Sacramento Suburban Water District

Draft-Final

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SACRAMENTO SUBURBAN WATER DISTRICT

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June 10, 2019

Mr. Daniel A. Bills
Finance Director
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, CA 95821

Subject: Comprehensive Water Cost of Service Study Report

Dear Mr. Bills,

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to provide this Comprehensive Water Cost of Service Report (Report) for the Sacramento Suburban Water District (District). This Report includes a comprehensive review of the District's financial plan, available usage data, customer accounts, capital improvement plan, and reserves in both the short-term and long-term planning horizons. The proposed rate structures and resulting rates were derived based on the cost of service principles and are proportionate and in compliance with Proposition 218.

The major objectives of the study include the following:

- Develop financial plans for the water utility to ensure financial sufficiency, meet operation and maintenance (O&M) costs, meet debt obligations, and ensure sufficient funding for system improvement and capital needs.
- Develop sound and sufficient reserve fund targets and meet minimum reserves during planning period.
- Review current rate structures for the water utility and determine any adjustments to the rates to more closely reflect costs incurred and adequately recover the revenue requirements over the planning period.

The Report summarizes the key findings and recommendations related to the development of rates for the water utility.

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

Sincerely,

Habib Isaac
Senior Manager

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Table of Contents

1. EXECUTIVE SUMMARY 1
1.1. BACKGROUND 1
1.1.1. Objectives of the Study 1
1.2. CURRENT RATES 1
1.3. FINANCIAL HEALTH AND PROPOSED RECOMMENDATIONS 3
1.3.1. Rate Design Adjustments 4
2. INTRODUCTION 7
2.1. STUDY APPROACH 7
2.2. LEGAL REQUIREMENTS 7
2.2.1. California Constitution - Article XIII D, Section 6 (Proposition 218) 7
2.2.2. California Constitution - Article X, Section 2 8
2.2.3. Cost-Based Rate Setting Methodology 9
3. KEY ASSUMPTIONS 10
4. FINANCIAL PLAN 11
4.1. REVENUE FROM CURRENT RATES 11
4.2. O&M EXPENSES 14
4.3. CAPITAL IMPROVEMENT PLAN 14
4.4. RESERVE REQUIREMENTS 15
4.5. FINANCIAL OUTLOOK AT CURRENT RATES 15
4.6. FINANCIAL PLAN RECOMMENDATIONS 17
4.6.1. Recommended Reserves 17
4.6.2. Proposed Financial Plan 18
5. COST OF SERVICE STUDY 22
5.1. PROPORTIONALITY 22
5.2. COST OF SERVICE PROCESS 23
5.3. COST OF SERVICE ANALYSIS 23
5.3.1. Step 1 – Determine Revenue Requirement 23

5.3.2. Step 2 – Functionalize O&M Costs 24
5.3.3. Step 3 – Allocate Functionalized Costs to Cost Components 26
5.4. RATE DESIGN 31
5.4.1. Single-Family Residential Water Rate Structure 31
5.4.2. Multi-Family Residential Water Rate Structure 32
5.4.3. Non-Residential Water Rate Structure 32
5.4.4. Usage Under Proposed Rate Structure 32
5.4.5. Step 4 – Distribute Cost Components to Customer Classes and Tiers 33
5.5. PROPOSED WATER RATES 38
5.5.1. Fixed Charges 38
5.5.2. Variable Rates 40
5.5.3. Non-Metered Conversions 40
6. CUSTOMER IMPACTS 43
6.1. SINGLE-FAMILY RESIDENTIAL BILL IMPACTS 43
6.2. MULTI-FAMILY RESIDENTIAL BILL IMPACTS 43
6.3. NON-RESIDENTIAL BILL IMPACTS 44
EXHIBIT A-1 –DETAILED CAPITAL IMPROVEMENT PLAN 32
EXHIBIT A-2 –DETAILED FINANCIAL PLAN 33

List of Tables

Table 1-1: Current Monthly Service Charges 2
Table 1-2: Current Usage Charges 2
Table 1-3: Current Monthly Private Fire Service Line Charge 2
Table 1-4: Currently Monthly Backflow Device Charge 2
Table 1-5: Existing and Recommended Primary Reserves Policies 3
Table 1-6: Current and Proposed Water Rate Structure 5
Table 1-7: CY 2020-2024 Proposed Monthly Service Charges 5
Table 1-8: CY 2020-2024 Proposed Usage Charges 5
Table 1-9: CY 2020-2024 Proposed Monthly Fire Line Service Charge 6
Table 1-10: CY 2020-2024 Proposed Monthly Backflow Charge 6
Table 3-1: Inflationary Factor Assumptions 10
Table 3-2: Account Growth, Demand, and Revenue Assumptions 10
Table 4-1: Projected Annual Meter Service Charge Revenue 12
Table 4-2: Projected Annual Flat Service Charge Revenue 12
Table 4-3: Projected Annual Capital Facilities Charge Revenue 12
Table 4-4: Projected Annual Usage Charge Revenue 13
Table 4-5: Projected Annual Private Fire Service Line and Backflow Device Charge Revenue 13
Table 4-6: Projected Water Revenues 13
Table 4-7: Projected O&M Expenses 14
Table 4-8: Capital Improvement Plan 14
Table 4-9: Recommended Water Financial Plan 19
Table 5-1: Revenue Requirements 24
Table 5-2: Functionalized Expenses 25
Table 5-3: Functionalized Assets 26
Table 5-4: System-Wide Peaking Factors 27
Table 5-5: Specific Allocation 28
Table 5-6: O&M Allocation 29
Table 5-7: Capital Allocation 30
Table 5-8: Cost of Service Requirements 31
Table 5-9: Single-Family Residential Tier Adjustments 32
Table 5-10: Usage by Customer Class and Tier 33
Table 5-11: Customer Service Component – Unit Rate 33
Table 5-12: Equivalent Meter Units 34
Table 5-13: Meter Capacity Component – Unit Rate 34
Table 5-14: Capital Facilities Component – Unit Rate 34
Table 5-15: Water Production 35
Table 5-16: Groundwater Component – Unit Rate 35
Table 5-17: Purchased Water Component – Unit Rate 35
Table 5-18: Base/Delivery Component – Unit Rate 36
Table 5-19: Customer Class Peaking Factors 37
Table 5-20: Peaking Costs Allocated to Classes 37
Table 5-21: Peaking Costs Allocated to Tiers 37
Table 5-22: Variable Component Revenue Requirements 37
Table 5-23: Non-Metered Variable Charge – Unit Rate 38
Table 5-24: CY 2020 Proposed Monthly Service Charges ($/Meter or $/Connection) 38

