SOQUEL CREEK WATER DISTRICT

Water Rate Study

FINAL REPORT / JANUARY 10, 2024

SOQUEL CREEK WATER DISTRICT

RAFTELIS

RAFTELIS

January 10, 2024

Leslie Strohm
Finance and Business Services Manager
Soquel Creek Water District
5180 Soquel Drive
Soquel, CA 95073

Subject: Water Financial Plan and Rate Study Report

Dear Ms. Strohm:

Raftelis is pleased to provide this Water Rate Study Report (Study) for the Soquel Creek Water District (District). The Study develops a long term financial plan and designs water rates with a technically sound methodology, which aligns with Proposition 218.

The major objectives of the study include the following:

- Develop a ten-year financial plan to ensure financial sufficiency, meet operation and maintenance costs, ensure sufficient funding for capital replacement and refurbishment needs, and achieve financial reserve targets adopted by the Board of Directors
- Develop equitable cost of service-based water commodity rates, monthly fixed charges, and private fire service charges that align with Proposition 218 requirements
- Review the current rate structure and evaluation of alternative water rate structures to achieve District policies

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

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

Sincerely,

Kevin Kostiuk
Senior Manager

Contents

1. Executive Summary 11

1.1. Background of the Study 11

1.2. Objectives of the Study 12

1.3. Legal Requirements and Rate Setting Methodology 13

1.3.1. California Constitution – Article XIII D, Section 6 (Proposition 218) 13

1.3.2. California Constitution – Article X, Section 2 13

1.3.3. Cost-Based Rate-Setting Methodology 14

1.4. Proposed Financial Plan 16

1.4.1. Factors Affecting Revenue Requirements 16

1.5. Proposed Water Rate Modifications 20

1.5.1. Proposed Rates 21

1.5.2. Proposed Multi-Year Rate Schedule 23

1.6. Water Bill Impacts 24

1.7. Proposed Emergency Rates 25

2. General Assumptions 27

2.1. Inflation 27

2.2. Projected Water Demand and Connection Growth 27

2.3. Water Shortage Contingency Stages 28

3. Financial Reserve Policies 29

4. Long-Term Financial Plan 30

4.1. Revenue Requirements 30

4.1.1. Revenues from Current Rates 30

4.1.2. Operating and Maintenance (O&M) Expenses 36

4.1.3. Projected Capital Improvement Plan 38

4.1.4. Existing Debt Service 42

4.2. Existing Financial Plan – No Revenue Adjustments 44

4.3. Proposed Financial Plan 47

5. Cost of Service Analysis 55

5.1. Methodology 55

5.2. Revenue Requirement 57

5.3. O&M Expense Functionalization 58
5.4. Allocation of Functionalized Expenses to Cost Components 58
5.5. Asset Functionalization 63
5.6. Allocation of Functionalized Assets to Cost Components 63
5.7. Preliminary Cost Allocation of Revenue Requirement 65
5.8. Allocation of Fire Protection Costs – Public vs. Private 67
5.9. Revenue Recovery by Cost Components 67
5.10. Final Cost Allocation of Revenue Requirement 70
5.11. Unit Costs Derivation 72
5.12. Distribution of Cost Components to Customer Classes 75

6. Rate Structure Definitions and Proposed Revisions 77

6.1. Existing Rate Structure and Rates 77
6.2. Proposed Rate Structure Changes 78

7. Rate Design and Derivation 81

7.1. Existing Rate Structure and Rates 81
7.2. Proposed Monthly Fixed Charges 82
7.2.1. Meter Services Component 82
7.2.2. Basin-Wide Sustainability Benefit Component 84
7.2.3. Billing and Customer Service Component 84
7.3. Proposed Private Fire Service Charges 87
7.4. Proposed Commodity Rates 89
7.4.1. Unit Cost Component Definitions 89
7.5. Customer Impacts 93

8. Emergency Rates 95

8.1. Shortage Impacts 95
8.2. Assumptions 95
8.3. Financial Impacts 95
8.4. Emergency Rates Design Methodology 98
8.5. Proposed Emergency Rates 101

Tables

Table 1-1: Proposed Annual Revenue Adjustments 16
Table 1-2: Residential & Commercial Monthly Water Service Charges 22
Table 1-3: Irrigation Monthly Water Service Charges 22
Table 1-4: Monthly Private Fire Protection Line Service Charges 23
Table 1-5: Commodity Water Use Rates 23
Table 1-6: Proposed Residential & Commercial Monthly Water Service Charge Schedule 23
Table 1-7: Proposed Irrigation Monthly Water Service Charge Schedule 24
Table 1-8: Proposed Monthly Private Fire Service Charge Schedule 24
Table 1-9: Proposed Commodity Water Use Rate Schedule 24
Table 1-10: Water Shortage Contingency Stages 25
Table 1-11: Water Shortage/Emergency Rates (FY 2024) 26
Table 2-1: Inflationary Assumptions 27
Table 2-2: Account, Water Demand, and Miscellaneous Revenue Growth Assumptions 28
Table 2-3: Water Conservation Stages and Estimated Demand Reduction by Stage 28
Table 3-1: Financial Reserves Policy 29
Table 4-1: Current Monthly Fixed Charges ($/Month) 30
Table 4-2: Current Monthly Private Fire Line Charges ($/Month) 31
Table 4-3: Current Commodity Tiers and Rates ($/HCF) 31
Table 4-4: Projected Water Meters by Meter Size 32
Table 4-5: Projected Fire Lines by Line Size 32
Table 4-6: Projected Water Usage by Class and Tiers 34
Table 4-7: Projected Rate Revenue with Current Rates 34
Table 4-8: Projected Other Revenues, Non-Rate 35
Table 4-9: Projected O&M Expenses 37
Table 4-10: Projected Capital Improvement Plan 39
Table 4-11: Existing Annual Debt Service 43
Table 4-12: Existing Financial Plan – Pro Forma 45
Table 4-13: Proposed Revenue Adjustments 48
Table 4-14: Proposed Financial Plan – Pro Forma 50
Table 5-1: FY 2024 Revenue Required from Rates 57
Table 5-2: Functionalization of O&M Expenses 58
Table 5-3: System Peaking 58
Table 5-4: System-Wide Peaking Factors 59
Table 5-5: System Fire Protection 60

Table 5-6: Allocation of Functionalized O&M Expenses to Cost Causation Components (Percentage) .. 61
Table 5-7: Allocation of Functionalized O&M Expenses to Cost Causation Components (Values) 62
Table 5-8: Functionalization of System Assets 63
Table 5-9: Allocation of Functionalized Asset Valuation to Cost Causation Components (Percentage) .. 64
Table 5-10: Allocation of Functionalized Asset Valuation to Cost Causation Components (Values) 64
Table 5-11: Preliminary Revenue Requirement by Cost Component 66
Table 5-12: Fire Analysis 67
Table 5-13: Cost Recovery, Cost Components (Percentage) 69
Table 5-14: Cost Recovery, Cost Components (Values) 69
Table 5-15: Revenue Requirement by Cost Component 71
Table 5-16: FY 2024 Projected Water Usage by Class 72
Table 5-17: Derivation of Equivalent Meters 72
Table 5-18: Derivation of Equivalent Fire Lines 73
Table 5-19: Cost Causation Component Unit Cost Calculation 74
Table 5-20: Derivation of Cost to Serve Each Class 76
Table 6-1: Existing Monthly Fixed Service Charges 77
Table 6-2: Existing Monthly Private Fire Service Charges 78
Table 6-3: Existing Commodity Rates and Tiers 78
Table 6-4: Existing and Proposed Water Commodity Definitions 80
Table 7-1: Existing Rates for the Meter Based Fixed Charge 81
Table 7-2: Existing Rate Structure – Water Commodity Rates 82
Table 7-3: Meter Equivalences Calculation 83
Table 7-4: Meter Service Cost Allocation 83
Table 7-5: Meter Equivalent Calculation ($/month) 84
Table 7-6: Pure Water Soquel Benefit Calculation ($/month) 84
Table 7-7: Customer Component Calculation 85
Table 7-8: Calculation of FY 2024 Cost of Service Meter Charges, Residential & Commercial 85
Table 7-9: Calculation of FY 2024 Cost of Service Meter Charges, Irrigation 86
Table 7-10: Proposed Monthly Service Charges (FY 2024-2027), Residential & Commercial 86
Table 7-11: Proposed Monthly Service Charges (FY 2024-2027), Irrigation 87
Table 7-12: Fire Line Equivalencies Calculation 87
Table 7-13: Fire Line Service Component Calculation 88
Table 7-14: Calculation of Rates for the COS FY 2024 Private Fire Protection Charges 88
Table 7-15: Proposed Monthly Private Fire Protection Charges ($/Fire Line Size) 89
Table 7-16: Groundwater Use Unit Cost Calculation 90
Table 7-17: Pure Water Soquel Water Use Unit Cost Calculation 90

Table 7-18: Combined Supply Component 91
Table 7-19: Water Delivery Unit Cost Calculation 91
Table 7-20: Conservation Cost Allocation 91
Table 7-21: Conservation Rate Component Calculation 92
Table 7-22: Proposed Commodity Rates 92
Table 7-23: Proposed Commodity Rates ($/HCF) 93
Table 8-1: Water Shortage Contingency Stages 95
Table 8-2: Estimated Water Demand at Stage 96
Table 8-3: Shortage Specific Expenditures at Stage 96
Table 8-4: Variable Cost Calculation 97
Table 8-5: Avoided Costs, at Stage 97
Table 8-6: Net Cost Change, at Stage 97
Table 8-7: Base Revenue Requirement 98
Table 8-8: Net Revenue Requirement, at Stage 98
Table 8-9: Average Rate Calculation, at Stage 98
Table 8-10: Commodity Percentage Increase Calculation, at Stage 99
Table 8-11: Stage 1 Emergency Rate Calculation 99
Table 8-12: Stage 2 Emergency Rate Calculation 100
Table 8-13: Stage 3 Emergency Rate Calculation 100
Table 8-14: Stage 4 Emergency Rate Calculation 100
Table 8-15: Stage 5 Emergency Rate Calculation 101
Table 8-16: Emergency Rates FY 2024 101
Table 8-17: Emergency Rates FY 2025 101
Table 8-18: Emergency Rates FY 2026 102
Table 8-19: Emergency Rates FY 2027 102

Figures

Figure 1-1: Proposed Water Revenue Adjustments and Calculated Debt Coverage 18
Figure 1-2: Capital Financing Plan 18
Figure 1-3: Proposed Financial Plan 19
Figure 1-4: Projected Ending Balances 19
Figure 1-5: Single Family Residential Monthly Water Bill Impacts (FY 2024) 25
Figure 4-1: Proposed Water Revenue Adjustments 52
Figure 4-2: Proposed Water Operating Financial Plan 53

Figure 4-3: Proposed Water Ending Fund Balances 53
Figure 4-4: Proposed Water Capital Improvement Program Funding 54
Figure 7-1: Current and Proposed SFR Tiers 93
Figure 7-2: Bill Impacts – SFR with 5/8” Meter 94

THIS PAGE INTENTIONALLY LEFT BLANK

1. Executive Summary

1.1. Background of the Study

The Soquel Creek Water District (SqCWD or District) serves an area of approximately 17 square miles in coastal Santa Cruz County. The District was founded in 1961 and serves potable water to roughly 40,000 people through 16,250 water and fire service connections. The District relies solely on local groundwater to meet customer demands of approximately 2,600 acre feet (AF) per year, and it operates and maintains 15 production wells and a distribution network of 166 miles of mains.

The District's current rates, last updated January 1, 2023, were developed in the 2018 Rate Study by Raftelis (adopted and implemented February 2019). The rate structure for the District's water service charges has two components: a fixed monthly service charge component and a variable water quantity (commodity) charge component. The monthly service charge is determined based on customer class and the meter size serving a property; the charge increases with meter size. The volumetric component of a customer's water bill is calculated based on the number of units of water delivered to a property, measured in one hundred cubic feet (HCF[1]), multiplied by rates that vary by customer class and tier. The volumetric component is an inclining rate structure for Residential users to incentivize conservation and water use efficiency.

As part of the 2023 Study, the District would like to propose four years of revenue and rate adjustments for adoption by the Board, as well as a ten-year financial plan.

In early 2019, the Board adopted five years of rates based on the study developed by Raftelis. In 2023, the District contracted Raftelis to conduct a new Water Rate Study (Study) to include an updated ten-year financial planning horizon, updated cost of service (COS) analysis, and updated rate design. This Executive Summary presents the financial plan results and resulting water rates proposed for adoption, with implementation assumed in March 2024. In addition to presenting the proposed multi-year rates the Executive Summary contains a description of the rates study process, legal requirements in California, financial drivers, rate structure alternative selection, and rate-setting methodology.

The District wishes to establish fair and equitable rates that:

- Proportionately allocate the costs of providing service in accordance with Proposition 218
- Meet the District's fiscal needs in terms of operational expenses, reserve targets, and capital investment to maintain the physical water system and long-term health and reliability of the groundwater basin
- Maintain affordable charges for customers, with a price signal for those whose higher demands place additional stressors on the District's water system and groundwater basin
- Provide revenue stability and financial sufficiency in times of mandatory conservation
- Are fair and equitable between different types of water users, both current and future users

[1] One HCF equals 748 gallons of water

1.2. Objectives of the Study

The primary components of the Study include:

1. **Financial Plan:** A ten-year financial plan to determine the amount of revenue required from water rates. The financial plan should ensure financial sufficiency including all operating and maintenance (O&M) costs, funding of financial reserves to policy targeted levels, fund imminent O&M and capital repayment of Pure Water Soquel (PWS), and fund the long-term capital improvement program (CIP).
2. **Cost of Service Analysis:** Allocate costs to water system components and then to various customer classes based on the costs incurred to serve, and the user characteristics, of each.
3. **Rate Design**: Develop rates that generate sufficient revenues based on the results of the financial plan and cost of service analysis and communicate the policy preferences of the District, maintaining that rates are cost-justified.
4. **Administrative Record Preparation:** Develop an administrative record (Study Report) to document the results of the rate study comprehensively. This includes the source of underlying data and assumptions, the determination of the revenue requirements, the basis for reasonable cost allocations, the basis for any rate structure modifications, and the cost-justification of proposed rates.
5. **Rate Adoption:** Follow and assist SqCWD staff with the procedural and substantive requirements of Proposition 218 including the Study Report, development of the notice to all affected parcels, and a Public Hearing on rate adoption.

This Study was completed using the principles established by the American Water Works Association's (AWWA) *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1, 7th edition* (M1 Manual). The M1 Manual's general principles of rate structure design and the objectives of the Study are described below.

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

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

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

Rate design is the final step of the M1 Manual's rate-making process and uses the revenue requirement and cost of service analysis to determine appropriate rates for each customer class. Rates utilize "rate components" that build-up to rates for commodity charges, and rates for fixed charges, for the various customer classes and meter sizes serving customers. In the case of inclining tier water rates, the rate components themselves allocate the cost of service *within* each class of customer, effectively treating each tier as a sub-class and determining the cost to serve each tier.

1.3. Legal Requirements and Rate Setting Methodology

1.3.1. California Constitution – Article XIII D, Section 6 (Proposition 218)

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

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

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

1.3.2. California Constitution – Article X, Section 2

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

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

Article X, Section 2 of the State Constitution establishes the need to preserve the State's water supplies and to discourage the waste or unreasonable use of water by encouraging conservation. By definition, public

agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In addition, Section 106 of the California Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, Section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water. The District established tiered water rates (also known as "inclining tier" or "inclining block") to incentivize customers to use water in an efficient manner. The inclining tier rates (as well as rates for uniform rate classes) need to be based on the proportionate costs incurred to provide water to customer classes and on a parcel basis within each customer class to achieve compliance with Proposition 218.

The District is charged with mandates by the State of California to achieve reduced per capita water use. In 2008, Governor Schwarzenegger signed into law a bill referred to as SBX7-7. SBX7-7 required all urban water suppliers to reduce per capita water use by 20 percent by the year 2020. The District's rate structure is one of the means by which it has achieved this statutory mandate.

The recurrence of drought and other water scarcity challenges emphasizes the finite nature of California's water resources, necessitating responsible management for sustainable future water supplies. In response to these concerns, the Sustainable Groundwater Management Act (SGMA) was enacted in 2014, designating the Santa Cruz Mid-County Groundwater Basin (Mid-County Basin) as a high-priority critically over drafted basin. As the sole source of supply for this region, the Mid-County Basin is witnessing declines in groundwater elevation, active seawater intrusion, saltwater contamination, and escalating threats from climate change and sea level rise, leading to its classification as critically over drafted by the State. Recognizing the unsustainability of these conditions, the state has mandated the restoration of the basin to sustainability by 2040. The District is a member of the Santa Cruz Mid-County Groundwater Agency (MGA), serving as the groundwater sustainability agency for the Mid-County Basin. The MGA has developed a Groundwater Sustainability Plan to meet the state mandate. Given the cyclical nature of droughts, SGMA requirements, local groundwater conditions, and the absence of reliable connections to other sources, it is evident that water conservation should be an integral component of a water-supply reliability portfolio.

"Inclining" tier rate structures (which are synonymous with "increasing" tier rate structures and "tiered" rates), when properly designed and differentiated by customer class, allow a water utility to send conservation price signals to customers while proportionately allocating the costs of service. Due to the necessity to reduce water use and increase efficiency, tiered water rates have gained widespread use, especially in relatively water-scarce regions like California, and more specifically in critically overdrawn basins like the Mid-County Basin. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reasonably reflect the proportionate cost of providing service, on a parcel basis, in each tier.

1.3.3. Cost-Based Rate-Setting Methodology

There are four major steps to develop water rates that align with Proposition 218 and industry standards while meeting other guiding principles and objectives of the District.

1.3.3.1. Calculate the Revenue Requirement

The rate-making process starts by determining the base year (rate-setting year) revenue requirement, which for this Study is fiscal year (FY) 2024 which runs from July 1, 2023, to June 30, 2024[2]. The revenue requirement should sufficiently fund the utility's O&M expenses, debt service, capital expenditures, and reserve funding.

1.3.3.2. Cost of Service (COS) Analysis

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

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

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands[4]). Peaking costs are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating and maintaining facilities to meet peak demands. These peak demand costs need to be allocated to those customers whose water usage patterns generate additional costs for the utility. In other words, not all customer classes and not all customers share the same responsibility for peaking-related costs.

1.3.3.3. Rate Design and Calculations

Rates do more than simply recover costs. Within the legal framework and industry standards, properly designed rates should support and optimize a blend of utility objectives, such as conservation, financial stability, fairness, and customer understanding, among other objectives. Rates act as a public information tool in communicating these objectives to customers.

1.3.3.4. Rate Adoption

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

---

[2] If adopted, proposed rates would become effective March 1, 2024, for the remaining four months of the current fiscal year 2023-2024.

[3] Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.

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

1.4. Proposed Financial Plan

Raftelis conducted a status quo cash flow analysis to evaluate whether existing water rates adequately fund the District's costs over the ten-year planning horizon and the four-year Study period. Annual projections of rate and non-rate revenues, O&M expenses, debt service payments, and capital expenditures through FY 2033 were developed in conjunction with District staff. Raftelis projects that with no rate increases over the four-year study period, the District's reserves will become negative and fail to meet minimum debt coverage beginning in FY 2026. This demonstrates a clear need for revenue adjustments (i.e. gross water rate revenue increases relative to existing rate revenues). Raftelis worked with District staff, the Ad Hoc Water Rates Advisory Committee (WRAC),[5] and the Board of Directors, to develop the proposed revenue adjustments over the study period.

Table 1-1 shows the four-year schedule of proposed revenue adjustments used to calculate proposed rates. Although **Table 1-1** shows anticipated revenue adjustments for FY 2024 through FY 2027, the District will review and confirm the revenue adjustments on an annual basis[6]. The first revenue adjustment of 10% is proposed for implementation in March 2024. Revenue adjustments of 12% in FY 2025 through FY 2027 will take effect in January of each fiscal year beginning in January 2025.

Table 1-1: Proposed Annual Revenue Adjustments

	A	B	C	D	E
Line	Revenue Adjustments	FY 2024	FY 2025	FY 2026	FY 2027
1	Effective Month	March	January	January	January
2	Percent Adjustment	10%	12%	12%	12%

1.4.1. Factors Affecting Revenue Requirements

The following items affect the District's revenue requirement (i.e., costs) and thus its water rates. The District's expenses include current and projected O&M expenses, cash funded capital expenditures, annual debt service payments, and cash reserve funding.

- **Inflationary Pressure:** The District's operating environment is not immune to the effects of inflation. The costs of materials, chemicals, construction, professional services, and other costs increased at a historic pace over the past two years. The financial plan assumes inflationary pressure at heightened levels over the first two years of projections before returning to a long-term rate of about 3% per year.

- **Baseline Water Demand Estimates:** With 60% of water rate revenues from water sales, the District is sensitive to reductions in water demands, which have declined over the past several years. Declines have been driven by a number of factors including a multi-year drought in 2019 to 2022, a near-record winter in 2023, long-term conservation outreach and messaging, passive conservation, and improved water use efficiency, among others. Based on experienced declines and to be conservative in long-range projections, water demand is

[5] The WRAC is an ad hoc committee of two Directors. These Directors invited regular public stakeholders to attend and participate in all meetings.

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

projected to remain consistent at approximately 2,600 acre feet per year (AFY). This is a decline of 300 AFY relative to the prior rate study which assumed a baseline water demand of 2,900 AFY.

» **Capital Improvement Program (CIP)**: The District has approximately $29.3 million in capital expenditures over the next four fiscal years and $80.2 million over the ten-year financial planning period. These reinvestment projects are proposed to be funded through cash and cash reserves from rates. Major capital projects include water main replacements, treatment facility upgrades, storage tank recoats, and other projects as identified in the District's long-term CIP. These program costs exclude Pure Water Soquel (PWS), discussed separately.

» **Pure Water Soquel:** The previous rate study was based on the Pure Water Soquel (PWS) Project funded by traditional loans (borrowing $90M at 3% interest rate). The cost of the PWS Project, like many water infrastructure projects in CA and the US, was impacted by increasing construction costs due to the COVID pandemic and supply chain issues. The District has been very fortunate to have the financial support from state and federal agencies for PWS with funding through grants ($65.25M grant from CA Prop 1 Groundwater Planning and Implementation Program and $30M in grant from US Bureau of Reclamation Title XVI WaterSmart Program) to help finance the project such that the Project's loan package is actually lower in this rate study than what was planned in the previous rate study (now borrowing $99M at ~1.3% interest rate through low-interest loans from CA Seawater Intrusion Control Program and US EPA WIFIA Program). The Project's is currently in construction and PWS operations will commence in FY 2025. Upon project completion the District will incur operating costs that average $5.5 million annually over the four-year study period. To smooth the effects on rates, PWS O&M is pre-funded in FY 2024 to help offset the shift in cost structure in FY 2025 and beyond. Pre-funding reserves existing cash on hand to partially offset these new O&M costs. In addition, this pre-funding provides additional reserve stability during PWS start-up. Since a cost of service analysis reflects a point in time, utilizing this approach ensures that rates accurately reflect the cost of service over the multi-year rate setting period. Repayment of PWS capital construction costs funded through the low-interest loans will not begin until FY 2030, towards the final years of the current 10-year financial planning horizon.

» **Reserve Funding:** The District has reserve policies to meet cash flow needs, ensure adequate funding of repairs and replacements in the event of asset failure or other unforeseen circumstances or events. The defined operating reserve policy is 40 percent of annual operating expenses in cash to meet cash flow needs, or roughly $8.8 million in FY 2024; of the $8.8 million, $2 million of the operating reserve is dedicated to rate stabilization as a tool with which to meet debt covenants in times of revenue shortfall or extraordinary events. The District has a debt reserve policy of one year of annual debt service, which for FY 2024 is approximately $3.9 million. Lastly, the District has a capital replacement fund which currently does not have a minimum target balance. The total cash reserve target for the District in FY 2024 is $12.7 million. Due to the increase in O&M and CIP expenses over the rate study, reserves will be drawn down below the District's policies through FY 2026 before beginning to recover in FY 2027. Beyond FY 2027 net cash generation is positive to bring cash balances back to the adopted target levels.

Figure 1-1 shows the proposed annual revenue adjustments in percentages as dark blue bars, as well as the calculated, target, and minimum debt coverage requirements shown as blue, yellow, and red lines, respectively. The y-axis on the left is for the revenue adjustments, and the y-axis on the right is for the debt coverage. With the proposed financial plan, the District is able to achieve its target debt coverage requirement

in all years of the plan. For **Figure 1-1** through **Figure 1-4**, 10 years are shown in the chart but this Study only proposes rates for adoption for the first four years through FY 2027.