Table 5-25: Proposed 5-Year Monthly Fixed Monthly Charges ($/Meter or $/Connection) 39
Table 5-26: CY 2020-2024 Proposed Monthly Private Fire Line Service Charge 39
Table 5-27: CY 2020-2024 Proposed Monthly Backflow Charge 39
Table 5-28: CY 2020 Proposed Monthly Commodity Rates ($/ccf) 40
Table 5-29: Proposed 5-Year Monthly Usage Charges ($/ccf) 40
Table 5-30: Provisional Schedule of Meter Conversions 41
Table 5-31: Adjustment to Monthly Fixed Charge Due to Conversions 41
Table 5-32: Proposed 5-Year Fixed Monthly Charges ($/Meter or $/Connection) after Conversion of Non-Metered Customers 42

List of Figures

Figure 4-1: Water Operating Financial Position at Current Rates 15
Figure 4-2: Baseline Water Capital Improvement Plan and Funding Source 16
Figure 4-3: Projected Ending Water Utility Reserves 16
Figure 4-4: Proposed Operating Financial Plan 20
Figure 4-5: Projected Capital Improvement Plan and Funding Source 20
Figure 4-6: Projected Operating Fund Ending Balances 21
Figure 5-1: Cost of Service Process 23
Figure 6-1: SFR Bill Impact 43
Figure 6-2: MFR Bill Impact 44
Figure 6-3: Non-Residential Bill Impact – No Pumping Zone 45

List of Appendices

APPENDIX A – Exhibit A-1: Detailed Capital Improvement Plan
APPENDIX A – Exhibit A-2: Detailed Financial Plan

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1. Executive Summary

1.1. BACKGROUND

In 2018, Sacramento Suburban Water District (District) engaged Raftelis to conduct a Comprehensive Water Cost of Service Study (Study) to develop a financial plan and design rates for the District's utilities over the next five years. The District is located in northern Sacramento County, California and provides water to portions of the unincorporated area of Sacramento County, Antelope, Carmichael, Citrus Heights, Foothill Farms; small portions of the cities of Sacramento and Citrus Heights; and all of McClellan Business Park serving approximately 46,000 customer accounts.

1.1.1. Objectives of the Study

The major objectives of the study include the following:

- Develop financial plan for the water utility to ensure financial sufficiency, meet operation and maintenance (O&M) costs, ensure sufficient funding for capital replacement and refurbishment (R&R) needs, and maintain the financial health of the utility.
- Develop sound and sufficient reserve fund targets and meet minimum reserves during planning period.
- Review current rate structures for the water utility and determine any adjustments to the rates to more closely reflect costs incurred and adequately recover the utility's revenue requirements over the planning period.

1.2. CURRENT RATES

The current water rate structure consists of the following components:

1. Monthly Meter Service Charge that varies by meter size
2. Monthly Flat Service Charge that varies by connection size for Non-Metered accounts
3. Monthly Capital Facilities Charge that varies by meter or connection size
4. Flat Usage Charge that varies per 1,000 square feet for Non-Metered accounts
5. Usage Charge for metered customers that varies by customer class and water usage

In addition to the four main components, the District also charges a Private Fire Service Line protection charge to those customers with private fire protection lines and a Backflow Device charge to connections with a backflow device. Private fire protection customers are charged a monthly fixed charge that varies by connection size and backflow device customers are charged a monthly fixed charge per connection. The following tables summarize the current rate structure of the District. Table 1-1provides a summary of the monthly charges by meter or connection size. Table 1-2 summarizes the current variable unit[1] charges by customer class and by tier as well as the tier widths. As shown, the District's current commodity rate structure is comprised of a flat usage charge for Non-Metered customers, inclining tiers (2 tiers) for Residential customers, and a uniform, seasonal rate for Non-Residential customers. Table 1-3 shows the monthly Private Fire Service Line charges by connection size and Table 1-4 shows the monthly Backflow Device Charge per connection.

[1] One unit of water is equal to 748 gallons or 100 cubic feet (1 ccf)

Table 1-1: Current Monthly Service Charges

Meter or Connection Size	CY 2018 Meter Service Charge	CY 2018 Flat Service Charge	CY 2018 Capital Facilities Charge
5/8"	$4.21		$22.52
3/4"	$6.14	$17.42	$33.57
1"	$9.94	$25.21	$56.15
1 1/2"	$19.42	$47.60	$111.90
2"	$30.88	$47.02	$179.11
3"	$57.56		$336.10
4"	$95.64		$560.30
6"	$190.86		$1,120.26
8"	$343.24		$2,016.60
10”	$552.76		$3,249.22
12”	$819.37		$4,817.07

Table 1-2: Current Usage Charges

Customer Class/Tiers	Units	CY 2018 Usage Charge
Flat Usage Charge	Per 1,000 sq ft	$1.06
Residential		
Tier 1	0 – 10 ccf	$0.94
Tier 2	11+ ccf	$1.17
Non-Residential – Off Peak	Uniform (ccf)	$0.95
Non-Residential - Peak	Uniform (ccf)	$1.18

Table 1-3: Current Monthly Private Fire Service Line Charge

Connections Size	CY 2018 Monthly Charge
2"	$13.28
3"	$24.92
4"	$40.59
6"	$80.78
8"	$142.90
10”	$223.27
12”	$248.83

Table 1-4: Currently Monthly Backflow Device Charge

	CY 2018 Monthly Charge
Per Connection	$2.20

1.3. FINANCIAL HEALTH AND PROPOSED RECOMMENDATIONS

As part of the financial plan development, Raftelis first reviewed the District's projected revenue requirements over a 10-year planning horizon to determine the financial health of the utility over the short-term and long-term to determine if the current rates could support the utility's revenue needs.

For Calendar Year 2019 (CY 2019) the District's total beginning reserve balance for the water utility is approximately $42.8 million. As part of Best Management Practices of utilities, it is recommended that a utility have at least 90-180 days of operating reserves as well as sufficient funds available to ensure that the utility's capital plan can move forward as scheduled and is not delayed due to insufficient funds on hand. As part of this study, Raftelis reviewed the District's reserves policies with District staff to determine if any adjustments should be made based on historical and current revenue recovery, commonly accepted industry standards, and futured planned revenue requirements. The District's primary unrestricted reserves include: 1) Operating Reserve with an ending balance target of 25% of current year annual expenditures, 2) Capital Assets Reserve with a target based on the budgeted capital needs for the upcoming calendar year, 3) Emergency Reserve set at 25% of following year's anticipated revenues, and 4) Rate Stabilization Reserve set at 50% of commodity revenue. These District reserves ensure the utility has adequate funding throughout the fiscal year and provides a strong financial position in connection with the District's credit worthiness and reflects a pro-active approach to its ongoing financial planning.