Figure 1-1: Proposed Water Revenue Adjustments and Calculated Debt Coverage

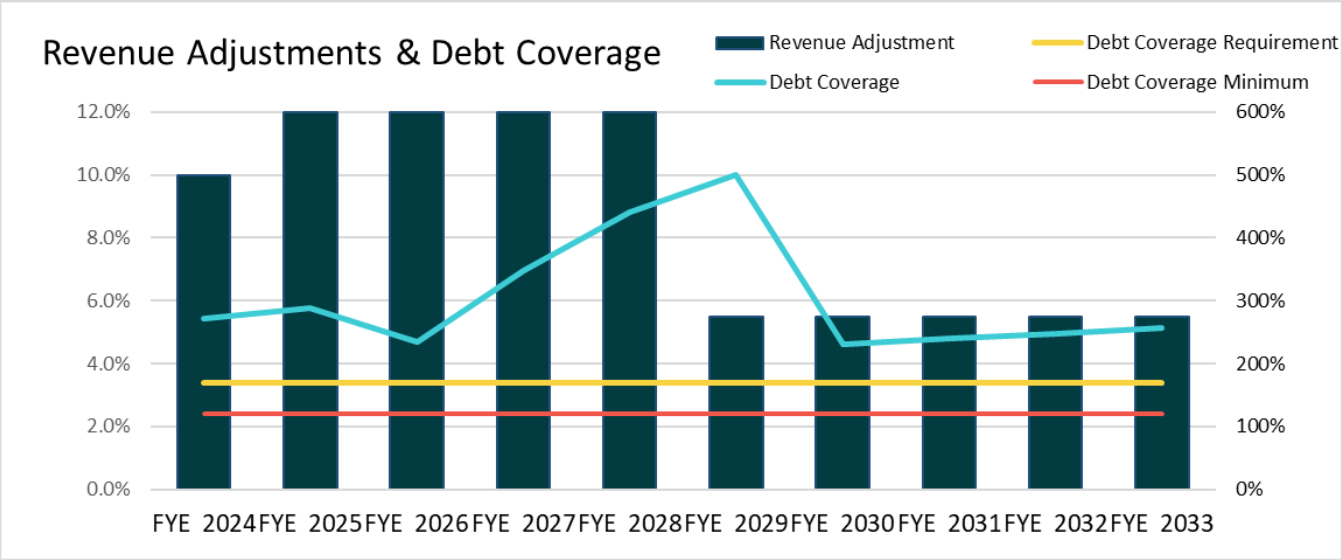


Figure 1-2 shows the proposed CIP financing plan over the study period. CIP in the first two years is predominantly the completion of PWS. PWS is funded through grants and a 1.3% low-interest Water Infrastructure Finance and Innovation Act (WIFIA) loan from the United States Environmental Protection Agency (US EPA) and 1.34% low-interest CA Seawater Intrusion Control loan. The District intends to fund all future non-PWS CIP with cash generated from rate revenues.

Figure 1-2: Capital Financing Plan

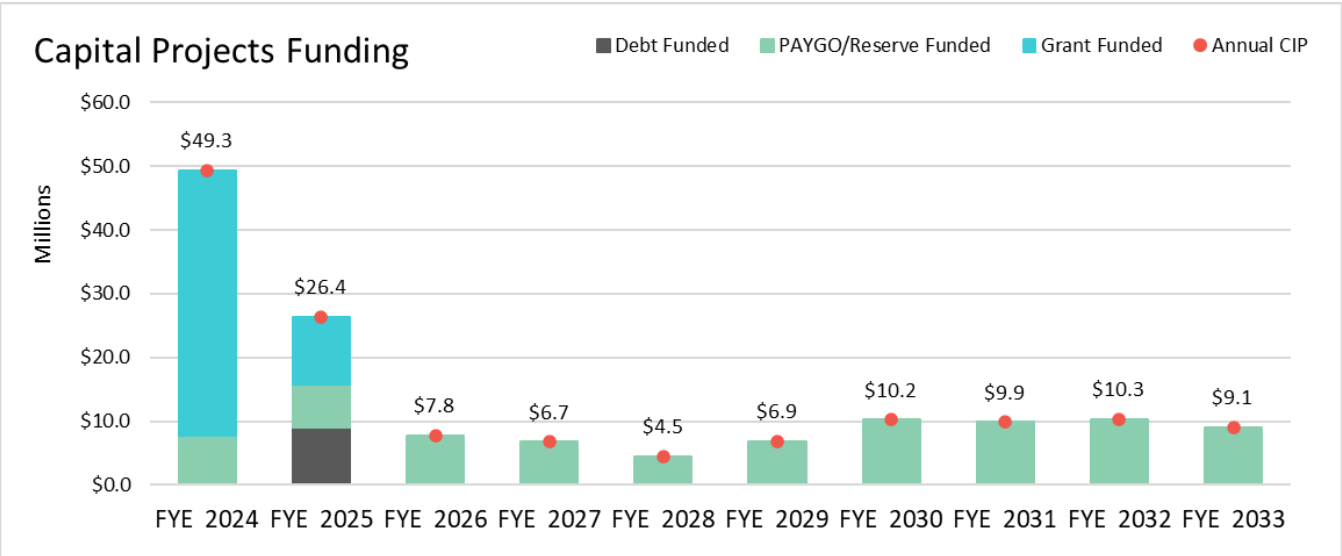


Figure 1-3 shows the proposed versus status quo operating financial plan. Revenues under the proposed financial plan and status quo financial plan are represented by the dotted and solid black lines, respectively. Revenue requirements including O&M expenses, debt service, rate funded CIP, and reserve funding are

represented by the various stacked bars. O&M includes cost centers related to groundwater production, system operations, District personnel, customer service, administration, and future Pure Water Soquel operating costs. Revenue adjustments (i.e., gross rate revenue increases) are required to generate additional revenue to fully recover O&M expenses, capital expenditures, debt service payments, and reserve funding over the study period.

Figure 1-3: Proposed Financial Plan

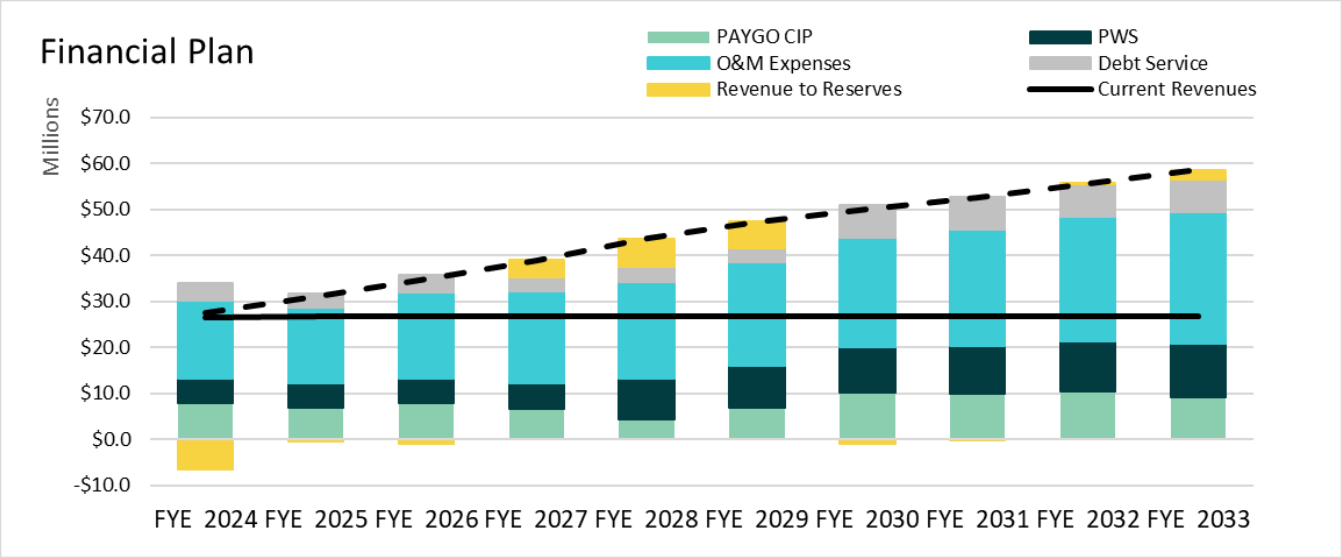
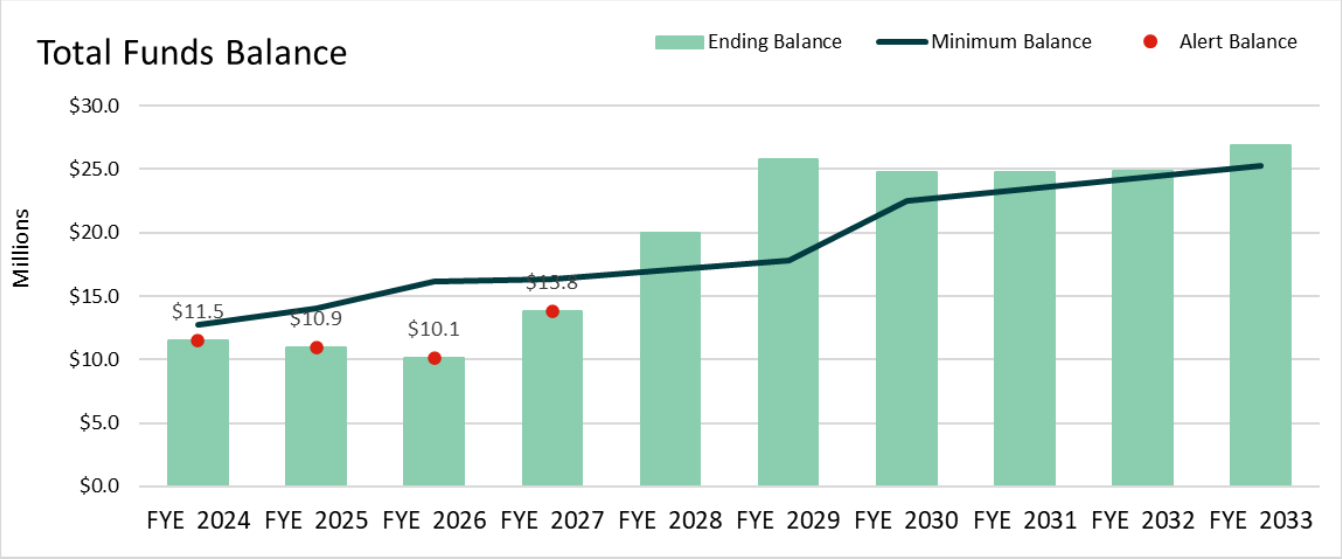


Figure 1-4 shows the District's projected fiscal year-end cash balance with the proposed financial plan. The green bars indicate the ending balance on June 30 of each year. The reserve target is represented by the dark blue line. The District is projected to draw down its reserves through FY 2026. While the ending balances fall below the reserve target in all four years, the ending balances are greater than the operating reserve target alone in each year, and reserves start to increase in FY 2027. Reserve targets are achieved in each year after FY 2027.

Figure 1-4: Projected Ending Balances



1.5. Proposed Water Rate Modifications

The District's existing water rate structure consists of a fixed water service charge (based on meter size) and a variable water usage rate (per hundred cubic feet [HCF] of water delivered). The two rate components recover different degrees of revenue and recover those revenues from distinct water system cost components. This section details the update to basin sustainability cost allocations within the cost of service analysis, as well as how that update, along with changes to fixed revenue recovery and the residential water use rate structure, affects rates. Throughout the Study, Raftelis worked closely with District staff, legal counsel, the WRAC, and the Board of Directors to evaluate potential changes to the existing water rate structures. The following changes are proposed:

- **Basin Sustainability Costs:** The prior study differentiated basin sustainability costs between water reliability and basin-wide management costs. This study maintains the same concept but modifies the approach based on the actual PWS project in construction and soon to come online, updated customer water demands, and proposed changes to how basin sustainability costs are recovered.

  The prior study identified and allocated 80% of basin sustainability costs to water reliability based on a planned project. These costs are currently recovered from Tier 2 water use within the Residential water use rates and from every unit of water within the Commercial & Irrigation/Outdoor Use uniform water use rates. The remaining 20% of costs are currently recovered as basin-wide benefit, related to the District's cost share of managing the Santa Cruz Mid-County Groundwater Sustainability Agency (MGA); and these basin-wide benefit costs are currently recovered from every unit of water within the supply cost component.

  The updated allocation proposed in this study is 45% to water reliability in the form of supplemental water supply and the remaining 55% to basin-wide benefit (replenishment of the over drafted condition, protection against further seawater intrusion, and aiding in meeting the basin sustainability mandate). This allocation is explained in further detail below.

  PWS will be operational in FY 2025 and will generate an estimated 1,500 AFY of water for the District. This volume of water is required in part for customer demands in excess of the basin's sustainable yield and in part for replenishment and protection as a seawater intrusion barrier. Raftelis, District staff, and legal counsel discussed approaches to reasonably allocating the costs between these two benefits of the project. The proposed allocation is:

  - **Supplemental Supply:** Raftelis analyzed District water demand data and aggregated all customer demands greater than 6 HCF per month per connection. 6 HCF represents the available water per connection per month at the Basin pre-recovery safe yield of 2,300 AFY. The total volume of water demanded by District customers greater than 6 HCF is 680 AFY, which expressed in percentage terms is 45% of the 1,500 AFY which the project will be delivering. Therefore, 45% of PWS costs are allocated in the form of supplemental water supply and differentiated within the water use rates.

  - **Basin-Wide Benefit:** The remaining water received from PWS (55% of the project costs) represents the basin-wide sustainability benefit for replenishment of the critically over drafted basin, protection against further seawater intrusion and aiding in meeting the state's mandate of basin sustainability. Whether an overlying property uses 2 HCF of water, 12 HCF of water, or no water at all, the parcel benefits from a sustainable basin. Due to this type of benefit, the proposed rates recover the Basin-

wide benefit from the fixed service charges to acknowledge the proportional benefit to all customers in protecting the existing water supply from further seawater intrusion; and that the benefit is proportional to the size of a property, for which the meter size is used as a proxy.

- **Fixed Meter-based Charges**: The prior rate study designed the monthly water service charges to recover 40% of total rate revenues from fixed sources, including meter-based service charges and private fire service charges. The current rate study and proposed rates are adjusted so that the fixed monthly water service charges recover 60% of overall rate revenues from fixed rates. The change in fixed revenue recovery is an affirmative policy decision of the Board of Directors to ensure financial sustainability of the District by better aligning the share of fixed revenues with the degree of fixed costs the District incurs.

- **Water Use Rates**

    - **Residential Tiers**: The study proposes replacing the existing two-tier rate structure with a three-tier rate structure. With the new structure, Tier 1 would include all water use below 4 units per month (up to 3.99 HCF), Tier 2 would include water use from 4 to 8 units (up to 7.99 HCF), and Tier 3 would include all water use at and above 8 units. These tier breakpoints were determined based on an analysis of the District's actual Single Family Residential seasonal demand patterns and the extrapolation of efficient indoor and outdoor use for a typical household in the service area from those seasonal demands.

    - **Supply Component**: The proposed rates differentiate the supply component of the water usage rate by source. All use up to 6 HCF per month is calculated using traditional groundwater costs. This amount is derived from the District's previously established sustainable pumping goal of 2,300 acre feet per year (AFY). Water use in excess of 6 HCF per year is calculated using supplemental supply costs provided by Pure Water Soquel. Because the proposed tier breaks are at 4 HCF and 8 HCF for residential customers, the Tier 1 rate will consist of the groundwater unit cost, Tier 3 will consist of the supplemental supply unit cost, and the Tier 2 rate will be a blend of the two (groundwater and supplemental supply unit costs) based on availability.

      As a result of the new supply component calculation, the uniform rate for Commercial and Irrigation/Outdoor Use customers will now be different, as the two classes have distinct demand patterns relative to the two sources of supply available and each classes' use above or below 6 HCF per connection per month.

1.5.1. Proposed Rates

Table 1-2 through **Table 1-5** show the current and proposed rates for the monthly service charges and the commodity water use rates starting in 2024. The rates for the current and proposed monthly fixed charges are based on the size of the meter serving a property and the class of customer served.

The rates for the current and proposed fire service charges are based on the diameter of the fire protection line serving a property. There are three components that comprise the meter based fixed charges: meter servicing costs, basin-wide sustainability benefit costs, and customer service costs. The meter services component collects servicing-related costs, peaking costs, and a portion of base costs. The basin-wide sustainability (BWS) benefit component collects costs related to the Basin-wide sustainability benefit for replenishment of the critically over drafted basin, protection against further seawater intrusion and aiding in meeting the state's mandate of basin sustainability. The customer service component recovers costs associated with meter reading, customer billing and collection, as well as answering customer service calls. These costs are uniform

for all meter sizes and classes as it costs the same to bill a small meter as it does a large meter and the same for a Residential user as it does an Irrigation user.

The rates for the current and proposed commodity charge are based on the amount of water delivered in one hundred cubic feet (HCF). Supply costs are related to the pumping and production of groundwater to meet customer demand. Delivery costs are associated with obtaining and treating water to ready it for transmission and distribution, as well as the operating and capital costs associated with delivering water to all customers at a constant average rate of use – also known as serving customers under average daily demand conditions. Conservation costs are related to direct conservation efforts made by the District.

Proposed charges represent year one rates for implementation which include the effects of the updated cost of service analysis, rate re-design, and revenue adjustments from the financial plan. The proposed revenue adjustments are annualized based on the effective month and represent the increase in total revenue. The proposed adjustment to each individual rate will vary based on the COS analysis. In future years, the proposed rates are adjusted by the revenue adjustment percentage found in **Table 1-1**. All rates are rounded up to the nearest whole penny.

Table 1-2: Residential & Commercial Monthly Water Service Charges

	A	B	C	D	E	F
Line	Meter Size	Meter Component	BWS Benefit	Customer Component	Proposed Monthly Charges	Current Charges
1	5/8" Restricted	$28.52	$7.18	$9.04	$44.74	$30.43
2	5/8"	$57.04	$14.36	$9.04	$80.44	$52.34
3	1"	$142.60	$35.91	$9.04	$187.55	$118.04
4	1.5"	$285.19	$71.82	$9.04	$366.05	$227.53
5	2"	$712.98	$179.54	$9.04	$901.56	$556.00
6	3"	$1,425.96	$359.09	$9.04	$1,794.09	$1,103.48
7	4"	$2,851.91	$718.18	$9.04	$3,579.13	$2,198.45
8	6"	$4,563.06	$1,149.09	$9.04	$5,721.19	$3,512.39
9	8"	$7,985.35	$2,010.90	$9.04	$10,005.30	$6,140.29

Table 1-3: Irrigation Monthly Water Service Charges

	A	B	C	D	E	F
Line	Meter Size	Meter Component	BWS Benefit	Customer Component	Proposed Monthly Charges	Current Charges
1	5/8" Restricted	$46.51	$7.18	$9.04	$62.74	$39.36
2	5/8"	$93.03	$14.36	$9.04	$116.43	$70.20
3	1"	$232.57	$35.91	$9.04	$277.52	$162.71
4	1.5"	$465.13	$71.82	$9.04	$545.99	$316.90
5	2"	$1,162.83	$179.54	$9.04	$1,351.42	$779.44
6	3"	$2,325.67	$359.09	$9.04	$2,693.80	$1,550.33
7	4"	$4,651.33	$718.18	$9.04	$5,378.55	$3,092.14
8	6"	$7,442.13	$1,149.09	$9.04	$8,600.26	$4,942.30
9	8"	$13,023.73	$2,010.90	$9.04	$15,043.68	$8,642.63

Table 1-4: Monthly Private Fire Protection Line Service Charges

	A	B	C	D	E
Line	Fireline Size	Fire Component	Customer Component	Proposed Monthly Charges	Current Charges
1	1"	$2.48	N/A	$2.48	$1.71
2	1.5"	$7.19	N/A	$7.20	$4.92
3	2"	$15.33	N/A	$15.33	$10.43
4	3"	$44.52	N/A	$44.52	$30.22
5	4"	$94.87	N/A	$94.88	$64.40
6	6"	$275.58	N/A	$275.59	$187.02
7	8"	$587.27	N/A	$587.28	$398.50

Table 1-5: Commodity Water Use Rates

	A	B	C	D	E	F
Line	Customer Class	Supply	Delivery	Conservation	Proposed Rate	Current Rate
1	**Residential**					
2	Tier 1	$4.41	$4.74	$0.00	$9.16	$9.10
3	Tier 2	$5.53	$4.74	$0.00	$10.27	$41.23
4	Tier 3	$8.39	$4.74	$3.09	$16.22	N/A
5	**Uniform Rates**					
6	Commercial	$7.57	$4.74	$0.24	$12.56	$15.25
7	Irrigation	$7.85	$4.74	$0.24	$12.84	$15.25

1.5.2. Proposed Multi-Year Rate Schedule

Table 1-6 through **Table 1-9** show the proposed multi-year rate schedule for FY 2024 through FY 2027. The first year of proposed rates show the cost of service rates from tables **Table 1-2** through **Table 1-5**. All subsequent years' rates are increased based on the proposed annual revenue adjustments in **Table 1-1**.

Table 1-6: Proposed Residential & Commercial Monthly Water Service Charge Schedule

	A	B	C	D	E	F
Line	Meter Size	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	5/8" Restricted	$30.43	$44.74	$50.11	$56.13	$62.87
2	5/8"	$52.34	$80.44	$90.10	$100.92	$113.04
3	1"	$118.04	$187.55	$210.06	$235.27	$263.51
4	1.5"	$227.53	$366.05	$409.98	$459.18	$514.29
5	2"	$556.00	$901.56	$1,009.75	$1,130.92	$1,266.64
6	3"	$1,103.48	$1,794.09	$2,009.39	$2,250.52	$2,520.59
7	4"	$2,198.45	$3,579.13	$4,008.63	$4,489.67	$5,028.44
8	6"	$3,512.39	$5,721.19	$6,407.74	$7,176.67	$8,037.88
9	8"	$6,140.29	$10,005.30	$11,205.94	$12,550.66	$14,056.74

Table 1-7: Proposed Irrigation Monthly Water Service Charge Schedule

	A	B	C	D	E	F
Line	Meter Size	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	5/8" Restricted	$39.36	$62.74	$70.27	$78.71	$88.16
2	5/8"	$70.20	$116.43	$130.41	$146.06	$163.59
3	1"	$162.71	$277.52	$310.83	$348.13	$389.91
4	1.5"	$316.90	$545.99	$611.51	$684.90	$767.09
5	2"	$779.44	$1,351.42	$1,513.60	$1,695.24	$1,898.67
6	3"	$1,550.33	$2,693.80	$3,017.06	$3,379.11	$3,784.61
7	4"	$3,092.14	$5,378.55	$6,023.98	$6,746.86	$7,556.49
8	6"	$4,942.30	$8,600.26	$9,632.30	$10,788.18	$12,082.77
9	8"	$8,642.63	$15,043.68	$16,848.93	$18,870.81	$21,135.31

Table 1-8: Proposed Monthly Private Fire Service Charge Schedule

	A	B	C	D	E	F
Line	Fire Line Size	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	1"	$1.71	$2.48	$2.78	$3.12	$3.50
2	1.5"	$4.92	$7.20	$8.07	$9.04	$10.13
3	2"	$10.43	$15.33	$17.17	$19.24	$21.55
4	3"	$30.22	$44.52	$49.87	$55.86	$62.57
5	4"	$64.40	$94.88	$106.27	$119.03	$133.32
6	6"	$187.02	$275.59	$308.67	$345.72	$387.21
7	8"	$398.50	$587.28	$657.76	$736.70	$825.11

Table 1-9: Proposed Commodity Water Use Rate Schedule

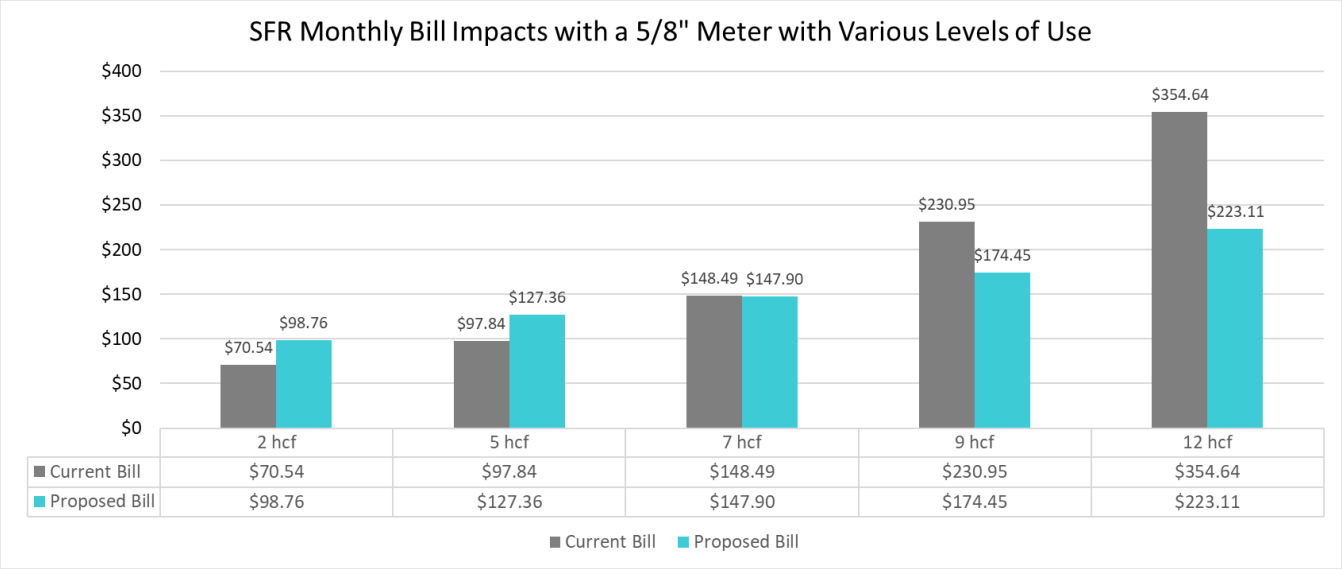
	A	B	C	D	E	F
Line	Class	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	**Residential**					
2	Tier 1	$9.10	$9.16	$10.26	$11.50	$12.88
3	Tier 2	$41.23	$10.27	$11.51	$12.90	$14.45
4	Tier 3	N/A	$16.22	$18.17	$20.35	$22.79
5	**Uniform Rates**					
6	Commercial	$15.25	$12.56	$14.07	$15.76	$17.66
7	Irrigation	$15.25	$12.84	$14.39	$16.12	$18.06

1.6. Water Bill Impacts

Figure 1-5 shows sample monthly water bills for Single Family Residential customers at varying levels of water use under both current and proposed FY 2024 rates. Note that actual bill impacts will vary based on individual water use; however, the values shown below are based on low, high, and typical volumes for a Single Family Residential customer and reflect actual use patterns for District customers. For reference, 31%

of all Single Family Residential bills use 2 HCF or less per month, 72% of all Single Family Residential bills use 5 HCF or less per month, and 98% of all Single Family Residential bills use 12 HCF or less per month.

Figure 1-5: Single Family Residential Monthly Water Bill Impacts (FY 2024)



1.7. Proposed Emergency Rates

Table 1-10 shows the water shortage stages as defined in the District's 2020 Urban Water Management Plan (UWMP). Rates developed in this Study represent the new Stage 0 – Baseline Conservation rates and updated long-term baseline water sales of 2,556 AFY.

Table 1-10: Water Shortage Contingency Stages

	A	B	C
Line	Stage	Stage Description	Curtailment Target
1	Stage 0	Baseline Conservation	0%
2	Stage 1	Water Shortage Alert	5%
3	Stage 2	Water Shortage Warning	15%
4	Stage 3	Emergency Water Shortage	25%
5	Stage 4	Severe Water Shortage	35%
6	Stage 5	Critical Water Shortage Emergency	50%

Table 1-11 shows the proposed water shortage emergency rates, by declared stage, customer class, and tier for fiscal year 2024. These charges will replace the base rates of the water commodity charge at each declared stage and are designed to recover the projected net revenue loss to the District at each shortage stage, which may be due to drought, natural disaster, or other event which requires a mandatory reduction in use by water customers. The development of emergency rates also incorporates variable cost savings - as less water is pumped and treated - as well as additional conservation program costs at each stage.

Table 1-11: Water Shortage/Emergency Rates (FY 2024)

	A	B	C	D	E	F	F
Line	Class	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	**Residential**						
2	Tier 1	$9.16	$9.61	$10.73	$12.16	$14.04	$18.20
3	Tier 2	$10.27	$10.78	$12.03	$13.63	$15.74	$20.40
4	Tier 3	$16.22	$17.02	$19.00	$21.53	$24.85	$32.22
5	**Uniform Rates**						
6	Commercial	$12.56	$13.18	$14.71	$16.67	$19.24	$24.95
7	Irrigation	$12.84	$13.47	$15.04	$17.04	$19.67	$25.51

2. General Assumptions

2.1. Inflation

The study period is FY 2024 to FY 2027, with proposed revenue adjustments and rates presented for the same period. FY 2024 begins on July 1, 2023, and ends on June 30, 2024. A variety of assumptions and inputs are incorporated into the study based on discussions with and/or direction from District staff. These include the projected number of accounts, water demand over time, and inflationary factors, among others.

Inflationary factors show projected increases in various cost categories across the study period. These factors are applied to all years beginning in FY 2025. FY 2024 is based on the District's adopted budget. Raftelis worked with District staff to escalate individual budget line items according to appropriate escalation factors. Inflationary assumptions are presented in **Table 2-1**. For long-term planning purposes, inflationary factors beyond FY 2027 are constant.

A general inflation rate of three percent is based on the long-term change in the US Bureau of Labor Statistics Consumer Price Index-Urban (CPI-U). Salaries and benefits tend to outpace general inflation, and District staff have estimated annual increases of eight percent and seven percent, respectively. Chemical costs reflect the cost of raw water treatment. Energy costs reflect the price of electricity for water production, system pumping, and other District uses of energy. While the District's long-term CIP estimates changes in the construction cost index (CCI), an additional capital cost escalation of two percent is added to CIP projects to account for recent variability in construction cost planning, design, and construction.

Table 2-1: Inflationary Assumptions

	A	B	C	D
Line	Escalation Factors	FY 2025	FY 2026	FY 2027
1	General Inflation	3%	3%	3%
2	Salary	8%	8%	8%
3	Benefits	7%	7%	7%
4	Chemicals	5%	5%	5%
5	Energy	5%	5%	5%
6	Capital	2%	2%	2%

2.2. Projected Water Demand and Connection Growth

To estimate future water demand, two primary factors are used – account growth from new connections and water demand relative to the most recent year of use, which is FY 2023. To be fiscally conservative, no new water connections are included in the study period.

Remaining in line with a fiscally conservative planning strategy and in consideration of cyclical drought conditions and the long-term management concerns of the Santa Cruz Mid-County Groundwater Basin, total annual water demand is projected to remain consistent for the study period at 2,600 AF. Water usage has continued to decline since the previous study due to conservation efforts during the recent drought, price signaling from the existing rate structure, and continued efficiency of District customers water use.

To predict non-operating revenues, the study assumes that all recurring non-rate revenues (miscellaneous revenues) will increase at two percent and reserve interest earning will increase at 1.5 percent per year through FY 2027. Interest rates earned on reserves are based on conservative estimates. These revenue growth assumptions are presented below in **Table 2-2**.

Table 2-2: Account, Water Demand, and Miscellaneous Revenue Growth Assumptions

	A	B	C	D	E
Line	Growth Assumptions	FY 2024	FY 2025	FY 2026	FY 2027
1	Account Growth	0.0%	0.0%	0.0%	0.0%
2	Water Demand (AFY)	2,556	2,556	2,556	2,556
3	Misc Revenues	N/A	2.0%	2.0%	2.0%
4	Reserve Interest	N/A	1.5%	1.5%	1.5%

2.3. Water Shortage Contingency Stages

Table 2-3 shows water conservation stage reductions. Stage reductions are defined in the 2020 Water Shortage Contingency Plan within the Urban Water Management Plan (UWMP). The plan aims to achieve system-wide reductions of 5 percent at Stage 1 and 50 percent at Stage 5. These reductions are utilized in estimating water demands and calculating water shortage emergency rates, by stage. Stage 6 is not shown as it represents greater than 50 percent reduction and is not used in the study.

Table 2-3: Water Conservation Stages and Estimated Demand Reduction by Stage

	A	B	C	D	E	F
Line		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	Cumulative Reduction in Water Demand	5%	15%	25%	35%	50%

3. Financial Reserve Policies

Reserve policies provide guidelines for sound financial management with an overall long-range perspective to maintain financial solvency and mitigate financial risks associated with revenue instability, volatile capital costs, and emergencies. These risks include fiscal emergencies, water shortages, asset failure, and natural disasters, among others. The District has adopted reserve policies for the utility to meet cash flow needs (operating), protect against revenue shortfalls that impact debt service coverage (rate stabilization), ensure adequate funding of capital repairs and replacements (capital), and fund certain liabilities as part of bond covenants (debt).

The targeted reserve policy for the operating reserve is 40 percent of annual operating expenses to fund short-term variations in operating costs and for unanticipated changes in revenues and expenses. $2 million of the operating reserve is dedicated to rate stabilization to ensure the District can meet bond covenant requirements for debt service during times of reduced consumption and mandated conservation. The operating reserve for FY 2024 is $8.8 million inclusive of the $2 million for rate stabilization. The District has a debt service reserve for repaying previously issued bonds. The debt service reserve policy is one year of debt service which is $3.9 million in FY 2024. The District's capital reserve allows the utility to award contracts and provide flexibility in the timing of projects. The defined policy for the capital reserve does not include a minimum target balance and is funded on an as-needed basis.

Table 3-1 shows the total target for all reserves is approximately $12.7 million in FY 2024. The District's beginning FY 2024 balance was approximately $14 million, excluding debt proceeds which are dedicated to capital projects over the next two fiscal years. Modest additions in annual reserve funding will allow the District to achieve Board-adopted reserve targets over the study horizon.

Table 3-1: Financial Reserves Policy

	A	B	C
Line	Reserve	Policy	FY 2024 Target Level
1	Operating Reserve	40% of Annual Expenses	$6,793,200
2	Capital Replacement Reserve	No Minimum	$0
3	Rate Stabilization Reserve	$2 Million of Operating Reserve	$2,000,000
4	Debt Reserve	One Year of Debt Service	$3,911,168
5	**Total Minimum Reserves**		**$12,704,368**

4. Long-Term Financial Plan

This section describes the development of the District's long-range financial plan. To develop the financial plan, Raftelis projects annual revenues and expenses; models reserve balances; incorporates capital expenditures, debt service, and inflationary pressures; and calculates debt service coverage ratios to estimate the amount of any additional rate revenue required in each year of the study. This section includes a discussion of O&M expenses, the CIP, current and future debt service, reserve funding, projected revenue under existing rates, and the revenue adjustments required to ensure the fiscal sustainability and solvency of the District.

4.1. Revenue Requirements

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

4.1.1. Revenues from Current Rates

The current rates, last updated in January 2023, were originally developed in the 2018 rate study. The District's rate structure has two main components – a fixed charge component (monthly service charge) and a variable volumetric charge (commodity charge) – and for certain customers, a monthly fire line charge for private fire protection service. The monthly fixed service charge is determined based on the size of the water meter serving a property and customer class increases with meter size. As described in more detail in **Section 5**, as larger meter sizes generally consume more water on average, have the capacity to consume more water, and tend to have higher rates of peaking, the costs to provide service to these customers are higher. A typical Single Family Residential (SFR) home with a 5/8" meter has a monthly fixed service charge of $52.34. The rates for the current fixed charge are shown in **Table 4-1**.

Table 4-1: Current Monthly Fixed Charges ($/Month)

	A	B	C	D	E
Line	Meter Size	SFR	MFR	Commercial	Irrigation
1	5/8" Restricted	$30.43	$30.43	$30.43	$39.36
2	5/8"	$52.34	$52.34	$52.34	$70.20
3	3/4"	$52.34	$52.34	$52.34	$70.20
4	1"	$118.04	$118.04	$118.04	$162.71
5	1.5"	$227.53	$227.53	$227.53	$316.90
6	2"		$556.00	$556.00	$779.44
7	3"		$1,103.48	$1,103.48	$1,550.33
8	4"		$2,198.45	$2,198.45	$3,092.14
9	6"		$3,512.39	$3,512.39	$4,942.30
10	8"		$6,140.29	$6,140.29	$8,642.63

The District imposes a fixed monthly fire service charge on properties that are required as a condition of extending or initiating water service to install a private fire suppression system, or where the customer or property owner has installed a private fire line for the purpose of fire protection. The rates for the monthly fire

service charge are established based on the diameter of the fire line serving a property and are calculated to recover the costs associated with fire service capacity in the water distribution system. The current rates for the monthly fire service charge for private fire lines are shown in **Table 4-2**. The rates for Private Fire Protection Charges are discussed in more detail in **Section 7.3**.

Table 4-2: Current Monthly Private Fire Line Charges ($/Month)

	A	B
Line	Fire Line Size	FY 2023
1	1"	$1.71
2	1.5"	$4.92
3	2"	$10.43
4	3"	$30.22
5	4"	$64.40
6	6"	$187.02
7	8"	$398.50

The volumetric component of a customer's water bill is calculated based on the number of units of water delivered to a property, measured in HCF, multiplied by the rates that vary by customer class and tier. The current tier widths and rates are shown in **Table 4-3**. The rates in **Table 4-3**, multiplied by the amount of use in each respective tier, determine the volumetric component of a customer's bill. Tiers are discussed in detail in **Section 6** and **Section 7.4**.

Table 4-3: Current Commodity Tiers and Rates ($/HCF)

	A	B	C
Line	Class	Tier Definition	Rate ($/HCF)
1	Residential		
2	Tier 1	0-5.99	$9.10
3	Tier 2	6+	$41.23
4	Commercial/Irrigation	Uniform	$15.25

Table 4-4 shows the projected number of water connections by meter size, by fiscal year. The number of connections each year does not change based on the zero percent growth assumptions identified in Section and **Table 2-2**. Similarly, **Table 4-5** shows estimated fire line counts using the same assumptions as metered connections.

Table 4-4: Projected Water Meters by Meter Size

	A	B	C	D	E	F	G	H	I	J	K	L
Line	Meter Size	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	5/8" Restricted	49	49	49	49	49	49	49	49	49	49	49
2	5/8"	13,671	13,671	13,671	13,671	13,671	13,671	13,671	13,671	13,671	13,671	13,671
3	1"	604	604	604	604	604	604	604	604	604	604	604
4	1.5"	101	101	101	101	101	101	101	101	101	101	101
5	2"	68	68	68	68	68	68	68	68	68	68	68
6	3"	25	25	25	25	25	25	25	25	25	25	25
7	4"	4	4	4	4	4	4	4	4	4	4	4
8	6"	0	0	0	0	0	0	0	0	0	0	0
9	8"	0	0	0	0	0	0	0	0	0	0	0
10	**Total**	**14,522**	**14,522**	**14,522**	**14,522**	**14,522**	**14,522**	**14,522**	**14,522**	**14,522**	**14,522**	**14,522**

Table 4-5: Projected Fire Lines by Line Size

	A	B	C	D	E	F	G	H	I	J	K	L
Line	Fire Line Size	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	1"	113	113	113	113	113	113	113	113	113	113	113
2	1.5"	4	4	4	4	4	4	4	4	4	4	4
3	2"	1,418	1,418	1,418	1,418	1,418	1,418	1,418	1,418	1,418	1,418	1,418
4	3"	0	0	0	0	0	0	0	0	0	0	0
5	4"	108	108	108	108	108	108	108	108	108	108	108
6	6"	68	68	68	68	68	68	68	68	68	68	68
7	8"	14	14	14	14	14	14	14	14	14	14	14
8	**Total**	**1,725**	**1,725**	**1,725**	**1,725**	**1,725**	**1,725**	**1,725**	**1,725**	**1,725**	**1,725**	**1,725**

Water demand projections through FY 2027 are shown in **Table 4-6**. Column B shows the FY 2023 actuals, which were used to project water usage for FY 2024 through FY 2027. The water demand and revenue growth assumptions are identified in **Table 2-2**. To be fiscally conservative, water sales are expected to remain constant through FY 2027 at 2,556 acre feet per year (AFY). This is a decline of over 300 AFY relative to the prior rate study which assumed a baseline water demand of 2,900 AFY. Declines have been driven by a number of factors including a multi-year drought in 2019 to 2022, a near-record winter in 2023, long-term conservation outreach and messaging, passive conservation, and improved water use efficiency, among others.

Although the proposed rates have three tiers, rather than the two current tiers, the projected water usage is shown in **Table 4-6** for all current tiers to calculate projected revenues most accurately under "status quo" conditions. The "status quo" financial plan does not include revenue adjustments and will assess whether the District's current rates, at the projected level of usage, will be sufficient to support operations, capital projects, reserve funding, etc.

Table 4-6: Projected Water Usage by Class and Tiers

	A	B	C	D	E	F	G	H	I	J	K	L
Line	Class	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	SFR											
2	Tier 1	558,723	558,723	558,723	558,723	558,723	558,723	558,723	558,723	558,723	558,723	558,723
3	Tier 2	112,392	112,392	112,392	112,392	112,392	112,392	112,392	112,392	112,392	112,392	112,392
4	MFR											
5	Tier 1	227,055	227,055	227,055	227,055	227,055	227,055	227,055	227,055	227,055	227,055	227,055
6	Tier 2	6,527	6,527	6,527	6,527	6,527	6,527	6,527	6,527	6,527	6,527	6,527
7	Commercial & Irrigation	208,581	208,581	208,581	208,581	208,581	208,581	208,581	208,581	208,581	208,581	208,581
8	**Total Water Sales (HCF)**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**	**1,113,278**
9	**Total Water Sales (AF)**	**2,556**	**2,556**	**2,556**	**2,556**	**2,556**	**2,556**	**2,556**	**2,556**	**2,556**	**2,556**	**2,556**

Table 4-7 shows the rate revenue generated in each study year with a projected steady demand and the current rates. Note that revenues for FY 2024 and beyond use existing rates from **Table 4-1**, **Table 4-2**, and **Table 4-3**. The overall adequacy of water revenues is measured by comparing the projected annual revenue required from rates with projected revenues from the existing rates.

Table 4-7: Projected Rate Revenue with Current Rates

	A	B	C	D	E	F	G	H	I	J	K
Line	Revenue Source	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	Service Charges	$10,798,594	$10,798,594	$10,798,594	$10,798,594	$10,798,594	$10,798,594	$10,798,594	$10,798,594	$10,798,594	$10,798,594
2	Commodity Charges	$15,234,470	$15,234,470	$15,234,470	$15,234,470	$15,234,470	$15,234,470	$15,234,470	$15,234,470	$15,234,470	$15,234,470
3	Fire Line Charges	$483,051	$483,051	$483,051	$483,051	$483,051	$483,051	$483,051	$483,051	$483,051	$483,051
4	**Total Rate Revenues**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**

The District also derives some revenues from other non-rate sources. These revenues consist of other operating revenue, miscellaneous, and non-operating revenues and are summarized in **Table 4-8**.

Table 4-8: Projected Other Revenues, Non-Rate

	A	B	C	D	E	F	G	H	I	J	K
Line	Revenue Source	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	Other Revenues	$40,000	$41,200	$42,436	$43,709	$45,020	$46,371	$47,762	$49,195	$50,671	$52,191
2	Miscellaneous Revenues	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524
3	Contributed Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	Interest Income	$150,000	$152,250	$154,534	$156,852	$159,205	$161,593	$164,016	$166,477	$168,974	$171,508
5	**Total Non-Operating Revenues**	**$195,000**	**$198,600**	**$202,274**	**$206,024**	**$209,852**	**$213,760**	**$217,749**	**$221,821**	**$225,979**	**$230,223**

4.1.2. Operating and Maintenance (O&M) Expenses

Total projected O&M expenses are shown in **Table 4-9** and are summarized by department. Expenses are projected form the District's adopted FY 2024 budget. Expenses beyond FY 2024 use District estimated costs where known or rely on FY 2024 budgeted values inflated by the assumptions from **Table 2-1**. The Pure Water Soquel (PWS) project is currently in construction and PWS operations will commence in FY 2025. Upon project completion the District will begin to incur operating costs that average $5.5 million annually over the four-year study period. To smooth the effects on rates and provide additional reserves during initial start-up, PWS O&M is pre-funded in FY 2024 to help offset the shift in cost structure in FY 2025 and beyond. Pre-funding reserves existing cash on hand to partially offset these new O&M costs. In addition, this pre-funding provides additional reserve stability during PWS start-up. Since the cost of service analysis in Section 5 reflects a point in time, utilizing this approach ensures that rates accurately reflect the cost of service over the multi-year rate setting period.

Table 4-9: Projected O&M Expenses

	A	B	C	D	E	F	G	H	I	J	K
Line	**O&M Expense Summary**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**
1	Source of Supply	$828,700	$882,866	$940,979	$1,003,342	$1,070,281	$1,142,149	$1,219,323	$1,302,215	$1,391,266	$1,486,950
2	Pure Water Soquel	$5,478,750	$5,478,750	$5,478,750	$5,478,750	$8,640,000	$9,140,000	$9,740,000	$10,340,000	$11,040,000	$11,740,000
3	Pumping	$1,245,000	$1,315,777	$1,390,815	$1,470,383	$1,554,773	$1,644,290	$1,739,265	$1,840,049	$1,947,016	$2,060,566
4	Water Treatment	$896,900	$955,330	$1,017,932	$1,085,018	$1,156,925	$1,234,016	$1,316,682	$1,405,343	$1,500,453	$1,602,500
5	Transmission and Distribution	$1,973,900	$2,088,164	$2,210,179	$2,340,519	$2,479,799	$2,628,685	$2,787,891	$2,958,189	$3,140,408	$3,335,442
6	Customer Accounts	$1,713,600	$1,818,451	$1,930,639	$2,050,714	$2,179,267	$2,316,937	$2,464,410	$2,622,427	$2,791,786	$2,973,345
7	General and Administrative	$10,229,900	$9,258,571	$11,277,693	$11,972,059	$12,714,040	$13,507,090	$14,354,919	$15,261,513	$16,231,157	$17,268,456
8	**Total Operating Expenses**	**$22,366,750**	**$21,797,909**	**$24,246,987**	**$25,400,785**	**$29,795,086**	**$31,613,167**	**$33,622,492**	**$35,729,737**	**$38,042,085**	**$40,467,259**

4.1.3. Projected Capital Improvement Plan

The District has proposed approximately $90.3 million in capital expenditures over the next four years (FY 2024 to FY 2027). These capital expenditures are shown in **Table 4-10**. The capital project costs in **Table 4-10** account for estimated construction cost inflation. A significant portion of the District's projected capital expenditures are attributed to the following project types: water main replacements, treatment facility upgrades, storage tank recoating, supplemental supply projects, and other projects as identified in the most recent master plan. FY 2024 capital costs rely on the summarized totals from the District's approved budget document.