After our review and discussions with staff, we had a few minor modifications to the four (4) reserves which included a higher target for the Operating Reserve and Capital Asset Reserve with the inclusion of a minimum target, and slight changes to the Emergency target and Rate Stabilization target to more closely reflect the purpose of those reserves. The recommended Operating Reserve target is set at 180 days of operating expenses with a minimum of the current 90-day target. The recommended Capital Asset Reserve target is set at the average annual capital expenditures of the current 5-year capital plan with a minimum target of the District's annual depreciation to ensure appropriate reinvestment. The Emergency Reserve should be more closely tied to the District's system, age of system, and current value of system in today's dollars which reflects the potential need in addressing and fixing any unexpected system failures that may occur. Therefore, the recommended Emergency Reserve target is set as 3% of the District's asset value in today's dollars by taking the replacement cost of the system less depreciation. The recommended Rate Stabilization Reserve target is still based on commodity revenue but reduced to 35% as current commodity revenue fluctuates around thirty percent. Table 1-5 provides a summary of the current reserve targets and recommended reserve target adjustments.

Table 1-5: Existing and Recommended Primary Reserves Policies

Reserve	Existing Policy	Recommended Policy
Operating Fund	25% of current year's budgeted annual expenditures	**Minimum -** 90 days or 25% of Operating expenses **Target -** 180 days of 50% of Operating expenses
Capital Assets	Sufficient to fund CIP above the CIP funding amount anticipate at rate setting or budget preparation	**Minimum –** Annual Depreciation **Target –** 5-Year Average CIP
Emergency	25% of following year's anticipated revenues	**3% of Asset Value**
Rate Stabilization	50% of upcoming water consumption revenue	**35% of Consumption Revenue**

Based on the financial plan review, the District is currently in a strong financial position and only modest revenue adjustments are needed to ensure that the District maintains its healthy financial position moving forward and can continue to reinvest in the water utility system. The proposed revenue adjustments are 5% for Calendar Year 2020, 4% for Calendar Year 2021, and 3% for Calendar Years 2022 through 2024.

1.3.1. Rate Design Adjustments

To determine the appropriate rate structure for meeting the District's revenue requirements, Raftelis reviewed the current rate structure and consumption data, worked closely with District staff, and, where possible, incorporated feedback on policies and objectives. As such, Raftelis recommends the following proposed adjustments to the current structure:

- Maintain the 2-tiered rate structure for SFR accounts with modifications to the Tier 1 and Tier 2 allotments (also referred to as tier widths). For Tier 1, the recommended allotment is based on the average amount of groundwater production the District generates to serve annual demand equal to approximately 19,800 acre feet (AF) evenly allocated to all accounts, which translates to 15 ccf or units of water. Tier 2 would capture any water usage above Tier 1.
- Establish a separate customer class for MFR accounts with a uniform rate structure. MFR accounts are distinguished from other customer classes in the billing records and, therefore, it is possible to allocate their proportionate share of the costs of providing service based on the total volume of water used, peak demand on the system, and burdens the class places on staff and customer service. A uniform rate provides the most appropriate and equitable rate structure between accounts within this customer class.
- Move from a seasonal rate structure to a uniform rate for all Non-Residential accounts. Although implementing uniform rates is recommended, it is important to note that non-residential customer classes are still paying their proportionate share of the costs of providing the service based on the total volume of water used, peak demand on the system, and burdens the class places on staff and customer service similar to Single-Family Residential and Multi-Family Residential. A uniform rate provides the most appropriate and equitable rate structure between accounts within this customer class.
- When implementing rate adjustments, it is common practice for public utilities to include authorization for 5 years of proposed rate increases versus a shorter timeframe. Therefore, as part of the proposed rate increases, Raftelis recommends including all 5 years of the proposed rates for inclusion within the Proposition 218 Notice as the ceiling the District may not exceed without going through the Proposition 218 procedures for updating utility rates. The proposed rates are the maximum amount that the District may charge without re-noticing and holding another Proposition 218 Public Hearing but is not required to implement the maximum and may set annual rates at a lower amount if warranted.

The proposed rate structure is set forth in Table 1-6. The proposed Monthly Service Charge and Variable Usage Charges are shown in Table 1-7 and Table 1-8, respectively. Table 1-9 shows the proposed monthly Private Fire Line charges by connection size and Table 1-10 shows the proposed monthly Backflow Charge per connection.

Table 1-6: Current and Proposed Water Rate Structure

Customer Class/Tiers	Current Tier Width	Proposed Tier Width (ccf)
METERED		
Residential		
Tier 1	0 – 10 ccf	0-15
Tier 2	11+ ccf	16+
Multi-Family Residential	N/A	Uniform
Non-Residential – Off Peak	Uniform	Uniform
Non-Residential - Peak	Uniform	N/A
NON-METERED		
Flat Usage Charge	Per sq ft	Per sq ft

Table 1-7: CY 2020-2024 Proposed Monthly Service Charges

Meter or Connection Size	CY 2020 Proposed Monthly Service Charge	CY 2021 Proposed Monthly Service Charge	CY 2022 Proposed Monthly Service Charge	CY 2023 Proposed Monthly Service Charge	CY 2024 Proposed Monthly Service Charge
5/8"	$32.01	$33.65	$35.04	$36.13	$37.21
3/4"	$44.40	$46.68	$48.61	$50.13	$51.63
1"	$69.19	$72.75	$75.75	$78.12	$80.45
1 1/2"	$131.17	$137.90	$143.60	$148.11	$152.53
2"	$205.53	$216.08	$225.01	$232.07	$238.99
3"	$403.85	$424.59	$442.15	$456.03	$469.62
4"	$626.95	$659.16	$686.42	$707.97	$729.07
6"	$1,246.68	$1,310.72	$1,364.95	$1,407.81	$1,449.77
8"	$2,238.25	$2,353.23	$2,450.59	$2,527.55	$2,602.87
10”	$2,981.93	$3,135.11	$3,264.82	$3,367.35	$3,467.69
12”	$4,190.40	$4,405.66	$4,587.93	$4,732.02	$4,873.03

Table 1-8: CY 2020-2024 Proposed Usage Charges

Customer Class / Tiers	Units	CY 2020 Proposed Usage Charge	CY 2021 Proposed Usage Charge	CY 2022 Proposed Usage Charge	CY 2023 Proposed Usage Charge	CY 2024 Proposed Usage Charge
Flat Usage Charge	Per 1,000 sq ft	$2.35	$2.47	$2.57	$2.65	$2.73
Single-Family Residential						
Tier 1	0 – 15 ccf	$0.88	$0.93	$0.97	$1.00	$1.03
Tier 2	16+ ccf	$1.15	$1.21	$1.26	$1.30	$1.34
Multi-Family Residential	Uniform (ccf)	$1.26	$1.33	$1.39	$1.44	$1.49
Non-Residential	Uniform (ccf)	$1.33	$1.40	$1.46	$1.51	$1.56

Table 1-9: CY 2020-2024 Proposed Monthly Fire Line Service Charge

Connection Size	CY 2020 Proposed Monthly Charge	CY 2021 Proposed Monthly Charge	CY 2022 Proposed Monthly Charge	CY 2023 Proposed Monthly Charge	CY 2024 Proposed Monthly Charge
2"	$13.95	$14.51	$14.95	$15.40	$15.87
3"	$26.17	$27.22	$28.04	$28.89	$29.76
4"	$42.62	$44.33	$45.66	$47.03	$48.45
6"	$84.82	$88.22	$90.87	$93.60	$96.41
8"	$150.05	$156.06	$160.75	$165.58	$170.55
10”	$234.44	$243.82	$251.14	$258.68	$266.45
12”	$261.28	$271.74	$279.90	$288.30	$296.95

Table 1-10: CY 2020-2024 Proposed Monthly Backflow Charge

	CY 2020 Proposed Monthly Charge	CY 2021 Proposed Monthly Charge	CY 2022 Proposed Monthly Charge	CY 2023 Proposed Monthly Charge	CY 2024 Proposed Monthly Charge
Per Connection	$2.31	$2.41	$2.49	$2.57	$2.65

2. Introduction

2.1. STUDY APPROACH

This report was prepared using principles established by the American Water Works Association (AWWA). The AWWA *"Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1* Manual (M1 Manual) establishes commonly accepted professional standards for cost of service studies. The M1 Manual principles of rate structure design and the objectives of the Study are described below.

According to the M1 Manual, the first step in ratemaking analysis 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 typically 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. A number of factors may affect these projections, including the number of customers served, water-use trends, nonrecurring sales, weather, conservation, water use restrictions, inflation, interest rates, wholesale contracts, capital finance needs, changes in tax laws, and other changes in operating and economic conditions, among others.

After determining the utility's revenue requirement, the next step was determining the cost of service. Utilizing the District's approved budget, financial reports, operating data, and capital improvement plans, a rate study generally categorizes (functionalizes) **system costs** (e.g., treatment, storage, pumping, etc.), including operating and maintenance and asset costs, among **major operating functions** to determine the cost of service.

After the asset values and operating costs are properly categorized by function, these functionalized costs are allocated first to cost causation components, and then distributed to the various customer classes (e.g., single-family residential, multi-family residential, and non-residential) by determining the characteristics of those classes and the contribution of each to cost causation components such as customer costs, supply costs, peaking costs, delivery costs, and fire protection.

Rate design is the final element of the rate-making procedure and uses the revenue requirement and cost of service analysis to determine rates for each customer class that reflect the cost of providing service to those customers. Rates utilize "rate components" that build-up to the total commodity rates, and fixed charge rates, for the various customer classes. In the case of tiered rates, the rate components allocate the cost of service *within* each customer class, effectively treating each tier as a sub-class and determining the cost to serve each tier.

2.2. LEGAL REQUIREMENTS

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

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

1. Revenues derived from the charge shall not exceed the costs required to provide the property related service.
2. Revenues derived from the charge shall not be used for any purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.

4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. No charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.
6. A public agency must hold a public hearing to consider the adoption of the proposed new or increase in an existing charge; written notice of the public hearing and proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing; if the public agency receives written protests to the proposed charge from a majority of the property owners, the charge may not be imposed.

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." Prop 218 requires that water rates cannot be "arbitrary and capricious," meaning that the rate-setting methodology must be sound and that there must be a nexus between costs and the rates charged. Raftelis followed industry standard rate setting methodologies set forth by the AWWA *M1 Manual* to ensure this study meets Proposition 218 requirements and creates rates that do not exceed the proportionate cost of providing water services.

In addition, the San Juan Capistrano decision (*Capistrano Taxpayers Assn v. City of San Juan Capistrano*, Cal.App.4 (Apr 20, 2015, 4th DCA Case No. G048969) clarifies Proposition 218 requirements so that tiered rates (as well as rates for the remaining classes) need to be based on the proportionate costs incurred to provide water to each customer class and each tier in order to achieve compliance with Proposition 218.

2.2.2. 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 institutes the need to preserve the State's water supplies and to discourage the wasteful or unreasonable use of water by encouraging conservation. As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.
In connection with meeting the objectives of Article X, section 2, Water Code Sections 370 and 375 et seq. authorize a water purveyor to utilize its water rate design to incentivize the efficient use of water. Although incentives to conserve water may be provided by implementing a higher rate as consumption increases, a nexus between the rates and costs incurred to provide the water must be developed to achieve compliance with Proposition 218.

Tiered Rates – "Inclining" tier water rate structures (synonymous with "tiered" rates) when properly designed and differentiated by customer class, allow a water utility to send consistent price signals to customers. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reasonably reflect the proportionate cost of providing service to users in each tier.

2.2.3. Cost-Based Rate Setting Methodology

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

1. **Calculate Revenue Requirement**
   The rate-making process starts by determining the test year (rate setting year) revenue requirement, which for this study is CY 2020. The revenue requirement should sufficiently fund the utility's O&M, debt service, capital expenses, and reserves.

2. **Cost of Service Analysis (COS)**
   The annual cost of providing service is distributed among customer classes commensurate with their service requirements. A COS analysis involves the following:
   a) Functionalize costs. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection.
   b) Allocate functionalized costs to cost causation components. Cost causation components include, but are not limited to, supply, base[2], maximum day, maximum hour[3], meter capacity, and customer service .
   c) Distribute the cost causation components. Distribute cost components, using unit costs, to customer classes in proportion to their demands on the system. This is described in the M1 Manual.

   A COS analysis for water 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 costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating and maintaining facilities large enough to meet peak demands. These peak demand costs need to be allocated to those imposing such costs on the utility. In other words, not all customer classes share the same responsibility for peaking related costs.

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

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

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[2] Base costs are those associated with meeting average day demands and unrelated to meeting peaking demands.
[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. Peak demand is calculated for each customer class and may not occur during same period. Both the operating costs and capital asset related costs incurred to accommodate the peak demand is generally allocated to each customer class based upon the class's relative peak demand.