Table 4-10: Projected Capital Improvement Plan

	A	B	C	D	E	F	G	H	I	J	K
Line	Project Description	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	Pure Water Soquel Advanced Purified Groundwater Replenishment Project	$41,378,300	$19,598,076	$0	$0	$0	$0	$0	$0	$0	$0
2	Cunnison Way Well Drilling	$1,800,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
3	Hexavalent Chromium Treatment Design & Construction	$1,000,000	$4,590,000	$4,681,800	$0	$0	$0	$0	$0	$0	$0
4	Regional Optimization Study	$1,000,000	$102,000	$52,020	$53,060	$54,122	$55,204	$56,308	$57,434	$58,583	$59,755
5	Cunnison Treatment Plant Planning & Design	$1,000,000	$102,000	$0	$0	$0	$0	$0	$0	$0	$0
6	Misc. Tank Recoat	$800,000	$0	$0	$716,315	$767,228	$821,657	$879,983	$942,497	$1,009,385	$1,081,081
7	Park Avenue Main Replacement Subec to McGregor	$750,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
8	Utility Relocation as Part of County Buffered Bike Lane Project	$300,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
9	Water Rate Study	$160,000	$0	$0	$0	$92,007	$93,847	$0	$0	$0	$101,583
10	Capitola Avenue Bridge Main Replacement	$150,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
11	Moosehead Dr. Main Replacement	$100,000	$0	$1,300,500	$0	$0	$0	$0	$0	$0	$0
12	Replace Unit 1	$88,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
13	Santa Cruz Mid County Groundwater Management Agency	$70,000	$102,000	$104,040	$74,285	$75,770	$77,286	$78,831	$80,408	$82,016	$83,656
14	Replace Units 7, 9 and 28	$70,000	$35,700	$0	$0	$0	$0	$0	$0	$0	$0
15	Replace Security Cameras	$60,000	$61,200	$0	$0	$0	$0	$0	$0	$0	$0
16	Raise Valve Boxes for County Overlay (Measure D Project on Cliff Dr, Martin Dr, Venetian, Marina Ave. Qty 120 @ $900/ea)	$50,000	$51,000	$52,020	$53,060	$54,122	$55,204	$56,308	$57,434	$58,583	$59,755
17	North Main Street Transmission Main	$50,000	$0	$0	$0	$0	$883,265	$0	$0	$0	$0
18	Aquaview Booster Station Upgrades	$50,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
19	Fairway Booster Station Upgrade	$50,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
20	1,2,3-TCP Treatment Feasibility Study & Treatment	$40,000	$0	$0	$0	$2,164,864	$0	$0	$0	$0	$0
21	Replace Carpet in Headquarters Building	$40,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
22	Garnet Reclaim System Filter Replacement	$40,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
23	Replace Unit 17	$35,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
24	Replace Unit 30	$35,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
25	Engineering Bullpen Office Reconfiguration and Electrical Upgrade	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
26	Pre-1914 Water Purchase from City of Santa Cruz	$25,000	$25,500	$26,010	$0	$0	$0	$0	$0	$0	$0
27	Replace Country Club Well	$25,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
28	O&M Asset Management Software	$25,000	$0	$0	$0	$0	$0	$0	$0	$0	$0

	A	B	C	D	E	F	G	H	I	J	K
Line	Project Description	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
29	457 Deferred Compensation Plan Review	$25,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
30	Chlorine Analyzer Replacement Program	$20,000	$20,400	$20,808	$21,224	$27,061	$27,602	$28,154	$34,461	$35,150	$0
31	Install Pole for AMI Solar Repeater	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
32	Replace Voice Radio Repeaters	$15,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
33	Computer Server Replacement Project	$12,000	$13,260	$0	$14,326	$0	$13,801	$0	$15,048	$0	$18,763
34	Replace Computer Network Wireless Access Points	$7,000	$0	$0	$0	$0	$0	$7,883	$0	$0	$0
35	Permanent Occupancy for Rosedale Trailer	$5,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
36	RDM Interchange Planning & Design	$0	$357,000	$0	$0	$0	$0	$0	$0	$0	$0
37	Rehabilitate Production Well (Rosedale 2023/24)	$0	$306,000	$152,939	$0	$169,942	$0	$189,195	$0	$210,899	$0
38	Mar Vista Dr. Main Replacement	$0	$168,300	$0	$0	$0	$0	$0	$0	$0	$0
39	Quail Run Tank and Transmission Main Construction	$0	$153,000	$0	$0	$0	$0	$0	$0	$0	$0
40	Seascape Booster Station Upgrade	$0	$147,900	$0	$0	$0	$0	$0	$0	$0	$0
41	Sumner Main Replacement	$0	$102,000	$0	$0	$0	$0	$0	$0	$0	$2,688,958
42	Replace Units 8 and 21	$0	$91,800	$0	$0	$0	$0	$0	$0	$0	$0
43	I&M Treatment Plant Interior Recoat and Media Replacement	$0	$76,500	$0	$0	$0	$0	$0	$396,297	$425,312	$0
44	Replace Six Cathodic Protection Units	$0	$52,020	$0	$0	$0	$0	$0	$0	$0	$0
45	Main St. Well Electrical Disconnect and Automatic Transfer Switch	$0	$51,000	$0	$0	$0	$0	$0	$0	$0	$0
46	Development of West Annex	$0	$51,000	$0	$318,362	$0	$0	$0	$0	$0	$0
47	Install sludge pump at Estates backwash tank	$0	$40,800	$0	$0	$0	$0	$0	$0	$0	$0
48	Automatic Step Switch Replacement at Miscellaneous Treatment Plants	$0	$25,500	$26,010	$26,530	$27,061	$0	$0	$0	$0	$0
49	Copier/Printer for Administration	$0	$24,480	$0	$0	$0	$0	$0	$0	$17,575	$23,902
50	Estates and Aptos Jr High wells Automatic Transfer Switches	$0	$18,360	$0	$0	$0	$0	$0	$0	$0	$0
51	Stockton Avenue Bridge 8" condition assessment	$0	$12,240	$0	$0	$0	$0	$0	$0	$0	$0
52	Exterior Painting at Remote Sites	$0	$10,200	$10,404	$10,612	$11,907	$12,145	$12,388	$12,636	$14,060	$14,341
53	Main Street Well Backwash Tank Cross Connection Retrofit	$0	$10,200	$0	$0	$0	$0	$0	$0	$0	$0
54	Renew Firewall/Switch Licensing	$0	$9,180	$0	$0	$0	$10,489	$0	$0	$0	$0
55	Remote Site Radio Replacement	$0	$5,100	$5,202	$5,306	$7,577	$7,729	$7,883	$9,189	$9,373	$11,951
56	RDM Interchange with Soquel 9000 block Phase Hwy 1 Crossing Construction	$0	$0	$832,320	$0	$0	$0	$0	$0	$0	$0
57	Urban Water Management Plan	$0	$0	$192,474	$0	$0	$0	$0	$229,737	$0	$0
58	Replace Units 11, 20 and 24	$0	$0	$161,262	$0	$0	$0	$0	$0	$0	$0
59	Meter Testing Bench	$0	$0	$62,424	$0	$0	$0	$0	$0	$0	$0

	A	B	C	D	E	F	G	H	I	J	K
Line	**Project Description**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**
60	Victory Lane 12" Transmission Main	$0	$0	$52,020	$530,604	$0	$0	$0	$0	$0	$0
61	Energy Optimization Study	$0	$0	$52,020	$0	$0	$0	$0	$0	$0	$0
62	Townsend Tree Removal	$0	$0	$18,727	$0	$0	$0	$0	$0	$0	$0
63	Cunnison Treatment Plant Construction	$0	$0	$0	$3,448,926	$351,790	$0	$0	$0	$0	$0
64	(9033 to 9065) Block Soquel Dr. Water Main Phase II	$0	$0	$0	$530,604	$0	$0	$0	$0	$0	$0
65	Aptos Creek Well Property Acquisition	$0	$0	$0	$424,483	$0	$0	$0	$0	$0	$0
66	New parking lot to west of HQ	$0	$0	$0	$318,362	$0	$0	$0	$0	$0	$0
67	Replace Seascape generator $38,000 plus tax no installation add 10K	$0	$0	$0	$74,285	$0	$0	$0	$0	$0	$0
68	Replace Units 15 and 16	$0	$0	$0	$63,672	$0	$0	$0	$0	$0	$0
69	La Selva Beach Main Replacement, Phase IV	$0	$0	$0	$63,672	$0	$0	$0	$0	$0	$0
70	**Total CIP**	**$49,320,300**	**$26,413,716**	**$7,803,000**	**$6,747,691**	**$3,803,450**	**$2,058,227**	**$1,316,934**	**$1,835,140**	**$1,920,936**	**$4,143,744**

4.1.4. Existing Debt Service

The District has two outstanding long-term debt obligations, which include the 2020 Revenue Refunding Bond and the CoBank Revolving Line of Credit. Additionally, debt service payments for the Seawater Intrusion Control Fund begin in FY 2026, and debt service payments for the Water Infrastructure Finance and Innovation Act (WIFIA) loan start in FY 2030 (which falls outside the Study period but within the ten year planning period). Debt service schedules for each obligation were provided by the District. **Table 4-11** shows the annual debt service payment obligation for each debt instrument for each year of the Study period.

Table 4-11: Existing Annual Debt Service

	A	B	C	D	E	F	G	H	I	J	K
Line	Debt Issuance	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	2020 Revenue Refunding Bond										
2	Principal	$1,895,000	$1,905,000	$1,915,000	$1,475,000	$1,495,000	$1,515,000	$1,535,000	$1,565,000	$1,590,000	$1,620,000
3	Interest	$289,368	$277,467	$263,599	$243,759	$225,528	$203,926	$180,519	$155,575	$128,579	$99,561
4	**Total 2020 Bond**	**$2,184,368**	**$2,182,467**	**$2,178,599**	**$1,718,759**	**$1,720,528**	**$1,718,926**	**$1,715,519**	**$1,720,575**	**$1,718,579**	**$1,719,561**
5											
6	CoBank Revolving Line of Credit										
7	Principal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
8	Interest	$1,726,800	$863,400	$0	$0	$0	$0	$0	$0	$0	$0
9	**Total CoBank Credit**	**$1,726,800**	**$863,400**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
10											
11	Seawater Intrusion Control Fund										
12	Principal	$0	$0	$1,102,600	$1,116,900	$1,131,500	$1,146,200	$1,161,100	$1,176,200	$1,191,400	$1,206,900
13	Interest	$0	$0	$325,000	$310,700	$296,100	$281,400	$266,500	$251,400	$236,200	$220,700
14	**Total Seawater Fund**	**$0**	**$0**	**$1,427,600**	**$1,427,600**	**$1,427,600**	**$1,427,600**	**$1,427,600**	**$1,427,600**	**$1,427,600**	**$1,427,600**
15											
16	WIFIA										
17	Principal	$0	$0	$0	$0	$0	$0	$2,633,400	$2,668,800	$2,704,700	$2,741,000
18	Interest	$0	$0	$0	$0	$0	$0	$1,310,900	$1,275,500	$1,239,600	$1,203,300
19	**Total WIFIA**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$3,944,300**	**$3,944,300**	**$3,944,300**	**$3,944,300**
20											
21	**Total Existing Debt Service**	**$3,911,168**	**$3,045,867**	**$3,606,199**	**$3,146,359**	**$3,148,128**	**$3,146,526**	**$7,087,419**	**$7,092,475**	**$7,090,479**	**$7,091,461**

4.2. Existing Financial Plan – No Revenue Adjustments

Table 4-12 displays the proforma of the District from current rates over the study period. The proforma incorporates revenues and expenses to show the overall position of the utility. All projections shown in the table are based upon the District's current rate structure and do not include rate adjustments. The proforma incorporates data shown in the preceding tables of this section. Under the "status-quo" no revenue adjustment-scenario revenues generated form rates and other miscellaneous revenues are inadequate to maintain adequate reserves or achieve reserve targets and fund planned capital improvement projects over the study period.

Table 4-12: Existing Financial Plan – Pro Forma

	A	B	C	D	E	F	G	H	I	J	K
Line	Pro Forma	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	**Operating Revenues**										
2	Revenue from Existing Rates	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115
3	Total Revenue Adjustments	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
4	**Total Rate Revenue**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**	**$26,516,115**
5											
6	**Non-Rate Revenue**										
7	Other Revenues	$40,000	$41,200	$42,436	$43,709	$45,020	$46,371	$47,762	$49,195	$50,671	$52,191
8	Miscellaneous Revenues	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524
9	Contributed Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
10	Interest Income	$150,000	$152,250	$154,534	$156,852	$159,205	$161,593	$164,016	$166,477	$168,974	$171,508
11	**Total Operating Revenue**	**$26,711,115**	**$26,714,715**	**$26,718,389**	**$26,722,140**	**$26,725,968**	**$26,729,875**	**$26,733,864**	**$26,737,936**	**$26,742,094**	**$26,746,338**
12											
13	**O&M Expenditures**										
14	Source of Supply	$828,700	$882,866	$940,979	$1,003,342	$1,070,281	$1,142,149	$1,219,323	$1,302,215	$1,391,266	$1,486,950
15	Pure Water Soquel	$5,478,750	$5,478,750	$5,478,750	$5,478,750	$8,640,000	$9,140,000	$9,740,000	$10,340,000	$11,040,000	$11,740,000
16	Pumping	$1,245,000	$1,315,777	$1,390,815	$1,470,383	$1,554,773	$1,644,290	$1,739,265	$1,840,049	$1,947,016	$2,060,566
17	Water Treatment	$896,900	$955,330	$1,017,932	$1,085,018	$1,156,925	$1,234,016	$1,316,682	$1,405,343	$1,500,453	$1,602,500
18	Transmission and Distribution	$1,973,900	$2,088,164	$2,210,179	$2,340,519	$2,479,799	$2,628,685	$2,787,891	$2,958,189	$3,140,408	$3,335,442
19	Customer Accounts	$1,713,600	$1,818,451	$1,930,639	$2,050,714	$2,179,267	$2,316,937	$2,464,410	$2,622,427	$2,791,786	$2,973,345
20	General and Administrative	$10,229,900	$9,258,571	$11,277,693	$11,972,059	$12,714,040	$13,507,090	$14,354,919	$15,261,513	$16,231,157	$17,268,456
21	**Total O&M Expenses**	**$22,366,750**	**$21,797,909**	**$24,246,987**	**$25,400,785**	**$29,795,086**	**$31,613,167**	**$33,622,492**	**$35,729,737**	**$38,042,085**	**$40,467,259**
22											
23	**Revenue Less Operating Expenses**	**$4,344,365**	**$4,916,806**	**$2,471,402**	**$1,321,355**	**($3,069,118)**	**($4,883,292)**	**($6,888,628)**	**($8,991,801)**	**($11,299,991)**	**($13,720,920)**
24											
25	**O&M for Debt Coverage**	**$16,983,000**	**$22,359,159**	**$26,408,237**	**$28,062,035**	**$29,795,086**	**$31,613,167**	**$33,622,492**	**$35,729,737**	**$38,042,085**	**$40,467,259**
26											
27	**Capital Projects**	**$49,320,300**	**$26,413,716**	**$7,803,000**	**$6,747,691**	**$4,479,970**	**$6,872,020**	**$10,247,402**	**$9,910,400**	**$10,345,518**	**$9,079,477**
28	Rate Funded	$7,802,200	$6,815,640	$7,803,000	$6,747,691	$4,479,970	$6,872,020	$10,247,402	$9,910,400	$10,345,518	$9,079,477
29	Debt Funded	$0	$8,998,076	$0	$0	$0	$0	$0	$0	$0	$0
30	Grant Funded	$41,518,100	$10,600,000	$0	$0	$0	$0	$0	$0	$0	$0
31											
32	**Debt Issues**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
33	Issuance Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

	A	B	C	D	E	F	G	H	I	J	K
Line	Pro Forma	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
34	Debt Proceeds	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
35											
36	**Debt Service**	**$3,911,168**	**$3,045,867**	**$3,606,199**	**$3,146,359**	**$3,148,128**	**$3,146,526**	**$7,087,419**	**$7,092,475**	**$7,090,479**	**$7,091,461**
37	Current Debt Service	$3,911,168	$3,045,867	$3,606,199	$3,146,359	$3,148,128	$3,146,526	$7,087,419	$7,092,475	$7,090,479	$7,091,461
38	Proposed Debt Service	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
39											
40	**Net Cash Change**	**($7,369,002)**	**($4,944,701)**	**($8,937,796)**	**($8,572,696)**	**($10,697,217)**	**($14,901,838)**	**($24,223,449)**	**($25,994,676)**	**($28,735,988)**	**($29,891,858)**
41											
42	**Beginning Balance**	**$17,942,200**	**$10,573,198**	**$5,628,497**	**($3,309,300)**	**($11,881,995)**	**($22,579,212)**	**($37,481,050)**	**($61,704,499)**	**($87,699,175)**	**($116,435,163)**
43	**Ending Balance**	**$10,573,198**	**$5,628,497**	**($3,309,300)**	**($11,881,995)**	**($22,579,212)**	**($37,481,050)**	**($61,704,499)**	**($87,699,175)**	**($116,435,163)**	**($146,327,021)**
44	*Target*	*$12,704,368*	*$13,989,531*	*$16,169,494*	*$16,371,173*	*$17,066,163*	*$17,791,792*	*$22,536,415*	*$23,384,370*	*$24,307,313*	*$25,278,365*

4.3. Proposed Financial Plan

Raftelis worked with District staff, the WRAC, and the Board of Directors, to develop the proposed revenue adjustments over the study period. The proposed financial plan calls for adoption of revenue adjustments in each year from FY 2024 through FY 2027. The FY 2024 revenue adjustment is proposed to be implemented in March 2024. The second adjustment will be implemented in January 2025, with all subsequent adjustments occurring in January of each fiscal year through 2027. The revenue required to fund District operations (cost of service) as identified in the original 10-year financial plan was projected to increase by 12% annually over a four-year period. This increase was designed to ensure full recovery of operating costs and capital investments. To offset larger customer bill impacts that the proposed structural changes to the rates create in the first year, the Board authorized staff to suspend prefunding of retirement obligations (typically a cost-saving measure) in Year 1 of the Study which reduces the additional revenue required in 2024 from 12% to 10%. **Table 4-13** shows the proposed revenue adjustment plan. Although **Table 4-13** shows anticipated revenue adjustments for FY 2024 through FY 2027, the District will review and confirm the required revenue adjustments on an annual basis. The rates presented in **Section 7** are based on the proposed financial plan below.

Table 4-13: Proposed Revenue Adjustments

	A	B	C	D	E	F	G	H	I	J	K
Line	Revenue Adjustments	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	Effective Month	March	January	January	January	January	January	January	January	January	January
2	Percent Adjustment	10%	12%	12%	12%	12%	6%	6%	6%	6%	6%

Table 4-14 shows the proforma for the District with additional revenues from the revenue adjustments from the proposed financial plan. These revenue adjustments allow for full funding of all operating expenses, capital expenditures (including repair and refurbishment (R&R) and supplemental supply projects) and achieve reserve policy targets within the 10-year planning period. No emergency rates are assumed to be in effect during the Study period.

The proposed financial plan proforma estimates rate revenues and expenses on a cash flow basis. Correspondingly, the revenue adjustment in FY 2024, implemented in March 2024, represents one-third of the annual revenue adjustment (new rates effective for four of the twelve billing periods, which is equal to one-third of the fiscal year). The cost of service analysis in **Section 5** utilizes the FY 2024 revenue adjustment and rate revenue to determine unit costs of service and the rate components for fixed and variable charges. The FY 2024 "rate-setting year" revenue requirement is discussed in detail in **Section 5**.

Table 4-14: Proposed Financial Plan – Pro Forma

	A	B	C	D	E	F	G	H	I	J	K
Line	Pro Forma	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
1	**Operating Revenues**										
2	Revenue from Existing Rates	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115	$26,516,115
3	Total Revenue Adjustments	$883,871	$4,401,675	$8,111,810	$12,267,161	$16,921,154	$20,642,007	$23,235,704	$25,972,054	$28,858,903	$31,904,529
4	**Total Rate Revenue**	**$27,399,986**	**$30,917,790**	**$34,627,925**	**$38,783,276**	**$43,437,269**	**$47,158,122**	**$49,751,819**	**$52,488,169**	**$55,375,018**	**$58,420,644**
5											
6	**Non-Rate Revenue**										
7	Other Revenues	$40,000	$41,200	$42,436	$43,709	$45,020	$46,371	$47,762	$49,195	$50,671	$52,191
8	Miscellaneous Revenues	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796	$5,970	$6,149	$6,334	$6,524
9	Contributed Revenue	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
10	Interest Income	$150,000	$152,250	$154,534	$156,852	$159,205	$161,593	$164,016	$166,477	$168,974	$171,508
11	**Total Operating Revenue**	**$27,594,986**	**$31,116,390**	**$34,830,199**	**$38,989,301**	**$43,647,122**	**$47,371,882**	**$49,969,568**	**$52,709,990**	**$55,600,997**	**$58,650,867**
12											
13	**O&M Expenditures**										
14	Source of Supply	$828,700	$882,866	$940,979	$1,003,342	$1,070,281	$1,142,149	$1,219,323	$1,302,215	$1,391,266	$1,486,950
15	Pure Water Soquel	$5,478,750	$5,478,750	$5,478,750	$5,478,750	$8,640,000	$9,140,000	$9,740,000	$10,340,000	$11,040,000	$11,740,000
16	Pumping	$1,245,000	$1,315,777	$1,390,815	$1,470,383	$1,554,773	$1,644,290	$1,739,265	$1,840,049	$1,947,016	$2,060,566
17	Water Treatment	$896,900	$955,330	$1,017,932	$1,085,018	$1,156,925	$1,234,016	$1,316,682	$1,405,343	$1,500,453	$1,602,500
18	Transmission and Distribution	$1,973,900	$2,088,164	$2,210,179	$2,340,519	$2,479,799	$2,628,685	$2,787,891	$2,958,189	$3,140,408	$3,335,442
19	Customer Accounts	$1,713,600	$1,818,451	$1,930,639	$2,050,714	$2,179,267	$2,316,937	$2,464,410	$2,622,427	$2,791,786	$2,973,345
20	General and Administrative	$10,229,900	$9,258,571	$11,277,693	$11,972,059	$12,714,040	$13,507,090	$14,354,919	$15,261,513	$16,231,157	$17,268,456
21	**Total O&M Expenses**	**$22,366,750**	**$21,797,909**	**$24,246,987**	**$25,400,785**	**$29,795,086**	**$31,613,167**	**$33,622,492**	**$35,729,737**	**$38,042,085**	**$40,467,259**
22											
23	**Revenue Less Operating Expenses**	**$5,228,236**	**$9,318,481**	**$10,583,212**	**$13,588,516**	**$13,852,036**	**$15,758,715**	**$16,347,076**	**$16,980,253**	**$17,558,912**	**$18,183,609**
24											
25	**O&M for Debt Coverage**	**$16,983,000**	**$22,359,159**	**$26,408,237**	**$28,062,035**	**$29,795,086**	**$31,613,167**	**$33,622,492**	**$35,729,737**	**$38,042,085**	**$40,467,259**
26											
27	**Capital Projects**	**$49,320,300**	**$26,413,716**	**$7,803,000**	**$6,747,691**	**$4,479,970**	**$6,872,020**	**$10,247,402**	**$9,910,400**	**$10,345,518**	**$9,079,477**
28	Rate Funded	$7,802,200	$6,815,640	$7,803,000	$6,747,691	$4,479,970	$6,872,020	$10,247,402	$9,910,400	$10,345,518	$9,079,477
29	Debt Funded	$0	$8,998,076	$0	$0	$0	$0	$0	$0	$0	$0
30	Grant Funded	$41,518,100	$10,600,000	$0	$0	$0	$0	$0	$0	$0	$0
31											
32	**Debt Issues**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
33	Issuance Costs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

	A	B	C	D	E	F	G	H	I	J	K
Line	**Pro Forma**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**
34	Debt Proceeds	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
35											
36	**Debt Service**	**$3,911,168**	**$3,045,867**	**$3,606,199**	**$3,146,359**	**$3,148,128**	**$3,146,526**	**$7,087,419**	**$7,092,475**	**$7,090,479**	**$7,091,461**
37	Current Debt Service	$3,911,168	$3,045,867	$3,606,199	$3,146,359	$3,148,128	$3,146,526	$7,087,419	$7,092,475	$7,090,479	$7,091,461
38	Proposed Debt Service	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
39											
40	**Net Cash Change**	**($6,485,132)**	**($543,026)**	**($825,986)**	**$3,694,465**	**$6,223,937**	**$5,740,169**	**($987,745)**	**($22,622)**	**$122,915**	**$2,012,671**
41											
42	**Beginning Balance**	**$17,942,200**	**$11,457,068**	**$10,914,042**	**$10,088,056**	**$13,782,521**	**$20,006,458**	**$25,746,628**	**$24,758,883**	**$24,736,260**	**$24,859,175**
43	**Ending Balance**	**$11,457,068**	**$10,914,042**	**$10,088,056**	**$13,782,521**	**$20,006,458**	**$25,746,628**	**$24,758,883**	**$24,736,260**	**$24,859,175**	**$26,871,846**
44	*Target*	*$12,704,368*	*$13,989,531*	*$16,169,494*	*$16,371,173*	*$17,066,163*	*$17,791,792*	*$22,536,415*	*$23,384,370*	*$24,307,313*	*$25,278,365*

Figure 4-1 through **Figure 4-4** display the proposed financial plan in a graphical format through FY 2027.

Figure 4-1 shows the proposed revenue adjustments in percentages as dark blue bars, as well as the calculated, target, and minimum debt coverage requirements shown as blue, yellow, and red lines, respectively. With the proposed financial plan, the District is able to achieve its target coverage requirement in all years of the plan.