3. Key Assumptions

The Study uses the District's CY 2019 budget as the base year and the model projects the District's revenue requirements through CY 2038; however, the proposed water rates herein are for CY 2020 through CY 2025. Certain cost escalation assumptions and inputs were incorporated into the Study to adequately model expected future costs of the District expenses. These assumptions were based on discussions with and/or direction from District management and are presented in Table 3-1 and Table 3-2.

Table 3-1: Inflationary Factor Assumptions

Inflationary Factors	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
General	2.00%	2.00%	2.00%	2.00%	2.00%
Salaries	5.00%	5.00%	5.00%	5.00%	5.00%
Utilities	5.00%	5.00%	5.00%	5.00%	5.00%
Capital	3.11%	3.11%	3.11%	3.11%	3.11%
Purchased Water	5.00%	5.00%	5.00%	5.00%	5.00%
Benefits	6.54%	6.53%	6.52%	6.51%	6.51%
Non-Inflated	0.00%	0.00%	0.00%	0.00%	0.00%
Water Loss [5]	7.1%	7.1%	7.1%	7.1%	7.1%

Table 3-2: Account Growth, Demand, and Revenue Assumptions

Escalation Factors	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
Account Growth[6]					
Metered Accounts					
Single Family	0%	0%	0%	0%	0%
Multi Family	0%	0%	0%	0%	0%
Non-Residential	0%	0%	0%	0%	0%
Non-Metered Accounts					
Single Family	0%	0%	0%	0%	0%
Multi Family	0%	0%	0%	0%	0%
Demand Factors[7]					
Metered Accounts					
Single Family	100%	100%	100%	100%	100%
Multi Family	100%	100%	100%	100%	100%
Non-Residential	100%	100%	100%	100%	100%
Non-Metered Accounts					
Single Family	100%	100%	100%	100%	100%
Multi Family	100%	100%	100%	100%	100%
Revenue Factors					
Non-Rate Revenues	2.00%	2.00%	2.00%	2.00%	2.00%
Reserve Interest Rate	2.00%	2.00%	2.00%	2.00%	2.00%

[5] For the cost of service analysis and determining the amount of expected water use from non-metered accounts, water loss for Calendar Year 2019 was set at 3.5%.
[6] For financial planning purposes, account growth was conservatively set at 0% which means that the District is not relying on growth to help fund ongoing operating and maintenance costs.
[7] Demand factors can be used to project changes in water usage patterns. For the purposes of this Study, no changes were made to the water usage patterns. Through discussions with District staff, they are not expecting customers to reduce

4. Financial Plan

This section describes the development of the water utility's financial plan, the results of which were used to determine the revenue adjustments needed to meet ongoing expenses and provide fiscal sustainability to the District. Establishing a utility's revenue requirement is a key step in the rate setting process. The review involves analysis of projected annual operating revenues under the current rates, O&M expenses, capital expenditures, transfers between funds, and reserve requirements. This section of the report provides a discussion of the projected revenues, O&M and capital expenditures, the capital improvement financing plan, and overall revenue requirements required to ensure the fiscal sustainability of the Water Utility.

4.1. REVENUE FROM CURRENT RATES

The current water rate structure consists of the following components:

1. Monthly Meter Service Charge that varies by meter size (Table 4-1 summarizes the current meters by size, the current monthly fixed charges, and projected revenue).
2. Monthly Flat Service Charge that varies by connection size for Non-Metered accounts. Customers with more than one dwelling unit pay an additional flat charge for each additional dwelling unit. (Table 4-2 summarizes the current connections by size, current monthly flat service charge, and projected revenue).
3. Monthly Capital Facilities Charge that applies to both Metered and flat accounts and varies by meter or connection size (Table 4-3 summarizes the current meters/connections by size, the current monthly capital facilities charge, and projected revenue).
4. Flat Usage Charge that varies per 1,000 square feet for Non-Metered accounts (Table 4-4 summarizes the number of square feet, the current flat usage charge per 1,000 square feet, and projected usage revenue).
5. Usage Charge that varies by customer class and water usage (Table 4-4 summarizes the rate structure, usage by tier and customer class, current water usage rates, and projected usage revenue).

In addition to these components, the District also charges a fire protection charge and backflow charge to those customers with private fire protection lines and backflow connections. Private fire protection customers are charged a monthly fixed charge that varies by connection size. Table 4-5 summarizes the connections by size, the current monthly Private Fire Service Line charges, and the projected private fire protection revenue. Backflow connection customers are charged a monthly fixed charge per connection. **Error! Reference source not found.** summarizes the number of connections, the current monthly Backflow Device charge, and the projected backflow charge revenue.

usage in the upcoming year. As drought conditions improve, the District anticipates there will be modest increases in water use as behaviors revert to non-drought conditions, however, it is not known how soon or to what extent this will occur

Table 4-1: Projected Annual Meter Service Charge Revenue

Meter Size	# of Meters [A]	Current Monthly Water Service Charges [B]	Projected Annual Water Service Charge Revenue [A x B x 12]
5/8"	2,174	$4.21	$109,830
3/4"	30,609	$6.14	$2,255,271
1"	3,927	$9.94	$468,413
1 1/2"	1,012	$19.42	$235,836
2"	1,403	$30.88	$519,896
3"	306	$57.56	$211,360
4"	104	$95.64	$119,359
6"	27	$190.86	$61,839
8"	4	$343.24	$16,476
10”	1	$552.76	$6,633
12”		$819.37	$0
Total	**39,567**		**$4,004,913**

Table 4-2: Projected Annual Flat Service Charge Revenue

Connection Size	# of Connections [A]	Current Flat Service Charges [B]	Projected Annual Flat Service Charge Revenue [A x B x 12]
3/4"	5,939	$17.42	$1,241,489
1"	20	$25.21	$6,050
1 1/2"		$47.60	$0
2"		$47.02	$0
Total	**5,959**		**$1,247,539**
Multiple Unit Charge[8]	**354**	$9.39	**$39,889**

Table 4-3: Projected Annual Capital Facilities Charge Revenue

Meter / Connection Size	# of Meters / Connections [A]	Current Monthly Capital Facilities Charges [B]	Projected Annual Capital Facilities Charge Revenue [A x B x 12]
5/8"	2,174	$22.52	$587,502
3/4"	36,548	$33.57	$14,722,996
1"	3,947	$56.15	$2,659,489
1 1/2"	1,012	$111.90	$1,358,914
2"	1,403	$179.11	$3,015,496
3"	306	$336.10	$1,234,159
4"	104	$560.30	$699,254
6"	27	$1,120.26	$362,964
8"	4	$2,016.60	$96,797
10”	1	$3,249.22	$38,991
12”		$4,817.07	$0
Total	**45,526**		**$24,776,562**