Figure 4-1: Proposed Water Revenue Adjustments

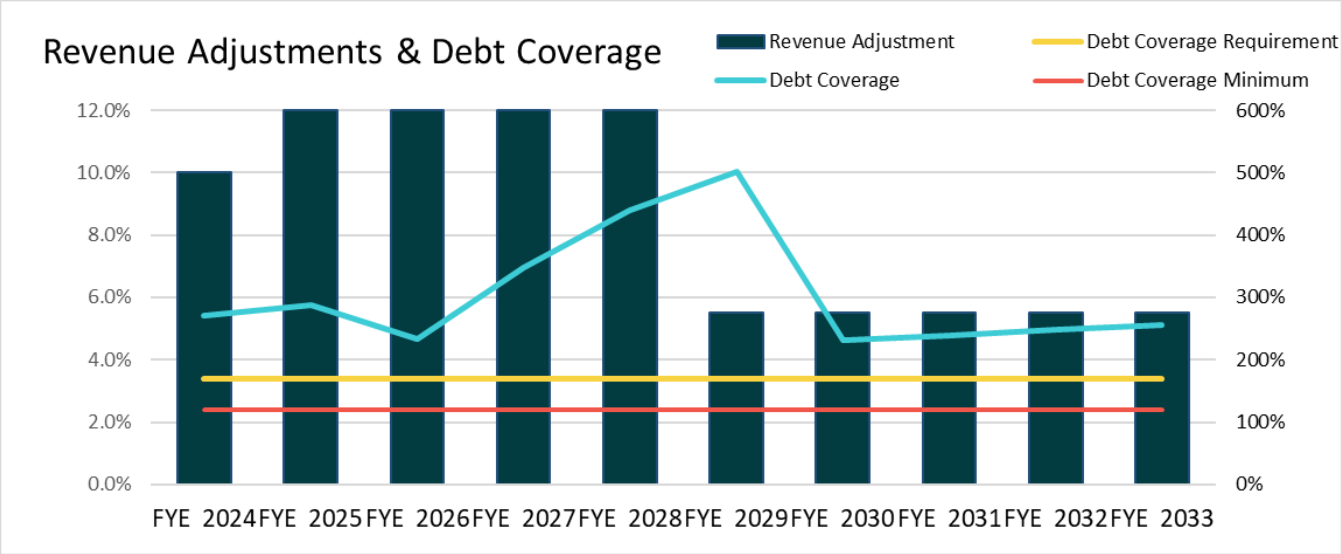


Figure 4-2 illustrates the Operating Financial Plan in a graphic format. It compares existing and proposed revenues with projected expenses. The expenses represent O&M expenses including water production costs, other operating expenses (including capitalized expenses), and reserve funding. Total revenues at existing and proposed rates are shown by the horizontal black and blue lines respectively. **Figure 4-2** shows that current revenue from existing rates, in black, will not meet future total expenses (inclusive of reserve funding).

Figure 4-2: Proposed Water Operating Financial Plan

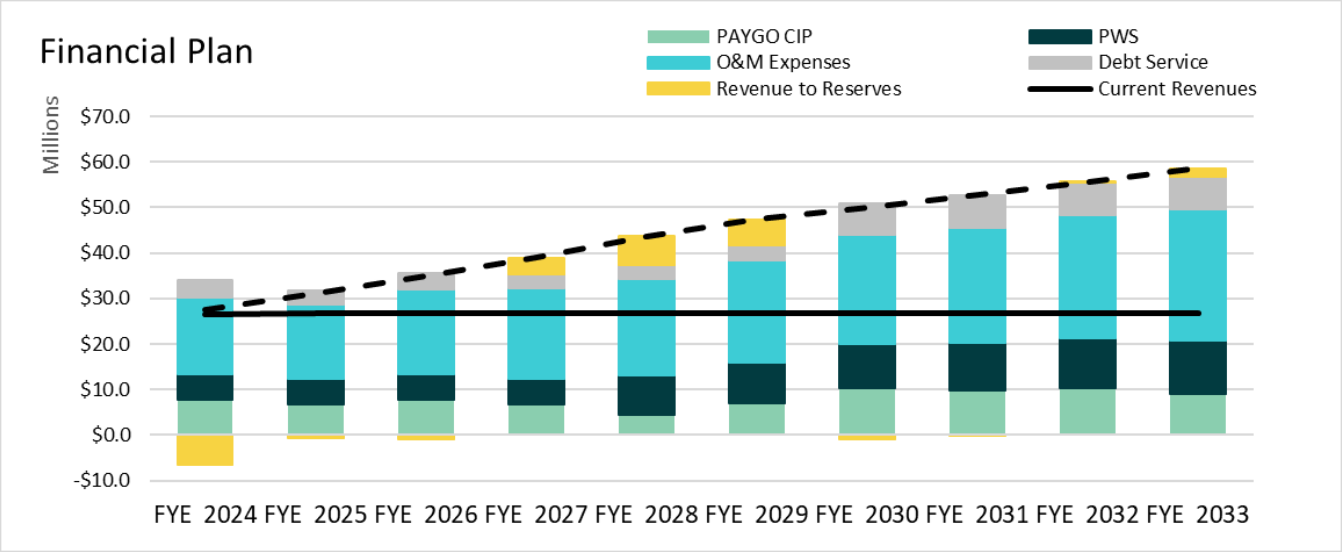


Figure 4-3 shows the District's ending balance by fiscal year. The green bars indicate the ending balance, while the black line indicates the target balance. With the proposed financial plan, the District is below reserves target balances in the first four years of the financial plan but achieves target fund balance by FY 2028.

Figure 4-3: Proposed Water Ending Fund Balances

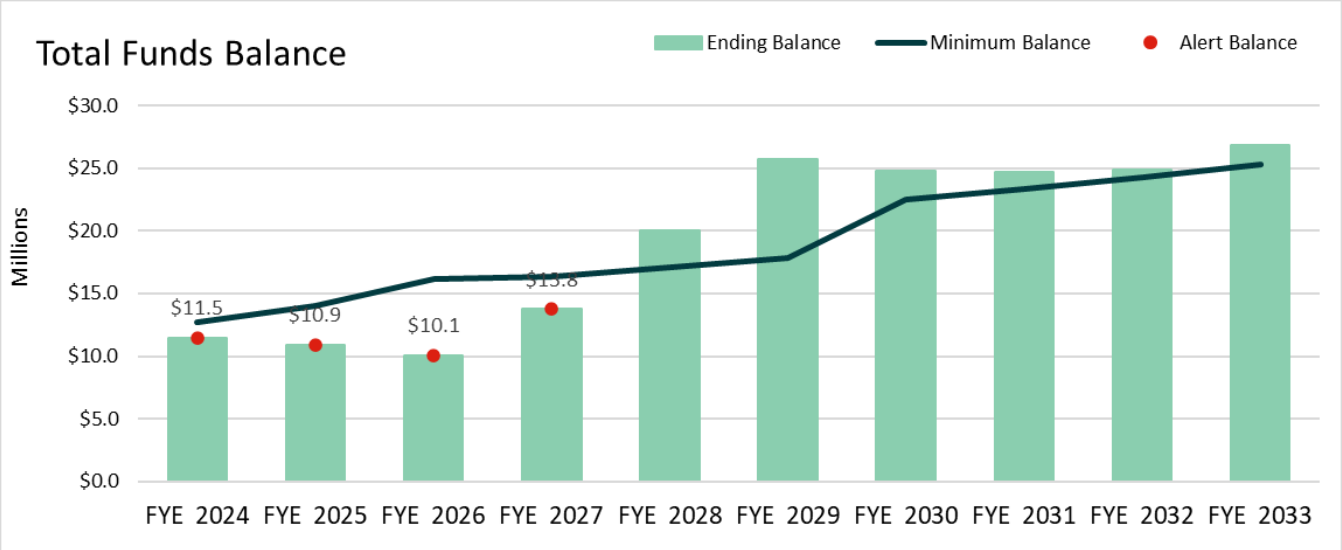
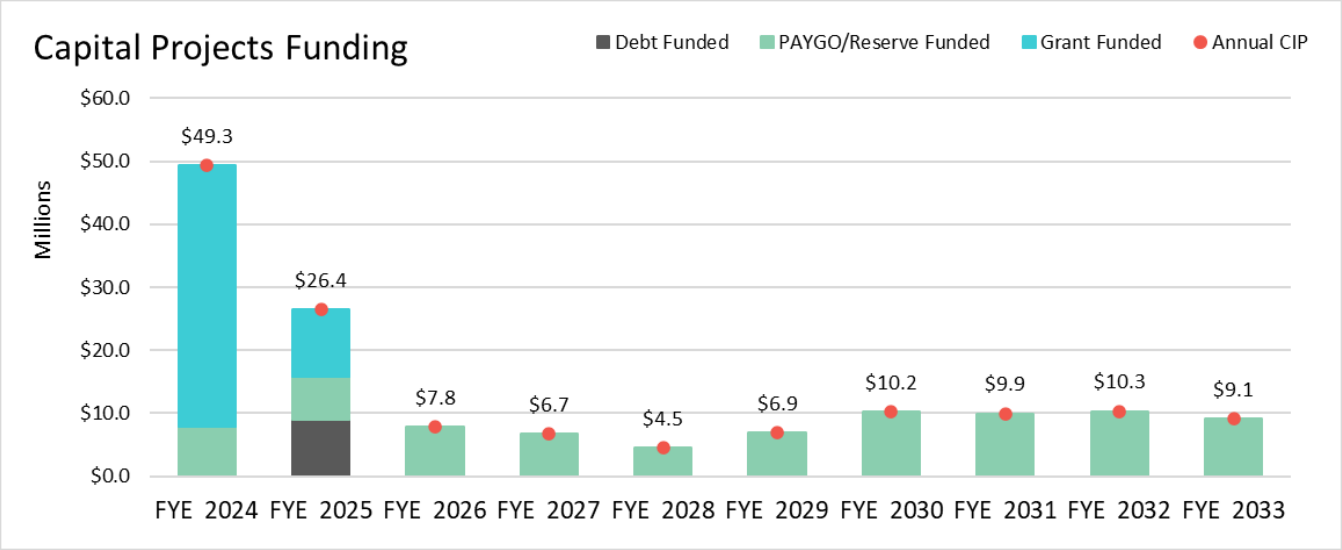


Figure 4-3 shows the total CIP of the District during the study period by funding source. The blue bars represent grant funded capital, the gray bars indicate debt funded capital, and the green bars indicate rate funded capital on a pay-as-you-go (PAYGO) basis. The red dots indicate the total value of CIP each year.

Figure 4-4: Proposed Water Capital Improvement Program Funding



5. Cost of Service Analysis

5.1. Methodology

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

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

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

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

1. **Water Supply**, or costs associated with supplying groundwater to customers.
2. **Reservoir/Storage Tanks**, or costs associated with storing water.
3. **Pumping**, or costs associated with pumping water to customers.
4. **Transmission**, or costs associated with operating, maintaining, and building of transmission pipelines.
5. **Treatment**, or costs associated with treating groundwater for consumption.
6. **Distribution**, or costs associated with operating, maintaining, and building distribution pipelines.
7. **Meters**, or costs associated with meter service and maintenance.
8. **Hydrants**, or costs associated with operating, maintaining, and building fire hydrants for fire protection.
9. **Customer**, or costs associated with customer service and billing.
10. **Conservation**, or costs associated with the District's conservation program, such as rebates, etc.
11. **Water Reliability** which recovers costs related to the Pure Water Soquel project

12. **General and Administrative**, or costs associated with the administration of the water system or those costs that are general in nature and allocated to direct cost components pro rata.

The functionalized costs are then allocated to the cost components[7]. The cost components include:

1. **Supply** costs are related to the production of water from the groundwater basin including energy costs for pumping. Supply costs also include supplemental supply produced by Pure Water Soquel for customer demands greater than the groundwater Basin's pre-recovery safe yield (greater than 6 HCF per connection per month). As explained in previous sections, the District relies on local groundwater from the Mid-County Basin as the sole source of water supply.
2. **Basin-wide Sustainability (BWS) Benefit** costs are related to replenishment of the critically over drafted basin, protection against further seawater intrusion, and aiding in meeting the state's mandate of basin sustainability.
3. **Base,** also known as delivery costs, vary with the total quantity of water used within the water system under average daily conditions. These costs may include treatment, transmission and distribution facilities, storage costs, and capital costs associated with serving customers at a consistent, or average, rate of use.
4. **Peaking** costs are divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as storage and distribution facilities and infrastructure, and the capital and O&M costs associated with those facilities, are designed to meet the peak demands placed on the system by customers. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demands greater than the average rate of use.
5. **Meter Service** costs include maintenance and capital costs related to meters and associated services.
6. **Customer** costs are those directly associated with serving customers, irrespective of the amount of water used, and generally include meter reading, bill generation, accounting, customer service, and collection expenses.
7. **Fire Protection** are costs of providing public and private fire protection services. They include both direct and indirect capital and maintenance costs for fire hydrants and private fire connections, as well as indirect costs for storage and distribution of water as these facilities and infrastructure must be upsized to meet fire flow demand.
8. **Conservation/Reliability** costs include the District's water resources services and supplies related to outreach and conservation programs and messaging.
9. **General** and administrative costs are incurred in operating and maintaining the water system not otherwise recovered in the other functionalized cost components. These costs are distributed to the other cost components in proportion to the cost responsibility of the other components.

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

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

5.2. Revenue Requirement

Table 5-1 shows the FY 2024 revenue requirement of $29,167,727. The total revenue requirement represents all O&M and capital revenue requirements and is equal to the cost of service to be recovered through rates. The O&M revenue requirement includes costs directly related to the supply, treatment, and distribution of water, as well as routine maintenance of system facilities. The Capital revenue requirement includes costs directly related to funding the capital program and the associated debt service obligations.

The rate revenue offsets are miscellaneous, non-rate revenues, which are utilized to reduce the amount required to be recovered from customer rates. The annual reserve funding adjustment is equal to the net cash change for FY 2024 in **Table 4-14**, which represents the amount by which the reserves are decreasing during the test year. The annualized rate increase adjustment represents the remaining two-thirds of the required revenue adjustment in the test year. As discussed previously in **Section 4.3**, the revenue adjustment for FY 2024 is effective in March, which represents one-third of the fiscal year. The annualized rate increase adjustment accounts for the remaining two-thirds of revenue required in the test year to effectively increase revenues by the 10 percentage points required in the proposed financial plan. To arrive at the Operating, Capital, and total revenue requirements, we subtract revenue offsets (non-rate revenues) and adjustments from the sub-total revenue requirement for each category (represented here as columns); the resulting calculation is the total revenue required from rates. This total is the amount that monthly meter service charges, private fire service charges, and commodity charges are designed to collect.

Table 5-1: FY 2024 Revenue Required from Rates

	A	B	C	D
Line	Revenue Requirements	Operating	Capital	Total
1	Operating Expenses	$22,366,750	$0	$22,366,750
2	Debt Service	$0	$3,911,168	$3,911,168
3	Paygo/Cash CIP	$0	$7,802,200	$7,802,200
4	**Sub-total Revenue Requirements**	**$22,366,750**	**$11,713,368**	**$34,080,118**
5				
6	**Revenue Offsets**			
7	Other Revenues	$40,000	$0	$40,000
8	Miscellaneous Revenues	$5,000	$0	$5,000
9	Interest Income	$0	$150,000	$150,000
10	**Total Revenue Offsets**	**$45,000**	**$150,000**	**$195,000**
11				
12	**Adjustments**			
13	Adjustments to Annual Cash Balance	$0	$6,485,132	$6,485,132
14	Adjustments to Annualize Rate Increase	$0	($1,767,741)	($1,767,741)
15	**Total Adjustments**	**$0**	**$4,717,391**	**$4,717,391**
16				
17	**COS to be Recovered from Water Rates**	**$22,321,750**	**$6,845,977**	**$29,167,727**

5.3. O&M Expense Functionalization

Table 5-2 shows the functionalization of District O&M expenses for the rate setting year FY 2024. Functionalizing O&M expenses follows the principles of rate setting set forth in the M1 Manual and allows for allocation of O&M to cost causation components. Note that the total functionalized O&M expenses are equal to the O&M expenses shown in **Table 5-1** and **Table 4-14**.

Table 5-2: Functionalization of O&M Expenses

	A	B
Line	Cost Function	O&M Expenses by Function ($)
1	Supply	$13,500
2	Reservoir	$600,800
3	Pumping	$2,060,200
4	Transmission	$0
5	Treatment	$896,900
6	Distribution	$936,100
7	Meters	$565,600
8	Hydrants	$12,600
9	Customer	$1,572,400
10	Conservation	$272,000
11	Water Reliability	$5,478,750
12	General	$9,957,900
13	**Total**	**$22,366,750**

5.4. Allocation of Functionalized Expenses to Cost Components

After functionalizing expenses, the next step is to allocate the functionalized expenses to cost components. To do so, we must identify system-wide peaking factors. The system-wide factors for maximum day and maximum hour were provided by the District's engineers and reflect a four-year average. Maximum day and maximum hour factors are shown in **Table 5-3** relative to the base factor. Base, or average daily demand, is represented by the factor 1.00.

Table 5-3: System Peaking

	A	B
Line	Cost Components	Ratio (relative to Base)
1	Base	1.00
2	Max Day	1.33
3	Max Hour	1.65

Calculated water system peaking factors from **Table 5-3** are shown in Column B of **Table 5-4**. The system-wide peaking factors are used to derive the cost causation component allocation bases (i.e., percentages)

shown in columns C, D, and E of **Table 5-4**. The numbers and calculations outlined in the following sections are rounded and may not equal the exact amounts shown.

Line 1 "Base" represents the average day demand throughout the year and is, therefore, a factor of 1.00.

- Base = 1.00 / 1.00 = 100%

Line 2 "Max Day" is the ratio of maximum day demand relative to base demand, or 1.33. The percentage allocated to maximum day is the incremental responsibility above base demand.

- Base = 1.00 / 1.33 = 75.5%
- Max Day = (1.33 – 1.00) / 1.33 = 24.5%

Similarly, Line 3, "Max Hour" is the ratio of maximum hour demand, on the maximum day, relative to base demand. The max hour factor is 1.65.

- Base = 1.00 / 1.65 = 60.6%
- Max Day = (1.33 – 1.00) / 1.65 = 19.7%
- Max Hour = (1.65 – 1.33) / 1.65 = 19.7%

These factors indicate how much additional capacity is required to meet demand above average daily use. As demand, and therefore capacity, increases, so must the sizing of facilities and pipelines, which incur greater costs to construct, maintain, and replace. To understand the interpretation of the percentages shown in columns C through E, "Base" is established as the average daily demand during the year. These allocation bases are used to assign certain functionalized costs to the cost causation components including reservoir, transmission, treatment, and distribution functions.

Table 5-4: System-Wide Peaking Factors

	A	B	C	D	E
Line		System Wide Factors	Base	Max Day	Max Hour
1	Base	1.00	100%		
2	Max Day	1.33	75.5%	24.5%	
3	Max Hour	1.65	60.6%	19.7%	19.7%

Table 5-5 shows system extra-capacity for fire protection related to the District's storage facilities, distribution system, and public hydrants. The District's engineering department identifies storage tank and/or reservoir capacity reserved for fire protection of 1.92 million gallons (MG) out of a total storage capacity of 7.53 MG, or 25.5 percent. Similarly, the District's engineering department estimated that 285,455 linear feet (LF) of distribution pipeline, out of a total of 885,144 LF, is necessary to provide fire flow. This amounts to approximately 32.2 percent. All costs functionalized as "Hydrants" are allocated 100 percent to fire protection.

Table 5-5: System Fire Protection

	A	B
Line	Function	Fire Protection
1	Reservoir	25.5%
2	Distribution	32.2%
3	Hydrants	100%

Table 5-6 and **Table 5-7** show the allocation basis for O&M expenses in percentages and dollars, respectively. The top row of **Table 5-6** shows the cost causation components and the left-most column shows the cost functions, equal to that shown in **Table 5-2**. The numbers shown in this section of the report are rounded to the nearest dollar and tenth of a percent; therefore, the calculations shown in the tables of this section may not be hand calculated to the precise numbers shown.

Supply and pumping costs are allocated 100 percent to the Supply component as they relate to producing water from the basin.

Reservoir and storage tank costs incorporates the fire protection allocation for reservoirs from **Table 5-5**. The remaining costs (total allocation less fire protection allocation) are proportionally allocated between Base and Max Day based on the maximum day allocation shown in **Table 5-4**. These costs are allocated on the basis of fire protection and maximum day because they are sized and constructed for maximum day demands, plus fire flow. Treatment related costs are allocated using the maximum day allocation from **Table 5-4**, as treatment facilities are constructed to meet maximum day demand.

Distribution costs are allocated using the maximum hour allocation from **Table 5-4** and the fire protection allocation from **Table 5-5** for the distribution function. Distribution pipelines are constructed to meet maximum hour customer demands, plus fire flow. Conservation costs are allocated 100 percent to the Conservation component as they relate to direct conservation effort costs.

The water reliability allocation proposed is 45% to supplemental water supply and 55% to basin-wide benefit (for water replenishment of the basin, to protection against further seawater intrusion, and to aid in meeting the basin sustainability mandate). To identify the allocation, Raftelis analyzed District water demand data and aggregated all customer demands greater than 6 HCF per month per connection. Recall, 6 HCF represents the available water per connection per month at the Basin pre-recovery safe yield of 2,300 AFY. The total volume of water demanded by District customers greater than 6 HCF is 680 AFY, which expressed in percentage terms is 45% of the 1,500 AFY that the project will deliver. Therefore, 45% of water reliability costs are allocated in the form of supplemental water supply while the remaining 55% of costs represent the basin-wide sustainability benefit.

Table 5-6: Allocation of Functionalized O&M Expenses to Cost Causation Components (Percentage)

	A	B	C	D	E	F	G	H	I	J	K	L
Line	Function	FY 2024	Supply	BWS Benefit	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conserva -tion	General
1	Supply	$13,500	100%									
2	Reservoir	$600,800			56%	18%		25%				
3	Pumping	$2,060,200	100%									
4	Treatment	$896,900			75%	25%						
5	Distribution	$936,100			41%	13%	13%	32%				
6	Meters	$565,600							100%			
7	Hydrants	$12,600						100%				
8	Customer	$1,572,400								100%		
9	Conservation	$272,000									100%	
10	Water Reliability	$5,478,750	45%	55%								
11	General	$9,957,900										100%
12	**Total**	**$22,366,750**	**$4,555,835**	**$2,996,615**	**$1,399,094**	**$454,706**	**$124,921**	**$467,680**	**$565,600**	**$1,572,400**	**$272,000**	**$9,957,900**

Table 5-7: Allocation of Functionalized O&M Expenses to Cost Causation Components (Values)

	A	B	C	D	E	F	G	H	I	J	K	L
Line	Function	FY 2024	Supply	BWS Benefit	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conserva-tion	General
1	Supply	$13,500	$13,500									
2	Reservoir	$600,800			$337,817	$109,791		$153,192				
3	Pumping	$2,060,200	$2,060,200									
4	Treatment	$896,900			$676,906	$219,994						
5	Distribution	$936,100			$384,371	$124,921	$124,921	$301,888				
6	Meters	$565,600							$565,600			
7	Hydrants	$12,600						$12,600				
8	Customer	$1,572,400								$1,572,400		
9	Conservation	$272,000									$272,000	
10	Water Reliability	$5,478,750	$2,482,135	$2,996,615								
11	General	$9,957,900										$9,957,900
12	**Total**	**$22,366,750**	**$4,555,835**	**$2,996,615**	**$1,399,094**	**$454,706**	**$124,921**	**$467,680**	**$565,600**	**$1,572,400**	**$272,000**	**$9,957,900**

5.5. Asset Functionalization

Table 5-8 presents the functionalization of the District's system asset base. Each asset category from the master capitalized asset schedule is assigned to one of the cost functions, in the same manner as is completed for the O&M cost evaluation. Capital assets are utilized in COS analyses to allocate the capital revenue requirement to the various cost causation components. The distribution of short-term CIP project costs can be heavily weighted to specific cost causation components based on the type of projects. Use of short-term plans to allocate capital costs may cause rates to fluctuate and result in customer confusion. The overall asset base, however, is considerably stable in the long-term, and therefore is more representative of long-term capital reinvestment. Thus, functionalized capital assets are used to allocate capital costs.

The column furthest right in **Table 5-8** shows the total asset valuation by category. Values shown represent book value (original cost less accumulated depreciation). Book value considers the original cost of the asset, it's useful (depreciable) life, and accumulated depreciation to date to arrive at individual system asset values. Land (real property) assets are excluded from the analysis.