[8] $/additional dwelling unit

Table 4-4: Projected Annual Usage Charge Revenue

Customer Classes	Current Units	Projected Sq ft / Annual Usage [A]	Current Rate ($/1,000 sq ft / $/ccf) [B]	Projected Usage Charge Revenue [A x B]
Flat Usage Charge	Per 1,000 sq ft	43,062	$1.06	$547,749
Residential				
Tier 1	0 – 10 ccf	2,663,329	$0.94	$2,503,529
Tier 2	11+ ccf	3,301,829	$1.17	$3,863,140
Non-Residential – Off Peak	Uniform	2,033,312	$0.95	$1,931,646
Non-Residential - Peak	Uniform	3,953,251	$1.18	$4,664,836
Total				**$13,510,900**

Table 4-5: Projected Annual Private Fire Service Line and Backflow Device Charge Revenue

Connection Size	# of Connections [A]	Current Charges [B]	Projected Annual Charge Revenue [A x B x 12]
Private Fire Service Lines			
2"	18	$13.28	$2,868
3"	7	$24.92	$2,093
4"	231	$40.59	$112,515
6"	355	$80.78	$344,123
8"	261	$142.90	$447,563
10"	30	$223.27	$80,377
12"	4	$248.83	$11,944
Backflow Device Charge	4,314	$2.20	$113,890
Total			**$1,115,373**

Using account growth, water demand factors, and other revenue assumptions from Table 3-1 and Table 3-2, Raftelis projected the revenues for the water utility[9]. Table 4-6 summarizes the rate revenue (Line 6) as well as other revenues. As shown in the table, since Raftelis assumed zero growth and no increase in water demand, the rates and rate revenue remained constant during the Study Period. The projected water sales by customer class and tier remained constant and was based on the total CY 2017 usage.

Table 4-6: Projected Water Revenues

Line #		CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
1	**Water Utility Revenues**					
2	Meter Service Charge Revenue	$4,004,913	$4,004,913	$4,004,913	$4,004,913	$4,004,913
3	Non-Metered Flat Charge Revenue	$1,287,428	$1,287,428	$1,287,428	$1,287,428	$1,287,428
4	Capital Facilities Charge Revenue	$24,776,562	$24,776,562	$24,776,562	$24,776,562	$24,776,562
5	Usage Charge Revenue	$13,510,895	$13,510,895	$13,510,895	$13,510,895	$13,510,895
6	**Subtotal Rate Revenue**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**
7	Other Revenues	$2,283,361	$2,369,969	$2,368,797	$2,373,511	$2,372,119
8	**Total Revenues**	**$45,863,158**	**$45,949,766**	**$45,948,594**	**$45,953,308**	**$45,951,916**

[9] Although only the Study Period is shown here, Raftelis projected the revenues through FYE 2038.

4.2. O&M EXPENSES

The District's CY 2019 budget values and the assumed inflation factors (Table 3-1) for the study period were used as the basis for projecting O&M costs. Table 4-7 shows the total projected O&M expenses for CY 2020 through CY 2024[10]. As shown in the table (Line 15), the water utility currently has outstanding debt obligation.

Table 4-7: Projected O&M Expenses

Line #		CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
1	**Expenditures**					
2	Water Costs	$3,847,131	$4,039,488	$4,241,462	$4,453,535	$4,676,212
3	Groundwater	$498,745	$523,682	$549,866	$577,359	$606,227
4	Electrical Costs	$1,711,381	$1,796,950	$1,886,797	$1,981,137	$2,080,194
5	Water Conservation	$31,620	$32,252	$32,897	$33,555	$34,227
6	Salaries	$5,602,298	$5,770,367	$5,943,478	$6,121,782	$6,305,436
7	Benefits	$5,301,610	$5,647,686	$6,015,836	$6,407,588	$6,824,574
8	Supplies	$1,274,290	$1,302,635	$1,331,636	$1,361,309	$1,391,670
9	Finance & Administration	$2,247,764	$2,292,719	$2,338,573	$2,385,345	$2,433,052
10	Engineering	$2,382,533	$2,431,785	$2,482,072	$2,533,416	$2,585,839
11	General	$591,945	$604,569	$617,486	$630,702	$644,226
12	Maintenance	$682,436	$703,655	$725,534	$748,093	$771,353
13	Meters	$861,000	$881,000	$775,000	$0	$0
14	**Total Operating Expenses**	**$25,032,753**	**$26,026,788**	**$26,940,639**	**$27,233,823**	**$28,353,010**
15	Debt Service	$7,426,107	$7,432,995	$7,404,113	$5,668,864	$5,712,244
16	**Total Expenses**	**$32,458,859**	**$33,459,783**	**$34,344,751**	**$32,902,687**	**$34,065,254**

4.3. CAPITAL IMPROVEMENT PLAN

The District provided the projected capital expenditures by category (supply, transmission, distribution, storage, and special projects) to address future capital improvement project needs. Raftelis worked closely with District staff to adjust the Capital Improvement Plan (CIP) to reflect a measured multi-year approach. Table 4-8 summarizes the adjusted CIP (Line 1), the cumulative inflationary factor[11] (Line 2), and the total anticipated CIP costs (Line 3). The detail capital improvement plan by category can be found in Appendix A – Exhibit A-1.

Table 4-8: Capital Improvement Plan

Line #		CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
1	Adjusted CIP Projections	**$20,765,000**	**$15,263,000**	**$12,662,000**	**$16,071,000**	**$16,271,000**
2	Cumulative Inflationary Factor	100%	100%	100%	100%	100%
3	**Total CIP**	**$20,765,000**	**$15,263,000**	**$12,662,000**	**$16,071,000**	**$16,271,000**

[10] Although only the Study Period is shown here, Raftelis projected the expenses through CY 2038.
[11] Per directions from District Staff, CIP costs were not inflated.

4.4. RESERVE REQUIREMENTS

For CY 2019, the District's projected total beginning reserve balance for the water utility is approximately $42.8 million. Currently, the District maintains a water Operating Fund, an Emergency Fund, a Rate Stabilization Fund, and a Capital Assets Fund. As part of Best Management Practices of utilities, it is recommended that a utility have at least 90 days of operating reserves as well as sufficient funds available to ensure that the utility's capital plan can move forward as scheduled and is not delayed due to insufficient funds on hand.

4.5. FINANCIAL OUTLOOK AT CURRENT RATES

Revenues generated from current rates and other revenues exceed the operational expenses for the Study Period. Based on the financial plan review, the District is currently in a strong financial position, however, modest revenue adjustments are needed each year to ensure that the District maintains a its financial position moving forward and can continue to reinvest in the water utility system in the out years. Figure 4-1 illustrates the operating position of the water utility, where expenses, inclusive of reserve funding, are shown by stacked bars; and the total revenues at current rates are shown by the horizontal orange trend line.

Figure 4-1: Water Operating Financial Position at Current Rates

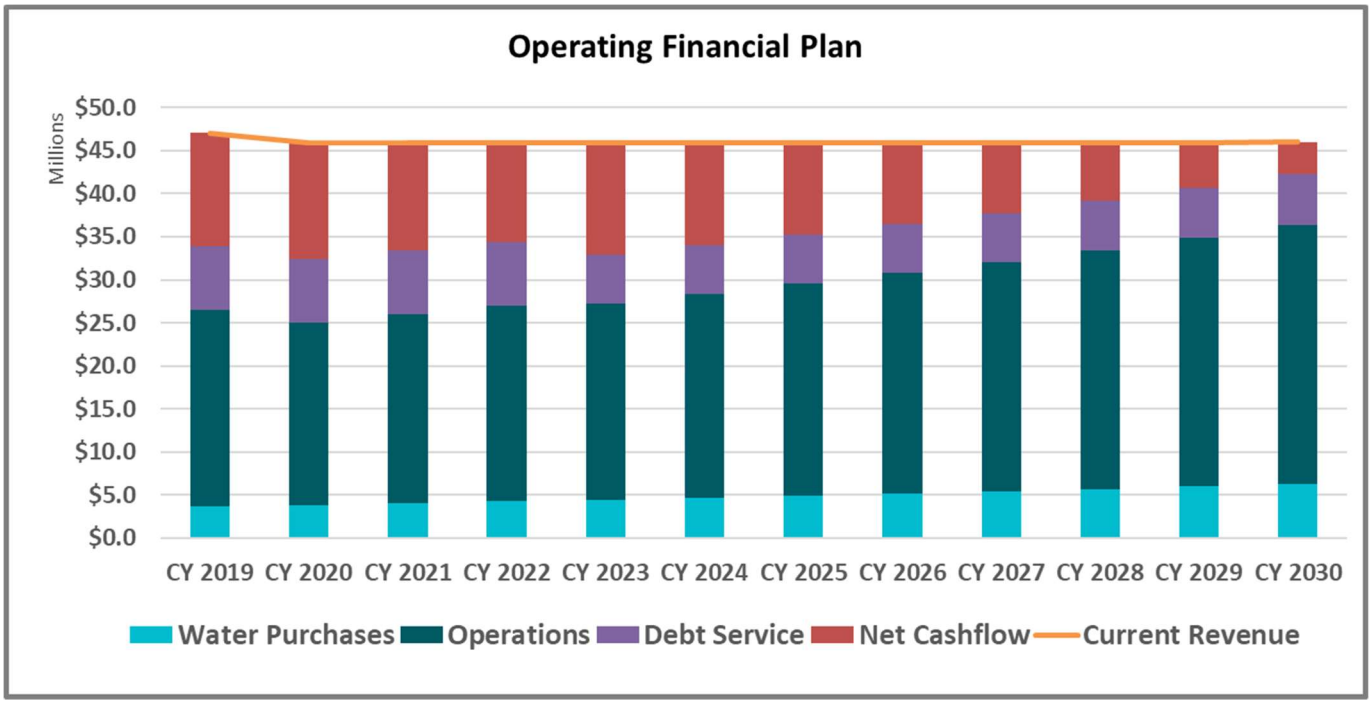


Figure 4-2 summarizes the baseline CIP and its funding sources by fiscal year.