Table 5-8: Functionalization of System Assets

	A	B	C
Line	Asset Category	Cost Function	Assets by Function ($)
1	Water Supply	Supply	$6,151,194
2	Wells	Supply	$8,675,248
3	Transmission & Distribution	Distribution	$33,241,503
4	Reservoirs	Reservoir	$2,845,756
5	Treatment	Treatment	$9,045,829
6	Fire	Hydrants	$1,946,496
7	Meters	Meters	$2,914,352
8	Customer Service	Customer	$7,431
9	General and Administrative	General	$2,938,317
10	**Total**		**$67,766,125**

5.6. Allocation of Functionalized Assets to Cost Components

Similar to the O&M cost allocation, the District's functionalized capitalized assets are allocated to the same cost components based on the function selected. Capital costs are allocated based on the asset base of the system in recognition that assets are required to be refurbished and replaced over time. This ensures that the allocations to the cost causation components, and ultimately the rates, remain relatively stable over time. **Table 5-9** and **Table 5-10** shows the functionalized assets allocated to the system cost components in both dollar and percentage terms. The numbers shown in this section of the report are rounded to the nearest dollar and tenth of a percent; therefore, the calculations shown in the tables of this section may not equal the precise numbers shown.

Table 5-9: Allocation of Functionalized Asset Valuation to Cost Causation Components (Percentage)

	A	B	C	D	E	F	G	H	I	J	K
Line	Description	Function	Value ($)	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	General
1	Water Supply	Supply	$6,151,194	100%							
2	Wells	Supply	$8,675,248	100%							
3	Transmission & Distribution	Distribution	$33,241,503		41%	13%	13%	32%			
4	Reservoirs	Reservoir	$2,845,756		56%	18%		25%			
5	Treatment	Treatment	$9,045,829		75%	25%					
6	Fire	Hydrants	$1,946,496					100%			
7	Meters	Meters	$2,914,352						100%		
8	Customer Service	Customer	$7,431							100%	
9	General and Administrative	General	$2,938,317								100%
10	**Total ($)**		**$67,766,125**	**$14,826,442**	**$22,076,403**	**$7,174,831**	**$4,436,007**	**$13,392,343**	**$2,914,352**	**$7,431**	**$2,938,317**
11	*Total (%)*			*21.9%*	*32.6%*	*10.6%*	*6.5%*	*19.8%*	*4.3%*	*0.0%*	*4.3%*

Table 5-10: Allocation of Functionalized Asset Valuation to Cost Causation Components (Values)

	A	B	C	D	E	F	G	H	I	J	K
Line	Description	Function	Value ($)	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	General
1	Water Supply	Supply	$6,151,194	$6,151,194	$0	$0	$0	$0	$0	$0	$0
2	Wells	Supply	$8,675,248	$8,675,248	$0	$0	$0	$0	$0	$0	$0
3	Transmission & Distribution	Distribution	$33,241,503	$0	$13,649,252	$4,436,007	$4,436,007	$10,720,237	$0	$0	$0
4	Reservoirs	Reservoir	$2,845,756	$0	$1,600,109	$520,036	$0	$725,611	$0	$0	$0
5	Treatment	Treatment	$9,045,829	$0	$6,827,041	$2,218,788	$0	$0	$0	$0	$0
6	Fire	Hydrants	$1,946,496	$0	$0	$0	$0	$1,946,496	$0	$0	$0
7	Meters	Meters	$2,914,352	$0	$0	$0	$0	$0	$2,914,352	$0	$0
8	Customer Service	Customer	$7,431	$0	$0	$0	$0	$0	$0	$7,431	$0
9	General and Administrative	General	$2,938,317	$0	$0	$0	$0	$0	$0	$0	$2,938,317
10	**Total ($)**		**$67,766,125**	**$14,826,442**	**$22,076,403**	**$7,174,831**	**$4,436,007**	**$13,392,343**	**$2,914,352**	**$7,431**	**$2,938,317**
11	*Total (%)*			*21.9%*	*32.6%*	*10.6%*	*6.5%*	*19.8%*	*4.3%*	*0.0%*	*4.3%*

5.7. Preliminary Cost Allocation of Revenue Requirement

Table 5-11 shows the revenue requirement, by cost component, before adjustments for public fire protection and extra-capacity costs (discussed further in the next sub-section).

The operating expenses are directly from the allocations in **Table 5-6**. The capital expense allocation is calculated by multiplying the capital revenue requirement from **Table 5-1** and the percentage allocations at the bottom of **Table 5-9**. Revenue offsets, equal to that shown in **Table 5-1**, are allocated to the general cost component to reduce the cost of each direct cost component proportionally.

General costs are distributed to all cost causation components, other than supply and basin-wide sustainability Benefit (labeled BWS), on a pro rata basis. Supply costs only include direct cost allocations to maintain the actual cost of producing one HCF from the groundwater basin; similarly, the Pure Water Soquel costs of producing replenishment water and supplemental water, as well as conservation costs are directly known and therefore do not include General cost allocations.

The numbers shown in this section of the report are rounded to the nearest dollar and tenth of a percent; therefore, the calculations shown in the tables of this section may not equal the precise numbers shown.

Table 5-11: Preliminary Revenue Requirement by Cost Component

	A	B	C	D	E	F	G	H	I	J	K	L
Line	**Cost of Service**	**Supply**	**BWS Benefit**	**Base**	**Max Day**	**Max Hour**	**Fire Protection**	**Meters**	**Customer**	**Conservation**	**General**	**Total**
1	Operating Expenses	$4,555,835	$2,996,615	$1,399,094	$454,706	$124,921	$467,680	$565,600	$1,572,400	$272,000	$9,957,900	$22,366,750
2	Capital Expenses	$1,530,639	$0	$2,279,103	$740,709	$457,960	$1,382,586	$300,869	$767	$0	$303,343	$6,995,977
3	Revenue Offsets	$0	$0	$0	$0	$0	$0	$0	$0	$0	($195,000)	($195,000)
4	**Sub-total Cost of Service**	**$6,086,473**	**$2,996,615**	**$3,678,197**	**$1,195,414**	**$582,881**	**$1,850,266**	**$866,469**	**$1,573,167**	**$272,000**	**$10,066,243**	**$29,167,727**
5	Allocation of General Costs	$0	$0	$4,444,407	$1,444,432	$893,054	$2,696,138	$586,715	$1,496	$0	($10,066,243)	$0
6	**Cost of Service**	**$6,086,473**	**$2,996,615**	**$8,122,604**	**$2,639,846**	**$1,475,935**	**$4,546,405**	**$1,453,185**	**$1,574,663**	**$272,000**	**$0**	**$29,167,727**

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

Water systems provide two types of fire protection: public fire protection for firefighting, which is generally visible as hydrants on a street, and private fire protection which provides fire flow to building and other structure sprinkler systems for fire suppression within private improvements. To determine the share of total fire costs responsible to each, Raftelis performs an analysis of the public hydrants and private fire lines.

Table 5-12 shows the steps of allocating costs between public and private fire service. Each fire connection size has a fire flow demand factor similar to a hydraulic capacity factor of a water meter. The diameter of the connection is raised to the 2.63 power to determine the fire flow demand factor[8]. The count of connections of a specific size is multiplied by the fire flow demand factor to derive total equivalent fire connections. Total fire costs are allocated based on the percentage share of total equivalent fire connections between public and private. The analysis estimates that 84.4 percent of fire costs relate to public fire and will be included and recovered on the monthly fixed charges. The remaining 15.6 percent is attributable to private fire service and will be recovered through private fire service charges.

Table 5-12: Fire Analysis

	A	B	C	D	E	F
Line	Connection Size	Demand Factor	Unit Counts	Equivalent Connections	Percent Allocation	Fire Protection Costs
1	**Public Hydrants**					
2	2.5"	11.13	78	868		
3	6"	111.31	1,152	128,230		
4	**Total Public Hydrants**				84.4%	**$3,835,432**
5						
6	**Private Fire Lines**					
7	1"	1.00	113	113		
8	1 1/2"	2.90	4	12		
9	2"	6.19	1,418	8,778		
10	3"	17.98	0	0		
11	4"	38.32	108	4,138		
12	6"	111.31	68	7,569		
13	8"	237.21	14	3,321		
14	**Total Private Lines**				15.6%	**$710,972**
15						
16	**Total Fire Connections**		**2,955**	**153,029**	100%	**$4,546,405**

5.9. Revenue Recovery by Cost Components

The cost components are recovered from customers through fixed monthly service charges and variable volumetric commodity charges. **Table 5-13** and **Table 5-14** show the total revenue requirement from each cost component in Column B. This represents the total to be collected through rates.

[8] Hazen-Williams equation via AWWA M1 Manual

Table 5-13 shows the allocation to rate components in percentage terms. **Table 5-14** shows the allocation in dollars. The values shown include the reallocation of public fire and general costs. The sum of all rate components under the "variable" headers represents the revenue to be recovered from commodity charges. The sum of all rate components under the "fixed" header represents the revenue to be recovered from service charges. Maximum day and maximum hour capacity costs are recovered through the fixed charge components (meter column).

Monthly service charge components include the three fixed charge components, meter, BWS benefit, and customer, as well as the private fire protection costs. The numbers shown in this section of the report are rounded to the nearest dollar and tenth of a percent; therefore, the calculations shown in the tables of this section may not equal the precise numbers shown.

Table 5-13: Cost Recovery, Cost Components (Percentage)

	A	B	C	D	E	F	G	H	I
			Fixed				Variable		
Line	Component	FY 2024	Fire Protection	Meters	Customer	BWS Benefit	Supply	Base	Conservation
1	Supply	$6,086,473					100%		
2	PWS Benefit	$2,996,615				100%			
3	Base	$8,122,604		35%				65%	
4	Max Day	$2,639,846		100%					
5	Max Hour	$1,475,935		100%					
6	Fire Protection	$710,972	100%						
7	Meters	$5,288,617		100%					
8	Customer	$1,574,663			100%				
9	Conservation	$272,000							100%
10	Total Allocated Costs	**$29,167,727**	**$710,972**	**$12,247,310**	**$1,574,663**	**$2,996,615**	**$6,086,473**	**$5,279,693**	**$272,000**

Table 5-14: Cost Recovery, Cost Components (Values)

	A	B	C	D	E	F	G	H	I
			Fixed				Variable		
Line	Component	FY 2024	Fire Protection	Meters	Customer	BWS Benefit	Supply	Base	Conservation
1	Supply	$6,086,473					$6,086,473		
2	PWS Benefit	$2,996,615				$2,996,615			
3	Base	$8,122,604		$2,842,912				$5,279,693	
4	Max Day	$2,639,846		$2,639,846					
5	Max Hour	$1,475,935		$1,475,935					
6	Fire Protection	$710,972	$710,972						
7	Meters	$5,288,617		$5,288,617					
8	Customer	$1,574,663			$1,574,663				
9	Conservation	$272,000							$272,000
10	**Total Allocated Costs**	**$29,167,727**	**$710,972**	**$12,247,310**	**$1,574,663**	**$2,996,615**	**$6,086,473**	**$5,279,693**	**$272,000**

5.10. Final Cost Allocation of Revenue Requirement

The total revenue recoverable from each cost causation component through water rates is shown in **Table 5-15** using the revenue requirement from **Table 5-1**, the O&M and asset allocations in **Table 5-6** and **Table 5-9**, the cost recovery adjustments in **Table 5-13** and **Table 5-14**, and the fire cost analysis in **Table 5-12**.

Since public fire protection costs are a function of system capacity, they are reallocated to the Meter component, along with the Max Day and Max Hour peaking costs (capacity components), and a portion of Base costs, as shown in **Table 5-13** and **Table 5-14**.

Table 5-15: Revenue Requirement by Cost Component

	A	B	C	D	E	F	G	H	I	J	K	L
Line	Cost of Service	Supply	BWS Benefit	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conserva-tion	General	Total
1	Operating Expenses	$4,555,835	$2,996,615	$1,399,094	$454,706	$124,921	$467,680	$565,600	$1,572,400	$272,000	$9,957,900	$22,366,750
2	Capital Expenses	$1,530,639	$0	$2,279,103	$740,709	$457,960	$1,382,586	$300,869	$767	$0	$303,343	$6,995,977
3	Revenue Offsets	$0	$0	$0	$0	$0	$0	$0	$0	$0	($195,000)	($195,000)
4	**Sub-total Cost of Service**	**$6,086,473**	**$2,996,615**	**$3,678,197**	**$1,195,414**	**$582,881**	**$1,850,266**	**$866,469**	**$1,573,167**	**$272,000**	**$10,066,243**	**$29,167,727**
5	Allocation of General Cost		$0	$4,444,407	$1,444,432	$893,054	$2,696,138	$586,715	$1,496	$0	($10,066,243)	
6	**Allocated Cost of Service**	**$6,086,473**	**$2,996,615**	**$8,122,604**	**$2,639,846**	**$1,475,935**	**$4,546,405**	**$1,453,185**	**$1,574,663**	**$272,000**	**$0**	**$29,167,727**
7	Reallocation of Public Fire						($3,835,432)	$3,835,432				
8	Reallocation of Capacity and Base Components	$0	$0	($2,842,912)	($2,639,846)	($1,475,935)	$0	$6,958,693	$0	$0		
9	**Adjusted Cost of Service**	**$6,086,473**	**$2,996,615**	**$5,279,693**	**$0**	**$0**	**$710,972**	**$12,247,310**	**$1,574,663**	**$272,000**	**$0**	**$29,167,727**

5.11. Unit Costs Derivation

The end goal of a cost of service analysis is to proportionately distribute the cost components to each user class and tier. To do so, unit costs for each component must be calculated, which starts by assessing the total water demanded (or equivalent service units) for each cost component. Projected water use (base units of service) for FY 2024 is shown in **Table 5-16**. Daily use is calculated as annual use divided by 365 days. For example, SFR is estimated to use 671,115 HCF annually, or 1,839 HCF daily. Demand is detailed by proposed rate class. Values are rounded to the nearest HCF and may not equal the exact values shown.

Table 5-16: FY 2024 Projected Water Usage by Class

	A	B	C
Line	Customer Class	FY 2024 Annual Usage (HCF)	Daily Usage (HCF)
1	SFR	671,115	1,839
2	MFR	233,582	640
3	Commercial	136,251	373
4	Irrigation	72,330	198
5	**Total**	**1,113,278**	**3,050**

Table 5-17 shows the total equivalent meters (discussed in detail in **Section 7.2.1**) and annual number of bills issued (discussed in **Section 7.2.3**). **Table 5-18** shows the total equivalent fire line connections (further discussed **Section 7.3**). These totals are used as the denominator in developing unit costs for the rate components of the monthly fixed service charges and private fire service charges.

Table 5-17: Derivation of Equivalent Meters

	A	B	C	D	E
Line	Meter Size	FY 2024 Meter Count	Hydraulic Capacity Factor	Equivalent Meters	Annual Bills
1	5/8" Restricted	49	0.50	25	588
2	5/8"	13,671	1.00	13,671	164,052
3	1"	604	2.50	1,510	7,248
4	1.5"	101	5.00	505	1,212
5	2"	68	12.50	850	816
6	3"	25	25.00	625	300
7	4"	4	50.00	200	48
8	6"	0	80.00	0	0
9	8"	0	140.00	0	0
10	**Total**	**14,522**		**17,386**	**174,264**

Table 5-18: Derivation of Equivalent Fire Lines

	A	B	C	D
Line	Fire Line Size	FY 2024 Fire Line Count	Demand Factor	Equivalent Fire Lines
1	1"	113	1.00	113
2	1 1/2"	4	2.90	12
3	2"	1,418	6.19	8,778
4	3"	0	17.98	0
5	4"	108	38.32	4,138
6	6"	68	111.31	7,569
7	8"	14	237.21	3,321
8	**Total**	**1,725**		**23,931**

Utilizing the final cost of service from **Table 5-15** as the numerator and **Table 5-16**, **Table 5-17**, and **Table 5-18** as the denominators allows us to derive unit costs of service in **Table 5-19**. The total cost of service is divided by the respective units of service to calculate the unit cost of each cost component. For example, the unit cost for the base component is determined by dividing the total base cost ($5,279,693) by total water use (1,113,278 HCF) to derive a base unit cost of $4.74.

Table 5-19: Cost Causation Component Unit Cost Calculation

	A	B	C	D	E	F	G	H
Line	Cost of Service	Supply	BWS Benefit	Base	Fire Protection	Meters	Customer	Conservation
1	Cost of Service	$6,086,473	$2,996,615	$5,279,693	$710,972	$12,247,310	$1,574,663	$272,000
2	Unit of Measure	HCF	Equivalent Meters	HCF	Equivalent Fire Meters	Equivalent Meters	Number of Bills	HCF
3	Units of Service (Annual)	1,113,278	208,632	1,113,278	287,172	208,632	174,264	1,113,278
4	**Unit Cost**	**$5.47**	**$14.36**	**$4.74**	**$2.48**	**$58.70**	**$9.04**	**$0.24**

5.12. Distribution of Cost Components to Customer Classes

The final step in a cost of service analysis is to distribute the cost components to the customer classes using the unit costs derived in **Table 5-19**. This is the end goal of a cost of service analysis and yields the cost to serve each class. **Table 5-20** shows the derivation of the cost to serve each class. The supply, base, and conservation cost components are collected through the commodity (volumetric) charges ($/HCF). Fire protection, meters, PWS benefit, and customer cost components are collected through the District's monthly fixed service charge ($/month) and private fire service charge ($/month).

Table 5-20: Derivation of Cost to Serve Each Class

	A	B	C	D	E	F	G	H	I
Line	Customer Class	Supply	BWS Benefit	Base	Fire Protection	Meters	Customer	Conservation	Total
1	SFR	$3,669,096		$3,182,746				$163,969	$7,015,811
2	MFR	$1,277,031		$1,107,757				$57,070	$2,441,857
3	Commercial	$744,909		$646,169				$33,289	$1,424,368
4	Irrigation	$395,437		$343,021				$17,672	$756,130
5	Meters		$2,996,615			$12,247,310	$1,574,663		$16,818,588
6	Private Fire				$710,972				$710,972
7	**Total**	**$6,086,473**	**$2,996,615**	**$5,279,693**	**$710,972**	**$12,247,310**	**$1,574,663**	**$272,000**	**$29,167,727**

6. Rate Structure Definitions and Proposed Revisions

The District has an inclining tier rate structure for residential users (SFR and MFR) and a uniform rate for all other non-residential users. The most recent update to these rate structures occurred with the 2019 Cost of Service Study. Existing rates and charges were implemented January 1, 2023.

6.1. Existing Rate Structure and Rates

The District's water service charges have two components for most customers: a fixed monthly service charge based on meter size and customer class and a volumetric charge based on water use during the billing period. Some customers requiring fire protection have a third charge related to private fire lines serviced by the District. The monthly fixed charge and private fire service charge increases with meter size or fire line size, as larger meters and fire conduits have the ability to consume more water and have higher rates of peaking required for instantaneous demand in terms of irrigation or firefighting. Therefore, the costs of providing service to these customers are higher. Additionally, the District recovers the costs of maximum day and maximum hour peaking on the meter charges. The meter charges are therefore differentiated by customer class based on the peaking characteristics of each.

Current fixed service charges for all meter sizes and customer classes are shown in **Table 6-1**. Current private fire service charges are shown in **Table 6-2**. Existing tier definitions and rates per HCF are shown in **Table 6-3**.

Table 6-1: Existing Monthly Fixed Service Charges

	A	B	C
Line	Meter Size	Residential/ Commercial	Irrigation
1	5/8" Restricted	$30.43	$39.36
2	5/8"	$52.34	$70.20
3	1"	$118.04	$162.71
4	1.5"	$227.53	$316.90
5	2"	$556.00	$779.44
6	3"	$1,103.48	$1,550.33
7	4"	$2,198.45	$3,092.14
8	6"	$3,512.39	$4,942.30
9	8"	$6,140.29	$8,642.63

Table 6-2: Existing Monthly Private Fire Service Charges

	A	B
Line	Fire Line Size	Current Charges
1	1"	$1.71
2	1.5"	$4.92
3	2"	$10.43
4	3"	$30.22
5	4"	$64.40
6	6"	$187.02
7	8"	$398.50

Table 6-3: Existing Commodity Rates and Tiers

	A	B
Line	Class	Current Rates
1	**Residential**	
2	Tier 1	$9.10
3	Tier 2	$41.23
4	**Uniform Rates**	
5	Commercial/Irrigation	$15.25

6.2. Proposed Rate Structure Changes

Raftelis identified several recommended changes over the course of the Study and worked with District staff and with District Board direction to refine proposed revisions to the rate structures. The District's existing water rate structure consists of a fixed water service charge (based on meter size) and a variable water usage rate (per hundred cubic feet [HCF] of water delivered). The two rate components recover different degrees of revenue and recover those revenues from distinct water system cost components. This section details the update to basin sustainability cost allocations within the cost of service analysis, as well as how that update, along with changes to fixed revenue recovery and the residential water use rate structure, affects rates. Throughout the Study, Raftelis worked closely with District staff, legal counsel, the WRAC, and the Board of Directors to evaluate potential changes to the existing water rate structures. The following changes are proposed:

- **Basin Sustainability Costs:** The prior study differentiated basin sustainability costs between water reliability and basin-wide management costs. This study maintains the same concept but modifies the approach based on the actual PWS project in construction, updated customer water demands, and proposed changes to how basin sustainability costs are recovered.

  The prior study identified and allocated 80% of basin sustainability costs to water reliability based on a planned project. These costs are currently recovered from Tier 2 water use within the Residential water use rates and from every unit of water within the Commercial & Irrigation/Outdoor Use uniform water use rates. The remaining 20% of costs are currently recovered as basin-wide benefit, related to the District's cost share of managing the Mid-County Groundwater Sustainability Agency (GSA); and these basin-wide benefit costs are currently recovered from every unit of water within the supply cost component. The updated allocation proposed in this study is 45% to water reliability in the form of supplemental supply

and the remaining 55% to basin-wide benefit. This allocation is explained in further detail below.

PWS will be operational in FY 2025 and will generate 1,500 AFY of water for the District. This volume of water is required in part for customer demands in excess of the basin's sustainable yield and in part for replenishment and as a seawater intrusion barrier. Raftelis, District staff, and legal counsel discussed approaches to reasonably allocating the costs between these two benefits of the project. The proposed allocation is:

- **Supplemental Supply:** Raftelis analyzed District water demand data and aggregated all customer demands greater than 6 HCF per month per connection. 6 HCF represents the available water per connection per month at the Basin pre-recovery safe yield of 2,300 AFY. The total volume of water demanded by District customers greater than 6 HCF is 680 AFY, which expressed in percentage terms is 45% of the 1,500 AFY which the project delivers. Therefore, 45% of PWS costs are allocated in the form of supplemental water supply and differentiated within the water use rates.

- **Basin-wide Benefit:** The remaining water received from PWS (55% of the project costs) represents the basin-wide sustainability benefit. Whether an overlying property uses 2 HCF of water, 12 HCF of water, or no water at all, the parcel benefits from the current availability and future reliability of the only water supply the District can access. Due to this type of benefit, the proposed rates recover the basin-wide benefit from the fixed service charges to acknowledge the proportional benefit to all customers in protecting the existing water supply from further seawater intrusion; and that the benefit is proportional to the size of a property, for which the meter size is used as a proxy.

» **Fixed Meter-based Charges**: The prior rate study designed the monthly water service charges to recover 40% of total rate revenues from fixed sources, including meter-based service charges and private fire service charges. The current rate study and proposed rates are adjusted so that the fixed monthly water service charges recover 60% of overall rate revenues from fixed rates. The change in fixed revenue recovery is an affirmative policy decision of the Board of Directors to ensure financial sustainability of the District by better aligning the share of fixed revenues with the degree of fixed costs the District incurs.

» **Water Use Rates**

- **Residential Tiers**: The study proposes replacing the existing two-tier rate structure with a three-tier rate structure. With the new structure, Tier 1 would include all water use below 4 units per month (up to 3.99 HCF), Tier 2 would include water use from 4 to 8 units (up to 7.99 HCF), and Tier 3 would include all water use at and above 8 units. These tier breakpoints were determined based on an analysis of the District's actual Single Family Residential seasonal demands patterns and levels of efficient indoor and outdoor use for a typical household in the service area.

- **Supply Component**: The proposed rates differentiate the supply component of the water usage rate by source. All use up to 6 HCF per month is calculated using traditional groundwater costs. This amount is derived from the District's previously established sustainable pumping goal of 2,300 AFY. Water use in excess of 6 HCF per year is calculated using supplemental supply costs provided by Pure Water Soquel. Because the proposed tier breaks are at 4 HCF and 8 HCF for residential customers, the Tier 1 rate will consist of the groundwater unit cost, Tier 3 will consist of the

supplemental supply unit cost, and the Tier 2 rate will be a blend of the two based on availability.

As a result of the new supply component calculation, the uniform rate for Commercial and Irrigation/Outdoor Use customers will now be different, as the two classes have distinct demand patterns relative to the two sources of supply available and each class's use above or below 6 HCF per connection per month.

Table 6-4: Existing and Proposed Water Commodity Definitions

	A	B	C
Line	Class	Current (HCF)	Proposed (HCF)
1	**Residential**		
2	Tier 1	0-5.99	0-3.99
3	Tier 2	6+	4-7.99
4	Tier 3	N/A	8+
5	**Uniform Rates**		
6	Commercial	N/A	N/A
7	Irrigation	N/A	N/A

7. Rate Design and Derivation

7.1. Existing Rate Structure and Rates

As explained in **Section 6** of this study, the rate structure for the District's water service charges currently has two components: a fixed meter-based service charge component and a variable volumetric commodity charge component[9]. The rates for the monthly service charges are determined based on the size of the water meter serving a property and the customer class. As described below, larger meter sizes generally consume more water on average, and tend to have higher rates of peaking; therefore, the costs to provide service to these customers are higher and are differentiated based on the meter capacity and class peaking characteristics. The current rates for all service charges are shown in **Table 7-1**.

Table 7-1: Existing Rates for the Meter Based Fixed Charge

	A	B	C
Line	Meter Size	Residential/ Commercial	Irrigation
1	5/8" Restricted	$30.43	$39.36
2	5/8"	$52.34	$70.20
3	1"	$118.04	$162.71
4	1.5"	$227.53	$316.90
5	2"	$556.00	$779.44
6	3"	$1,103.48	$1,550.33
7	4"	$2,198.45	$3,092.14
8	6"	$3,512.39	$4,942.30
9	8"	$6,140.29	$8,642.63

The rates for the current commodity charges are calculated based on the amount of water delivered in HCF (or fraction thereof). The current unit rates within each tier are shown in **Table 7-2**. SFR refers to stand alone houses with a single dwelling unit and duplexes. MFR refers to residential housing with three or more dwelling units, such as triplexes and apartment complexes. Commercial are non-residential accounts, such as offices, restaurants, warehouses, government buildings, school buildings, and manufacturing facilities. Irrigation refers to accounts with dedicated landscape irrigation meters, like those found in parks, schools, homeowner associations, and on the properties of offices and apartment complexes that have dedicated landscape meters. Irrigation also includes accounts associated with beaches and campgrounds, whose usage peaks in summer.

[9] Certain Commercial and Residential customers also pay a fixed private fire line charge for properties that require fire suppression systems.

Table 7-2: Existing Rate Structure – Water Commodity Rates

	A	B
Line	Class	Current Rates
1	**Residential**	
2	Tier 1	$9.10
3	Tier 2	$41.23
4	**Uniform Rates**	
5	Commercial/Irrigation	$15.25

7.2. Proposed Monthly Fixed Charges

Utilities invest in and continuously maintain facilities to provide capacity to meet all levels of water consumption, including peak demand plus fire protection. These costs must be recovered regardless of the amount of water used during a given period. Thus, peaking costs, along with base delivery costs and fixed water system costs to meet average demand, are generally considered fixed water system costs. To balance affordability and revenue stability, it is a common practice that some or all base delivery and peaking costs are recovered in the monthly service charge, along with customer-related costs and direct meter-related costs. For the District, all peaking costs are recovered from the fixed charges as well as 35 percent of the delivery (base) costs. The remaining 65 percent of base delivery costs are recovered by the variable commodity charges. This was shown in **Table 5-13**.

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

7.2.1. Meter Services Component

The meter services component collects servicing-related costs, peaking costs, and a portion of base costs. Larger meters are more expensive to maintain and replace, and have the potential to demand more capacity, or, said differently, exert greater peaking characteristics compared to smaller meters. The potential capacity demanded (peaking) is proportional to the potential flow through each meter size as established by the safe operating capacity of the District's meter manufacturer. For example, the flow rate capacity through a 4" meter is 50 times that of a 5/8" meter and therefore the meter capacity component of the fixed charge is 50 times that of the 5/8" meter.

Allocating a portion of base costs by meter size (with the remainder allocated to the base cost component of the commodity charge rates) is a common way to provide greater revenue stability, especially in light of declining water sales revenues during a water shortage, from permanent conservation, or other water emergency. To create parity across the various meter sizes, each meter size is assigned a factor relative to a 5/8" meter, which has a value of 1.00. This establishes the "base" meter size. A given meter size's ratio of meter servicing costs relative to the base (that of a 5/8" meter) determines the *meter equivalency*. Summation of all meter equivalencies for a given size yields total equivalent meters. For this study, Raftelis was directed by District staff to use AWWA meter capacity ratios from AWWA *M22 Manual – Sizing Water Service Lines and Meters* (M22) for meter sizes 1" and less and manufacturer capacity ratios for meters 2" and greater for *Master Meter Octave Ultrasonic* meters. **Table 7-3** shows total meter count for each class as well as the corresponding

meter ratio and total meter equivalencies. The total number of equivalent meters is calculated by multiplying the number of meters of a specific size by their respective capacity ratio. The total number of equivalent meters across all District connections is 17,386.

Table 7-3: Meter Equivalences Calculation

	A	B	C	D	E	F	G	H
Line	Meter Size	SFR	MFR	Commercial	Irrigation	Total Meters	Capacity Ratio	Equiv. Meters (Capacity)
1	5/8" Restricted	23	0	22	4	49	0.50	25
2	5/8"	12,718	363	472	118	13,671	1.00	13,671
3	1"	136	296	105	67	604	2.50	1,510
4	1.5"	0	31	49	21	101	5.00	505
5	2"	0	37	12	19	68	12.50	850
6	3"	0	17	5	3	25	25.00	625
7	4"	0	2	0	2	4	50.00	200
8	6"	0	0	0	0	0	80.00	0
9	8"	0	0	0	0	0	140.00	0
10	**Total**	**12,877**	**746**	**665**	**234**	**14,522**		**17,386**
11	*Equivalents by Class*	*13,070*	*2,246*	*1,266*	*805*	*17,386*		

The fixed charges consolidate SFR, MFR, and Commercial customers into one fixed charge rate schedule. This is due to the similar peaking characteristics of the class. To appropriately allocate costs and differentiate the SFR, MFR, and Commercial fixed charge from the Irrigation fixed charge, the peaking ratios must be normalized, and the meter service costs allocated based on the normalized peaking ratios.

Table 7-4 shows the calculation steps in allocating the meter service costs from the cost of service to the customer classes. SFR, MFR, and Commercial are assigned a factor of 1.00 and the Irrigation class is then normalized relative to the SFR factor by dividing 2.06 by 1.26 yielding a normalized peak of 1.63. Equivalents from **Table 7-3** are multiplied by the normalized peak to yield equivalents by peak and then total meter service costs are allocated based on the proportionate share of peak equivalents.

Table 7-4: Meter Service Cost Allocation

	A	B	C	D	E	F
Line	Class	Max Month Factor	By Class	Equivalents	EMU by Peak	Meter Cost Allocation
1	SFR	1.26	1.00	13,070	13,070	$8,945,537
2	MFR	1.14	1.00	2,246	2,246	$1,536,953
3	Commercial	1.30	1.00	1,266	1,266	$866,183
4	Irrigation	2.06	1.63	805	1,313	$898,638
5	**Totals**			**17,386**	**17,893**	**$12,247,310**

Table 7-5 shows the calculation steps in calculating the cost per meter equivalent per month. The cost allocation of each class from **Table 7-4** is divided by the total number of meter equivalents in each class, and by 12 billing periods in a year, to yield the cost per equivalent per month for the base 5/8" meter. SFR, MFR, and Commercial equivalents of $57.04 per month are equal as intended and the Irrigation equivalent is $93.03 per month due to the higher peaking factor.

Table 7-5: Meter Equivalent Calculation ($/month)

	A	B	C	D	E	F
Line		SFR	MFR	Commercial	Irrigation	Total
1	Meter Costs	$8,945,537	$1,536,953	$866,183	$898,638	$12,247,310
2	Equivalent Meters (MFR)	13,070	2,246	1,266	805	17,386
3	Billing Periods	12	12	12	12	
4	**Cost per Equivalent (per month)**	**$57.04**	**$57.04**	**$57.04**	**$93.03**	

7.2.2. Basin-Wide Sustainability Benefit Component

The Basin-Wide Sustainability (BWS) Benefit component collects costs related to replenishment of the critically over drafted basin, protection against further seawater intrusion and aiding in meeting the state's mandate of basin sustainability. Whether an overlying property uses 2 HCF of water, 12 HCF of water, or no water at all, the parcel benefits from a sustainable basin. Due to this type of benefit, the proposed rates recover the basin-wide benefit from the fixed service charges to acknowledge the proportional benefit to all customers in protecting the existing water supply from further seawater intrusion; and that the benefit is proportional to the size of a property, for which the meter size is used as a proxy.

Table 7-6 shows the BWS Benefit component cost calculation. To calculate the BWS benefit component Raftelis divides the total BWS costs from **Table 5-15** by the total equivalent meters to determine the monthly BWS and the number of billing periods to determine the monthly BWS component of $14.36.

Table 7-6: Pure Water Soquel Benefit Calculation ($/month)

	A	B
Line	BWS Benefit	FY 2024
1	BWS Benefit Costs	$2,996,615
2	Equivalent Meters	17,386
3	Billing Periods	12
4	**BWS Benefit Component (per month)**	**$14.36**

7.2.3. Billing and Customer Service Component

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

Table 7-7 shows the customer service component calculation. To calculate the customer component Raftelis divides the total billing and customer service costs from **Table 5-15** by the total estimated annual bills (unique accounts multiplied by 12 billing periods) prepared by the District to determine the monthly customer service charge component of $9.04.

Table 7-7: Customer Component Calculation

	A	B
Line	Customer	FY 2024
1	Customer Service Costs	$1,574,663
2	Unique Accounts	14,522
3	Billing periods	12
4	**Customer Component (per month)**	**$9.04**

Table 7-8 and **Table 7-9** shows the calculation of the proposed FY 2024 rates for the fixed charges. The meter services component is the cost per equivalent meter calculated in **Table 7-5** multiplied by the respective meter capacity ratio in **Table 7-3**. The BWS Benefit component is the cost per equivalent meter calculated in **Table 7-6** multiplied by the respective meter capacity ratio in **Table 7-3**. The customer component is uniform for all meter sizes. The meter services component and customer component are added together for each meter size yielding the proposed charge. All rates are rounded up to the nearest whole penny. **Table 7-8** and **Table 7-9** also include the current charges to each class and meter size and a comparison of the proposed charges and current charges.

Table 7-8: Calculation of FY 2024 Cost of Service Meter Charges, Residential & Commercial

	A	B	C	D	E	F	G	H	I
Line	Meter Size	Hydraulic Capacity Factor	Meter Count	Meter Equivalents	Meter Component	BWS Benefit	Customer Component	Proposed Monthly Charges	Current Charges
1	5/8" Restricted	0.50	45	23	$28.52	$7.18	$9.04	$44.74	$30.43
2	5/8"	1.00	13,553	13,553	$57.04	$14.36	$9.04	$80.44	$52.34
3	1"	2.50	537	1,343	$142.60	$35.91	$9.04	$187.55	$118.04
4	1.5"	5.00	80	400	$285.19	$71.82	$9.04	$366.05	$227.53
5	2"	12.50	49	613	$712.98	$179.54	$9.04	$901.56	$556.00
6	3"	25.00	22	550	$1,425.96	$359.09	$9.04	$1,794.09	$1,103.48
7	4"	50.00	2	100	$2,851.91	$718.18	$9.04	$3,579.13	$2,198.45
8	6"	80.00	0	0	$4,563.06	$1,149.09	$9.04	$5,721.19	$3,512.39
9	8"	140.00	0	0	$7,985.35	$2,010.90	$9.04	$10,005.30	$6,140.29

Table 7-9: Calculation of FY 2024 Cost of Service Meter Charges, Irrigation

	A	B	C	D	E	F	G	H	I
Line	Meter Size	Hydraulic Capacity Factor	Meter Count	Meter Equivalents	Meter Component	BWS Benefit	Customer Component	Proposed Monthly Charges	Current Charges
1	5/8" Restricted	0.50	4	2	$46.51	$7.18	$9.04	$62.74	$39.36
2	5/8"	1.00	118	118	$93.03	$14.36	$9.04	$116.43	$70.20
3	1"	2.50	67	168	$232.57	$35.91	$9.04	$277.52	$162.71
4	1.5"	5.00	21	105	$465.13	$71.82	$9.04	$545.99	$316.90
5	2"	12.50	19	238	$1,162.83	$179.54	$9.04	$1,351.42	$779.44
6	3"	25.00	3	75	$2,325.67	$359.09	$9.04	$2,693.80	$1,550.33
7	4"	50.00	2	100	$4,651.33	$718.18	$9.04	$5,378.55	$3,092.14
8	6"	80.00	0	0	$7,442.13	$1,149.09	$9.04	$8,600.26	$4,942.30
9	8"	140.00	0	0	$13,023.73	$2,010.90	$9.04	$15,043.68	$8,642.63

Table 7-10 and **Table 7-11** show proposed rates for the next four years based on the financial plan developed in **Section 4.3**. The rates for the fixed monthly service charges are increased uniformly by a percentage increase in subsequent years – that is, relative to proposed FY 2024 rates – by the selected financial plan of 12 percent per year. All rates are rounded up to the nearest penny.

Table 7-10: Proposed Monthly Service Charges (FY 2024-2027), Residential & Commercial

	A	B	C	D	E	F
Line	Meter Size	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	5/8" Restricted	$30.43	$44.74	$50.11	$56.13	$62.87
2	5/8"	$52.34	$80.44	$90.10	$100.92	$113.04
3	1"	$118.04	$187.55	$210.06	$235.27	$263.51
4	1.5"	$227.53	$366.05	$409.98	$459.18	$514.29
5	2"	$556.00	$901.56	$1,009.75	$1,130.92	$1,266.64
6	3"	$1,103.48	$1,794.09	$2,009.39	$2,250.52	$2,520.59
7	4"	$2,198.45	$3,579.13	$4,008.63	$4,489.67	$5,028.44
8	6"	$3,512.39	$5,721.19	$6,407.74	$7,176.67	$8,037.88
9	8"	$6,140.29	$10,005.30	$11,205.94	$12,550.66	$14,056.74

Table 7-11: Proposed Monthly Service Charges (FY 2024-2027), Irrigation

	A	B	C	D	E	F
Line	Meter Size	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	5/8" Restricted	$39.36	$62.74	$70.27	$78.71	$88.16
2	5/8"	$70.20	$116.43	$130.41	$146.06	$163.59
3	1"	$162.71	$277.52	$310.83	$348.13	$389.91
4	1.5"	$316.90	$545.99	$611.51	$684.90	$767.09
5	2"	$779.44	$1,351.42	$1,513.60	$1,695.24	$1,898.67
6	3"	$1,550.33	$2,693.80	$3,017.06	$3,379.11	$3,784.61
7	4"	$3,092.14	$5,378.55	$6,023.98	$6,746.86	$7,556.49
8	6"	$4,942.30	$8,600.26	$9,632.30	$10,788.18	$12,082.77
9	8"	$8,642.63	$15,043.68	$16,848.93	$18,870.81	$21,135.31

7.3. Proposed Private Fire Service Charges

Total fire protection costs are allocated to private and public fire protection in proportion to the potential demand of each. The total private fire costs are $710,972 (**Table 5-12**). Each connection size has a fire flow demand factor similar to the hydraulic capacity factor of water meters. The diameter of the connection is raised to the 2.63 power to determine the fire flow demand factor. The count of connections of a specific size is multiplied by the fire flow demand factor to derive total equivalent fire connections.

Total fire costs of $4,546,405 are allocated based on the percentage share of total equivalent fire connections between public and private. From the analysis it is determined that 84.4 percent of fire costs relate to public fire protection and is included and recovered across the monthly fixed charges. The remaining 15.6 percent is attributable to private fire service and is recovered through private fire protection charges. This 15.6 percent translates into $710,972, which becomes the numerator for the fire service cost component to determine the cost per fire line equivalency. **Table 7-12** shows the fire line equivalencies calculation. Similar to rates for the fixed charges, private fire lines use the total count of fire lines and the demand factor to determine total equivalent units. The total equivalent fire lines are 23,931.

Table 7-12: Fire Line Equivalencies Calculation

	A	B	C	D
Line	Fire Line Diameter	Fire Line Count	Demand Factor	Equiv. Lines
1	1"	113	1.0	113
2	1 1/2"	4	2.9	12
3	2"	1,418	6.2	8,778
4	3"	0	18.0	0
5	4"	108	38.3	4,138
6	6"	68	111.3	7,569
7	8"	14	237.2	3,321
8	**Total**	**1,725**		**23,931**

Table 7-13 shows the calculation of the fire line service component. Dividing the total private fire line costs ($710,972) by total equivalent lines (23,931) yields the monthly cost per equivalent fire line of $2.48.

Table 7-13: Fire Line Service Component Calculation

	A	B
Line	Fire Service	FY 2024
1	Private Fire Service Costs	$710,972
2	Equivalent Fire Lines	23,931
3	Billing Periods	12
4	**Cost per Equivalent Fire Line (per month)**	**$2.48**

Table 7-14 shows the derivation of the monthly rates for the private fire service charges. The cost per equivalent line ($2.48) is multiplied by the respective fire line ratio to obtain the fire line service component and rounded up to the nearest whole penny.

Table 7-14: Calculation of Rates for the COS FY 2024 Private Fire Protection Charges

	A	B	C	D	E
Line	Fire Line Size	Fire Line Count	Demand Factor	Proposed Charge	Current Charge
1	1"	113	1.0	$2.48	$1.71
2	1.5"	4	2.9	$7.20	$4.92
3	2"	1,418	6.2	$15.33	$10.43
4	3"	0	18.0	$44.52	$30.22
5	4"	108	38.3	$94.88	$64.40
6	6"	68	111.3	$275.59	$187.02
7	8"	14	237.2	$587.28	$398.50

Table 7-15 shows proposed rates for the private fire protection charges for the Study period. The rates for the private fire protection charge are increased by the annual revenue adjustment of 12 percent in subsequent years – that is, relative to proposed FY 2024 rates – by the selected financial plan. All rates are rounded up to the nearest whole penny.

Table 7-15: Proposed Monthly Private Fire Protection Charges ($/Fire Line Size)

	A	B	C	D	E	F
Line	Fire Line Size	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	1"	$1.71	$2.48	$2.78	$3.12	$3.50
2	1.5"	$4.92	$7.20	$8.07	$9.04	$10.13
3	2"	$10.43	$15.33	$17.17	$19.24	$21.55
4	3"	$30.22	$44.52	$49.87	$55.86	$62.57
5	4"	$64.40	$94.88	$106.27	$119.03	$133.32
6	6"	$187.02	$275.59	$308.67	$345.72	$387.21
7	8"	$398.50	$587.28	$657.76	$736.70	$825.11

7.4. Proposed Commodity Rates

7.4.1. Unit Cost Component Definitions

The rates for the commodity charges for each customer class and tier are derived by summation of the unit rates ($/HCF) for:

1. Variable Supply Costs (Variable Supply Cost Component)
2. Delivery Costs (Base Fixed Cost Component)
3. Conservation Costs (Conservation Component)

Variable Supply are costs related to the pumping and production of groundwater and supplemental supply produced by Pure Water Soquel to meet customer demand. The supply rate is split into two components: groundwater and supplemental supply produced by Pure Water Soquel.

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

Conservation Costs cover costs directly related to conservation efforts. The conservation costs are required due to high volume water users, seasonal irrigation demands, and other discretionary uses of water. Therefore, conservation costs are allocated to Residential Tier 3 water use and as a blended rate across all units of water for Commercial and Irrigation users. Allocation of conservation costs to the higher tier provides a strong price signal conveying the cost of supplemental supply facilities. Allocating costs in this fashion is consistent with Article X Section 2 of the State of California Constitution and proportionately allocates, on a parcel basis, such costs to those customers whose greater demand creates the need for conservation programs.

7.4.1.1. Variable Supply Rate Component

Table 7-16 shows the unit cost calculation for the groundwater portion of the supply rate component. All use up to 6 HCF per customer per month is allocated as groundwater use, shown in Column E. The use costs in Column F are calculated for each class and tier by dividing the total cost of service for groundwater use (Column F, Row 10) by the groundwater usage in Column E. The groundwater use cost for each class and tier in Column G is calculated by dividing the groundwater use costs in Column F by the annual use in Column D.

Table 7-16: Groundwater Use Unit Cost Calculation

	A	B	C	D	E	F	G
Line	Groundwater Use Unit Cost	Customers	Allocated Use by customer (HCF)	Annual Use (HCF)	Groundwater Use	Sustainable Use Cost	Sustainable Use Unit Cost
1	Residential	18,605	779,587				
2	Tier 1			642,594	642,594	$2,834,022	$4.41
3	Tier 2			190,473	136,994	$604,181	$3.17
4	Tier 3			71,631	0	$0	$0.00
5							
6	Commercial	665	27,865	136,251	27,865	$122,892	$0.90
7							
8	Irrigation	234	9,805	72,330	9,805	$43,243	$0.60
9							
10	**Total**	**19,504**	**817,257**	**1,113,278**	**817,257**	**$3,604,339**	

Table 7-17 shows the unit cost calculation for the supplemental water supply produced by Pure Water Soquel. All use above 6 HCF per customer per month is allocated to supplemental water use, shown in Column E. The use costs in Column F are calculated for each class and tier by dividing the total cost of supplemental water use (Column F, Line 10) by the supplemental water use in Column E. The supplemental water use cost for each class and tier in Column G is calculated by dividing the supplemental water use costs in Column F by the annual use in Column D.

Table 7-17: Pure Water Soquel Water Use Unit Cost Calculation

	A	B	C	D	E	F	G
Line	PWS Use Unit Cost	Customers	Allocated Use (HCF)	Annual Use (HCF)	PWS Use	PWS Use Cost	Sustainable Use Unit Cost
1	Residential	18,605	282,376				
2	Tier 1			642,594	0	$0	$0.00
3	Tier 2			190,473	53,479	$448,421	$2.35
4	Tier 3			71,631	71,631	$600,623	$8.39
5							
6	Commercial	665	10,093	136,251	108,387	$908,823	$6.67
7							
8	Irrigation	234	3,552	72,330	62,524	$524,268	$7.25
9							
10	**Total**	**19,504**	**296,021**	**1,113,278**	**296,021**	**$2,482,135**	

Table 7-18 shows the combined supply component rates by class and tier. These rates (Column D) are determined by summing the groundwater and supplemental water unit costs (Column B and C) from **Table 7-16** and **Table 7-17**. The Tier 2 Residential, Commercial, and Irrigation supply rate components are blended because they contain usage from both supply sources.

Table 7-18: Combined Supply Component

	A	B	C	D
Line	Class	Groundwater Use/Supply	PWS Use	Supply
1	Residential			
2	Tier 1	$4.41	$0.00	$4.41
3	Tier 2	$3.17	$2.35	$5.53
4	Tier 3	$0.00	$8.39	$8.39
5				
6	Commercial	$0.90	$6.67	$7.57
7				
8	Irrigation	$0.60	$7.25	$7.85

7.4.1.2. Delivery (Base) Rate Component

The delivery rate component recovers the costs to supply and deliver water under average daily demand conditions. Dividing estimated annual usage by total delivery costs from **Table 5-20** yields the cost to deliver water during average conditions. The calculated delivery unit cost is presented in **Table 7-19**. The delivery rate is uniform for all classes and tiers since costs are recovered for average use.

Table 7-19: Water Delivery Unit Cost Calculation

	A	B
Line	Base Delivery	Unit Cost
1	Variable Base Costs	$5,279,693
2	Unit of Measure	HCF
3	Unit of Service	1,113,278
4	**Unit Cost**	**$4.74**

7.4.1.3. Conservation Rate Component

Conservation costs are recovered from Residential Tier 3 water use and uniformly across all units of Commercial and Irrigation water. Conservation costs are allocated in two steps. First, total conservation costs are allocated to each rate class proportional to their estimated water use. Second, the cost recovery from each class is distributed based on the number of units subject to the conservation component (i.e., units in Residential Tier 3 and all Commercial and Irrigation units). **Table 7-20** shows the allocation of conservation costs to each rate class. These values are rounded to the nearest HCF and may not equal the exact numbers shown.

Table 7-20: Conservation Cost Allocation

	A	B	C	D	E
Line	All Classes	Usage (HCF)	Allocation %	Rev Requirement	Unit Cost ($/HCF)
1	Residential	904,697	81%	$221,039	$0.24
2	Commercial	136,251	12%	$33,289	$0.24
3	Irrigation	72,330	6%	$17,672	$0.24
4	**Total**	**1,113,278**	**100%**	**$272,000**	

Table 7-21 allocates the revenue required from each class in **Table 7-20** to the respective units of service. The Residential revenue requirement is divided by the estimated units of service in Tier 3 to determine the unit rate of $3.09. Similarly, revenue required from Commercial and Irrigation water use is divided by the estimated units of service of each rate class. Because reliability costs are recovered across all Commercial and Irrigation units, the unit rate matches the unit cost derived in **Table 7-20**.

Table 7-21: Conservation Rate Component Calculation

	A	B	C	D	E	F
Line	All Classes	Usage (HCF)	Allocation %	Conservation Units	Rev Requirement	Unit Cost ($/HCF)
1	Residential					
2	Tier 1	642,594	0%		$0	$0.00
3	Tier 2	190,473	0%		$0	$0.00
4	Tier 3	71,631	100%	71,631	$221,039	$3.09
5						
6	Commercial	136,251	100%	136,251	$33,289	$0.24
7						
8	Irrigation	72,330	100%	72,330	$17,672	$0.24
9						
10	**Total**	**1,113,278**		**280,212**	**$272,000**	

7.4.1.4. Final Commodity Rate Derivation

To determine the rates for the commodity charge, the three rate components described above are added together. The resulting summation constitutes the final commodity rates. The cost of service rates, inclusive of the nine percent revenue adjustment in March 2024, are shown in Column F of **Table 7-22**. Rates are rounded to the nearest whole penny.

Table 7-22: Proposed Commodity Rates

	A	B	C	D	E	F	G
Line	All Classes	Tier Definition	Supply	Delivery	Conservation	Proposed Rate ($/HCF)	Current Rate
1	Residential						
2	Tier 1	0-3.99 HCF	$4.41	$4.74	$0.00	$9.16	$9.10
3	Tier 2	3.99-7.99 HCF	$5.53	$4.74	$0.00	$10.27	$41.23
4	Tier 3	7.99- HCF	$8.39	$4.74	$3.09	$16.22	$0.00
5							
6	Commercial	Uniform	$7.57	$4.74	$0.24	$12.56	$15.25
7							
8	Irrigation	Uniform	$7.85	$4.74	$0.24	$12.84	$15.25

Table 7-23 shows proposed commodity rates for the Study period. The commodity rates are increased by a uniform percentage in subsequent years – that is, relative to proposed FY 2024 rates – by the selected financial plan. All rates are rounded up to the nearest whole penny.

Table 7-23: Proposed Commodity Rates ($/HCF)

	A	B	C	D	E	F
Line	Class	Current	Proposed March 2024	Proposed January 2025	Proposed January 2026	Proposed January 2027
1	**Residential**					
2	Tier 1	$9.10	$9.16	$10.26	$11.50	$12.88
3	Tier 2	$41.23	$10.27	$11.51	$12.90	$14.45
4	Tier 3	N/A	$16.22	$18.17	$20.35	$22.79
5	**Uniform Rates**					
6	Commercial	$15.25	$12.56	$14.07	$15.76	$17.66
7	Irrigation	$15.25	$12.84	$14.39	$16.12	$18.06

7.5. Customer Impacts

The rate model calculates water customer impacts for all classes and meter sizes. Customer impacts from the proposed new rates are presented below for each class.

Figure 7-1 illustrates the current and proposed tier breakpoints and corresponding rate per HCF. The proposed structure has three tiers versus the existing structure of two tiers. The proposed rate structure decreases Tier 1 from 5.99 HCF to 3.99 HCF monthly, caps Tier 2 usage at 7.99 HCF monthly, and adds a third Tier for all use greater than 8 HCF.

Figure 7-1: Current and Proposed SFR Tiers

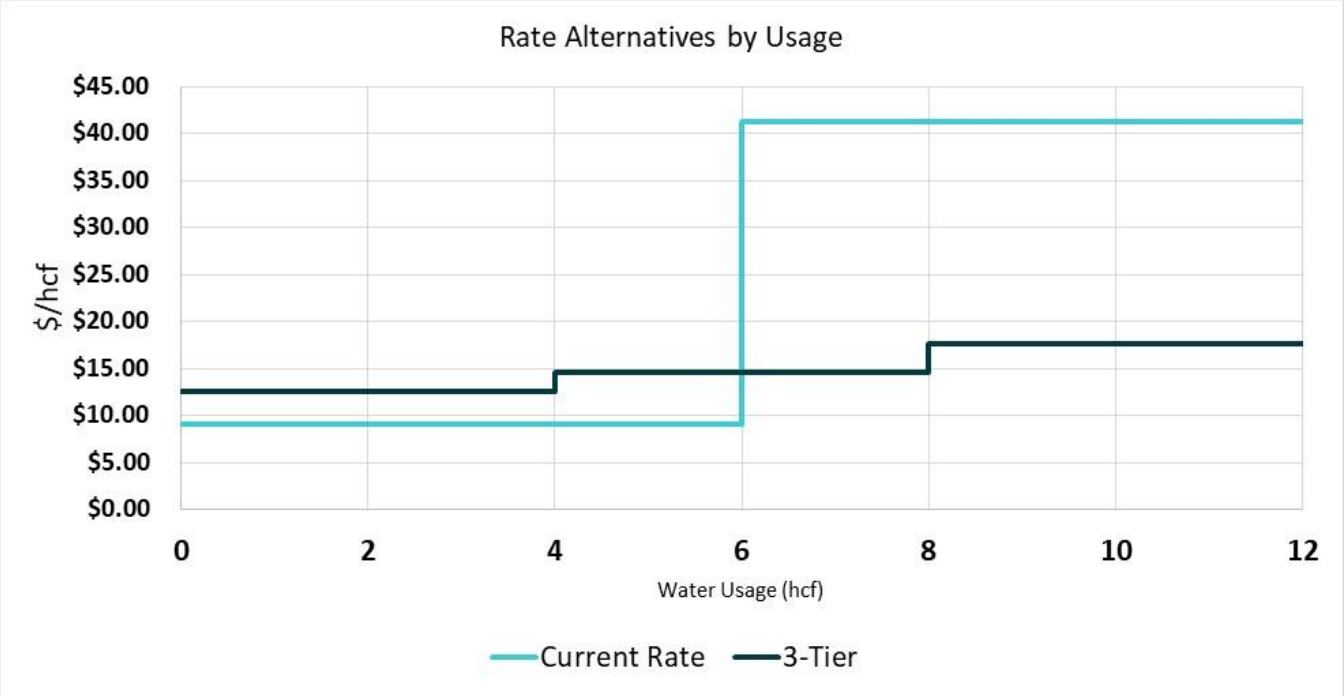
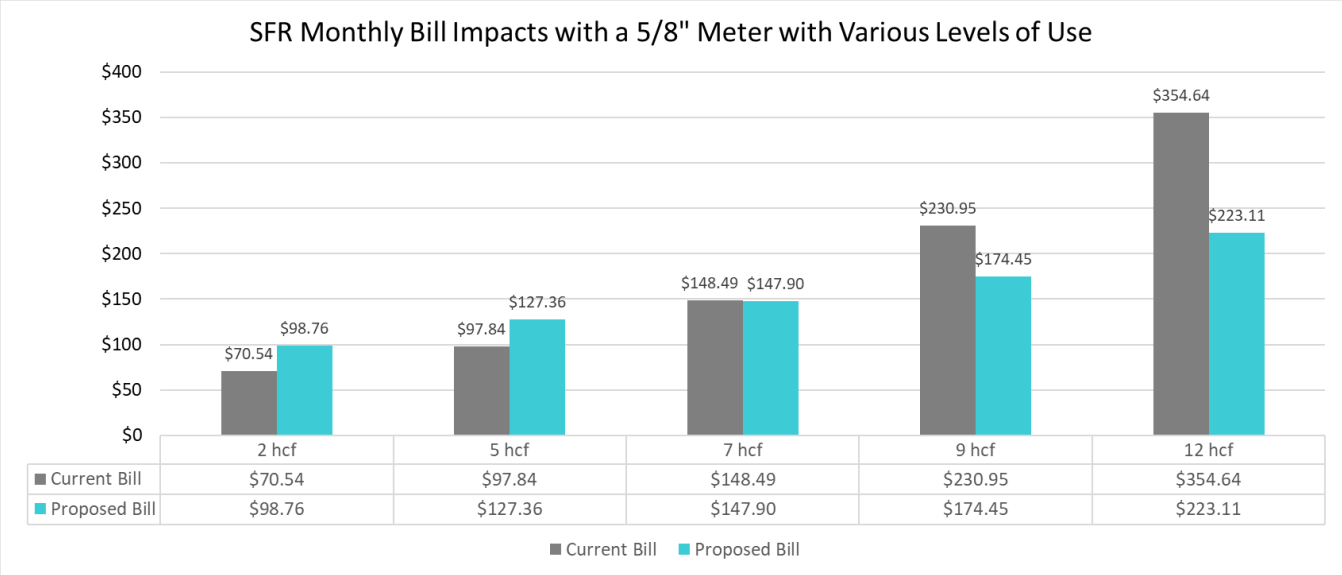


Figure 7-2: Bill Impacts – SFR with 5/8” Meter



8. Emergency Rates

This section documents key assumptions involved in the development of the emergency rates, an overview of the demand reduction required at each stage, corresponding revenue impacts, emergency rate calculations, and the resulting proposed charges at each stage. Emergency rates, when placed in effect by a Board Declaration, will supplant the base commodity rates proposed in **Section 7.4**. The meter based fixed charges and private fire service charges remain the same at each stage.

8.1. Shortage Impacts

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

The District relies solely on local groundwater from the Mid-County basin. In periods of reduced demand, less water is pumped and produced, however, nearly all of the District's O&M costs (as well as routine capital and debt service) are fixed and therefore unavoidable. This means that the District is sensitive to reductions in water sales with significant effects on rate revenue.

Proactively adopting temporary emergency charges is part of a cohesive and fiscally sound plan to respond to local water shortages, drought, water supply interruptions from natural disasters, or other emergencies. Temporary rates are a mechanism to maintain revenue stability and achieve debt coverage requirements in the short term. The remainder of this section details the assumptions, methodology, and calculation of the proposed emergency rates.

8.2. Assumptions

Table 8-1 shows the water shortage stages as defined in the 2020 Water Shortage Plan. Commodity rates developed in **Section 7** of this Study represent the new Stage 0 – Baseline Conservation rates and updated long-term baseline water sales of 2,556 AFY. Curtailment targets (demand reduction) range from 5 percent in Stage 1 to 50 percent in Stage 5.

Table 8-1: Water Shortage Contingency Stages

	A	B	C
Line	Stage	Stage Description	Curtailment Target
1	Stage 0	Baseline Conservation	0%
2	Stage 1	Water Shortage Alert	5%
3	Stage 2	Water Shortage Warning	15%
4	Stage 3	Emergency Water Shortage	25%
5	Stage 4	Severe Water Shortage	35%
6	Stage 5	Critical Water Shortage Emergency	50%

8.3. Financial Impacts

During times of mandatory conservation, water sales decline to achieve the cutbacks required at each stage. Water sales reductions directly translate into lost commodity sales revenues. The District's costs are nearly 97

percent fixed and only 3 percent variable, for treatment, energy, pumping, and groundwater production. The net revenue loss must be recovered to recover the total annual revenue requirement. In estimating the net revenue impact, Raftelis accounts for additional shortage specific costs at each stage as well as variable cost savings from the production of less water from the groundwater basin (avoided costs). The following tables show the steps in estimating the net revenue requirement of the District's commodity charges at each stage.

Table 8-2 shows the estimated water demand at each stage accounting for the system-wide cutbacks required at each stage from **Table 8-1**. Base – Stage 0 – demand represents the new baseline of 2,556 AFY, or 1,113,278 HCF. The values shown in this section are rounded to the nearest whole number and may not equal the exact amounts shown.

Table 8-2: Estimated Water Demand at Stage

	A	B	C	D	E	F	G
Line	Class	Base	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	Residential						
2	Tier 1	642,594	610,464	546,205	481,945	417,686	321,297
3	Tier 2	190,473	180,949	161,902	142,854	123,807	95,236
4	Tier 3	71,631	68,049	60,886	53,723	46,560	35,815
5							
6	Commercial	136,251	129,439	115,814	102,189	88,563	68,126
7	Irrigation	72,330	68,713	61,480	54,247	47,014	36,165
8							
9	**Total**	**1,113,278**	**1,057,614**	**946,286**	**834,959**	**723,631**	**556,639**

Shortage expenditures represent the net increase from base conservation costs in FY 2024. These additional costs are incurred for staff time, public outreach, messaging, and other active conservation measures at each stage. **Table 8-3** presents the additional shortage costs at each stage provided by District staff.

Table 8-3: Shortage Specific Expenditures at Stage

	A	B	C
Line	Stage	Stage Description	Shortage Expenditure
1	Stage 0	Baseline Conservation	$0
2	Stage 1	Water Shortage Alert	$0
3	Stage 2	Water Shortage Warning	$76,900
4	Stage 3	Emergency Water Shortage	$161,490
5	Stage 4	Severe Water Shortage	$253,770
6	Stage 5	Critical Water Shortage Emergency	$353,740

As previously mentioned, when the District produces less water, it incurs fewer costs in electrical pumping and water treatment costs. To account for the savings from less production Raftelis first calculates the variable unit rate of producing one HCF of water. Using the cost of service year budgeted costs of hypochlorite for treatment and power for well pumping, the total variable costs amount to $870,000. Dividing the total by base demand yields a cost of $0.78 per HCF. This calculation is shown in **Table 8-4**.

Table 8-4: Variable Cost Calculation

	A	B
Line	Variable Unit Rate	FY 2024
1	Hypochlorite (FYE 2024)	$70,000
2	Power (FYE 2024)	$800,000
3	Total	$870,000
4	Total Usage (HCF)	1,113,278
5	$/HCF	$0.78

Table 8-5 estimates the total avoided costs at each stage. For each stage the reduction in demand from base water use is multiplied by the variable unit cost calculated in **Table 8-4** to determine the total water production savings at each stage. The numbers in this section are rounded to the nearest whole number and may not equal the exact numbers shown.

Table 8-5: Avoided Costs, at Stage

	A	B	C	D	E
Line	Stage	Usage at Stage	Reduction from Base	Variable Cost	Total Production Savings
1	Stage 0	1,113,278	0	$0.78	$0
2	Stage 1	1,057,614	55,664	$0.78	$43,500
3	Stage 2	946,286	166,992	$0.78	$130,500
4	Stage 3	834,959	278,320	$0.78	$217,500
5	Stage 4	723,631	389,647	$0.78	$304,500
6	Stage 5	556,639	556,639	$0.78	$435,000

Table 8-6 calculates the net cost change at each stage by adding together the shortage expenditures and the variable cost savings. The net cost change is added to the base commodity revenue requirement to yield the net commodity revenue required at each stage.

Table 8-6: Net Cost Change, at Stage

	A	B	C	D
Line	Stage	Shortage Expenditures	Variable Production (Cost Savings)	Net Cost Change
1	Stage 0	$0	$0	$0
2	Stage 1	$0	($43,500)	($43,500)
3	Stage 2	$76,900	($130,500)	($53,600)
4	Stage 3	$161,490	($217,500)	($56,010)
5	Stage 4	$253,770	($304,500)	($50,730)
6	Stage 5	$353,740	($435,000)	($81,260)

Table 8-7 shows the base revenue requirement, which is calculated by multiplying the base rates, equal to the proposed rates shown in **Table 7-22**, by the base usage for each customer class and tier.

Table 8-7: Base Revenue Requirement

	A	B	C	D
Line	Class	Base Use (HCF)	Base Rates ($/HCF)	Base Revenue Requirement
1	Residential			
2	Tier 1	642,594	$9.16	$5,886,159
3	Tier 2	190,473	$10.27	$1,956,153
4	Tier 3	71,631	$16.22	$1,161,849
5				
6	Commercial	136,251	$12.56	$1,711,319
7	Irrigation	72,330	$12.84	$928,711
8				
9	**Total**	**1,113,278**		**$11,644,191**

Table 8-8 shows the net revenue requirement at each stage, using the base revenue requirement calculated in **Table 8-7** and the net cost change calculated in **Table 8-6**.

Table 8-8: Net Revenue Requirement, at Stage

	A	B	C	D
Line	Stage	Base Revenue Requirement	Net Cost Change	Stage Revenue Requirement
1	Stage 0	$11,644,191	$0	$11,644,191
2	Stage 1	$11,644,191	($43,500)	$11,600,691
3	Stage 2	$11,644,191	($53,600)	$11,590,591
4	Stage 3	$11,644,191	($56,010)	$11,588,181
5	Stage 4	$11,644,191	($50,730)	$11,593,461
6	Stage 5	$11,644,191	($81,260)	$11,562,931

8.4. Emergency Rates Design Methodology

The base demand commodity revenue requirement for FY 2024 of $11,644,191 plus the net increase in costs during shortage equals the total commodity revenue requirement at each stage (**Table 8-8**). The revenue requirement at each stage is divided by the estimated water sales in each stage to determine the required average commodity rate ($/HCF). The average commodity rate calculation is presented in **Table 8-9**.

Table 8-9: Average Rate Calculation, at Stage

	A	B	C	D
Line	Stage	Revenue Requirement	Estimated Use	Average Rate ($/HCF)
1	Stage 0	$11,644,191	1,113,278	$10.46
2	Stage 1	$11,600,691	1,057,614	$10.97
3	Stage 2	$11,590,591	946,286	$12.25
4	Stage 3	$11,588,181	834,959	$13.88
5	Stage 4	$11,593,461	723,631	$16.02
6	Stage 5	$11,562,931	556,639	$20.77

Next, the average commodity rate at stage is divided by the average commodity rate at base demand (Stage 0). This yields the required percentage increase across all class rates. The percentage increase calculation is presented in **Table 8-10**.

Table 8-10: Commodity Percentage Increase Calculation, at Stage

	A	B	C	D
Line	Stage	Average Rate, at Stage ($/HCF)	Average Rate, Base Demand ($/HCF)	Increase Required (%)
1	Stage 0	$10.46	$10.46	0%
2	Stage 1	$10.97	$10.46	5%
3	Stage 2	$12.25	$10.46	17%
4	Stage 3	$13.88	$10.46	33%
5	Stage 4	$16.02	$10.46	53%
6	Stage 5	$20.77	$10.46	99%

The percentage increase calculated in **Table 8-10** is applied uniformly across all commodity rates which become the shortage rate at each stage. The same steps are repeated for each stage. **Table 8-11** through **Table 8-15** show the derivation of shortage rates for all stages and include the difference between the stage rates and the base rates for comparison. All calculated rates are rounded up to the nearest whole penny.

Table 8-11: Stage 1 Emergency Rate Calculation

	A	B	C	D	E
Line	Class	Stage 1			
1		5%	Water Shortage Alert		
2		Estimated Stage Use	Revenue Increase	Shortage Rate	Difference
3	Residential				
4	Tier 1	610,464	5%	$9.61	$0.45
5	Tier 2	180,949	5%	$10.78	$0.51
6	Tier 3	68,049	5%	$17.02	$0.80
7					
8	Commercial	129,439	5%	$13.18	$0.62
9	Irrigation	68,713	5%	$13.47	$0.63

Table 8-12: Stage 2 Emergency Rate Calculation

	A	B	C	D	E
Line	Class	Stage 2			
1		15%	Water Shortage Warning		
2		Estimated Stage Use	Revenue Increase	Shortage Rate	Difference
3	Residential				
4	Tier 1	546,205	17%	$10.73	$1.57
5	Tier 2	161,902	17%	$12.03	$1.76
6	Tier 3	60,886	17%	$19.00	$2.78
7					
8	Commercial	115,814	17%	$14.71	$2.15
9	Irrigation	61,480	17%	$15.04	$2.20

Table 8-13: Stage 3 Emergency Rate Calculation

	A	B	C	D	E
Line	Class	Stage 3			
1		25%	Emergency Water Shortage		
2		Estimated Stage Use	Revenue Increase	Shortage Rate	Difference
3	Residential				
4	Tier 1	481,945	33%	$12.16	$3.00
5	Tier 2	142,854	33%	$13.63	$3.36
6	Tier 3	53,723	33%	$21.53	$5.31
7					
8	Commercial	102,189	33%	$16.67	$4.11
9	Irrigation	54,247	33%	$17.04	$4.20

Table 8-14: Stage 4 Emergency Rate Calculation

	A	B	C	D	E
Line	Class	Stage 4			
1		35%	Severe Water Shortage		
2		Estimated Stage Use	Revenue Increase	Shortage Rate	Difference
3	Residential				
4	Tier 1	417,686	53%	$14.04	$4.88
5	Tier 2	123,807	53%	$15.74	$5.47
6	Tier 3	46,560	53%	$24.85	$8.63
7					
8	Commercial	88,563	53%	$19.24	$6.68
9	Irrigation	47,014	53%	$19.67	$6.83

Table 8-15: Stage 5 Emergency Rate Calculation

	A	B	C	D	E
Line	Class	Stage 5			
1		50%	Critical Water Shortage Emergency		
2		Estimated Stage Use	Revenue Increase	Shortage Rate	Difference
3	Residential				
4	Tier 1	321,297	99%	$18.20	$9.04
5	Tier 2	95,236	99%	$20.40	$10.13
6	Tier 3	35,815	99%	$32.22	$16.00
7					
8	Commercial	68,126	99%	$24.95	$12.39
9	Irrigation	36,165	99%	$25.51	$12.67

8.5. Proposed Emergency Rates

Table 8-16 through **Table 8-19** present the emergency rates for each of the next four fiscal years. Each year's rates are increased across the board by the proposed revenue adjustments from the financial plan in **Section 4.3**. All rates are rounded up to the nearest whole penny.

Table 8-16: Emergency Rates FY 2024

	A	B	C	D	E	F
Line	Class	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	Residential					
2	Tier 1	$9.61	$10.73	$12.16	$14.04	$18.20
3	Tier 2	$10.78	$12.03	$13.63	$15.74	$20.40
4	Tier 3	$17.02	$19.00	$21.53	$24.85	$32.22
5						
6	Commercial	$13.18	$14.71	$16.67	$19.24	$24.95
7	Irrigation	$13.47	$15.04	$17.04	$19.67	$25.51

Table 8-17: Emergency Rates FY 2025

	A	B	C	D	E	F
Line	Class	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	Residential					
2	Tier 1	$10.76	$12.02	$13.62	$15.72	$20.38
3	Tier 2	$12.07	$13.47	$15.27	$17.63	$22.85
4	Tier 3	$19.06	$21.28	$24.11	$27.83	$36.09
5						
6	Commercial	$14.76	$16.48	$18.67	$21.55	$27.94
7	Irrigation	$15.09	$16.84	$19.08	$22.03	$28.57

Table 8-18: Emergency Rates FY 2026

	A	B	C	D	E	F
Line	Class	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	Residential					
2	Tier 1	$12.05	$13.46	$15.25	$17.61	$22.83
3	Tier 2	$13.52	$15.09	$17.10	$19.74	$25.59
4	Tier 3	$21.35	$23.83	$27.01	$31.17	$40.42
5						
6	Commercial	$16.53	$18.45	$20.91	$24.13	$31.30
7	Irrigation	$16.90	$18.87	$21.37	$24.67	$32.00

Table 8-19: Emergency Rates FY 2027

	A	B	C	D	E	F
Line	Class	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	Residential					
2	Tier 1	$13.50	$15.07	$17.08	$19.73	$25.57
3	Tier 2	$15.15	$16.90	$19.15	$22.11	$28.66
4	Tier 3	$23.91	$26.69	$30.25	$34.91	$45.27
5						
6	Commercial	$18.52	$20.67	$23.42	$27.03	$35.05
7	Irrigation	$18.92	$21.13	$23.94	$27.63	$35.84