Figure 4-2: Baseline Water Capital Improvement Plan and Funding Source

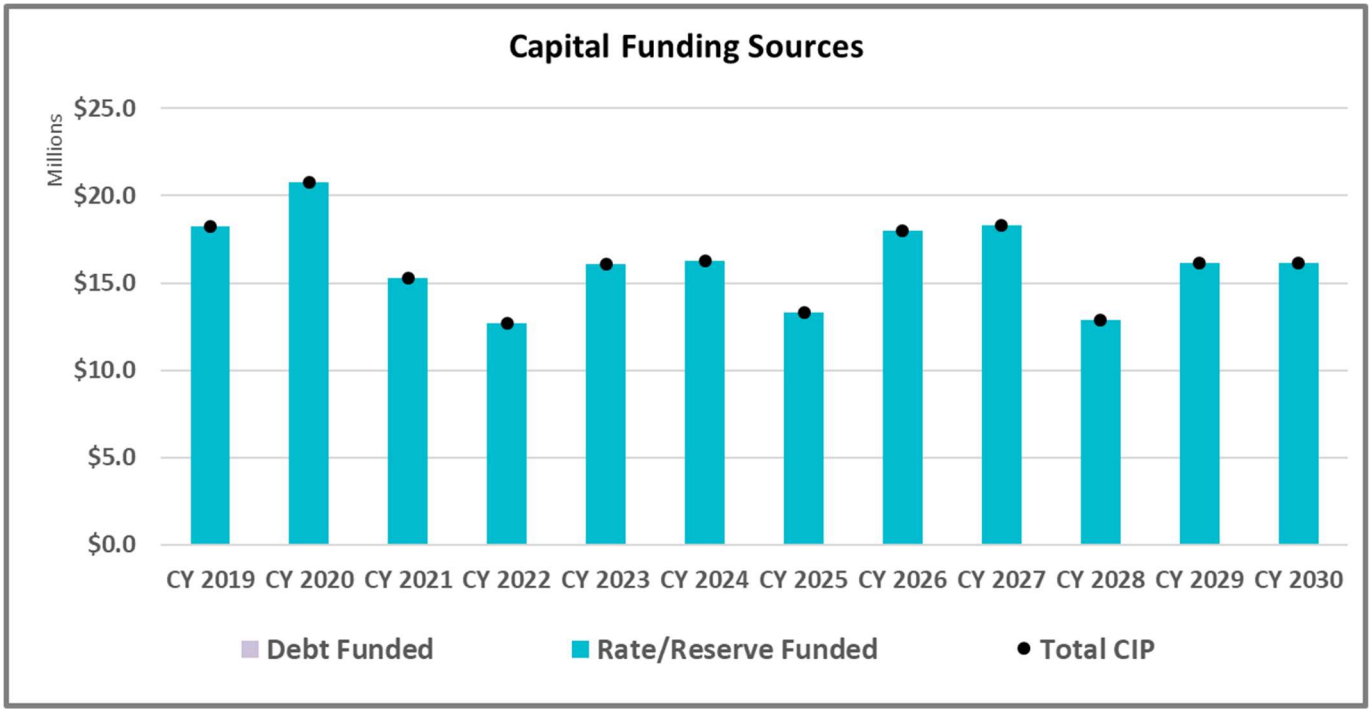
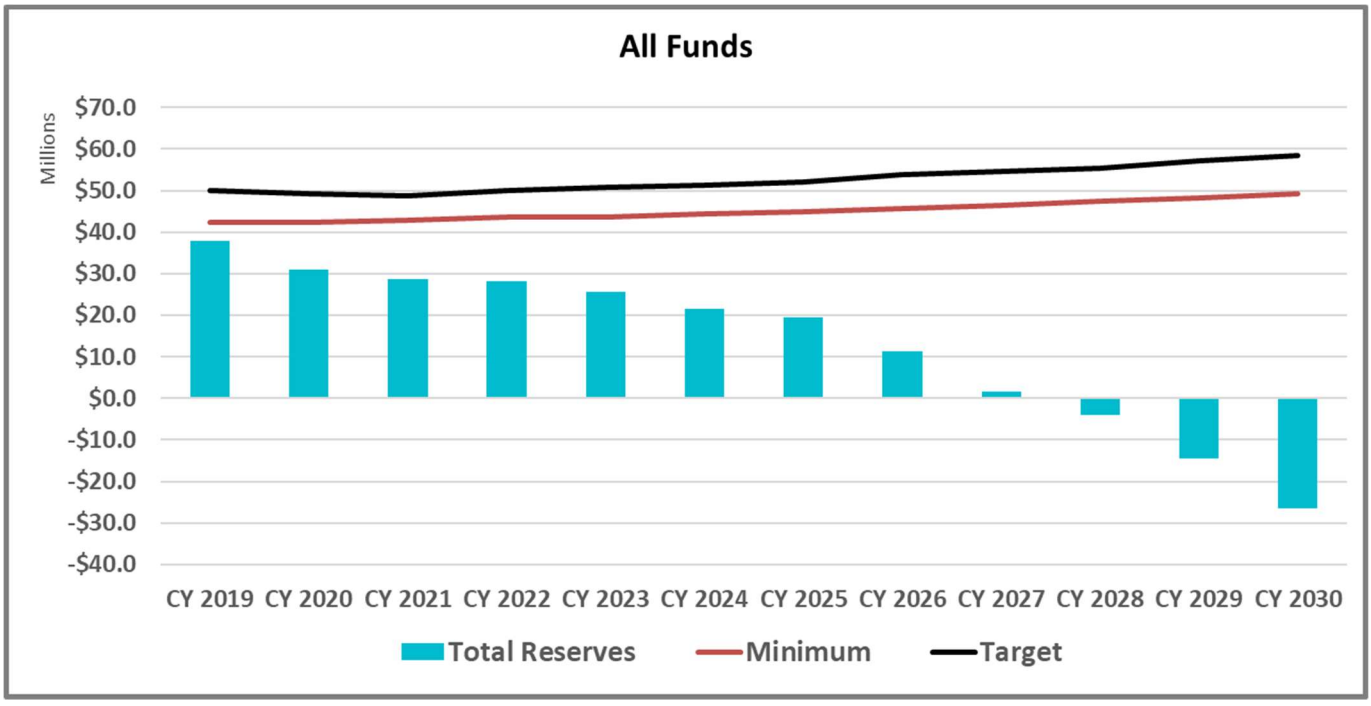


Figure 4-3 illustrates the ending total reserve balance for each calendar year after operating and capital are funded.

Figure 4-3: Projected Ending Water Utility Reserves



4.6. FINANCIAL PLAN RECOMMENDATIONS

After reviewing the District's revenue requirements, reserve policies, capital planning schedule, and current revenues, a financial plan was developed to meet the following criteria:

- Positive net operating cash income each CY of the planning period (CY 2020-CY 2029)
- Fully fund capital projects through Pay-As-You-Go (PAYGO) or cash on hand over the five-year plan
- Maintain the following reserves by the end of both the Study Period (CY 2020 – CY 2024) and the planning period (i.e. through CY 2029):
    - Operating Fund – target of 180 of operating expenses with a minimum target of 90 days.
    - Capital Assets Fund –target of one years' average annual capital expenses based on the District 's upcoming five-year capital plan with a minimum target of the District's annual depreciation in today's dollars.
    - Emergency Reserve – target of 3% of asset value in today's dollars less depreciation.
    - Rate Stabilization Reserve – target of 35% of commodity revenue.

4.6.1. Recommended Reserves

As part of this study, we reviewed the District's reserves policies with District staff to determine if any adjustments should be made based on historical and current revenue recovery, commonly accepted industry standards, and futured planned revenue requirements. The District primary unrestricted reserves include: 1) Operating Reserve with an ending balance target of 25% of current year annual expenditures, 2) Capital Assets Reserve with a target based on the budgeted capital needs for the upcoming calendar year, 3) Emergency Reserve set at 25% of following year's anticipated revenues, and 4) Rate Stabilization Reserve set at 50% of commodity revenue. These District reserves ensure the utility has adequate funding throughout the fiscal year and provides a strong financial position in connection with the District's credit worthiness and reflects a pro-active approach to its ongoing financial planning.

After our review and discussions with staff, we had a few minor modifications to the four (4) reserves which included a higher target for the Operating Reserve and Capital Asset Reserve with the inclusion of a minimum target, and slight changes to the Emergency Target and Rate Stabilization Target to more closely reflect the purpose of those reserves.

Raftelis recommends maintaining the following reserves:

Operating Fund– The operating reserve is used primarily to meet ongoing cash flow requirements. Raftelis recommends establishing an operating reserve target of 180-days of annual O&M expenses while maintaining a minimum reserve target of 90 days of annual O&M expenses. The operating Reserve ensures working capital to support the operation, maintenance, and administration of the utility. Maintaining this level of reserves also provides liquid funds for the continued ongoing operations of the utility in the event of unforeseen operating costs or interruption with the utility or the billing system.

Capital Assets Fund– The capital reserve is used primarily to meet the District's capital improvement requirements. The District's revised capital improvement plan—over the five-year period—is approximately $81.2M. The recommended target for the capital reserve should be to have a reserve sufficient to fund one year of capital based on the average annual capital expenses of the District 's upcoming five-year capital plan while maintaining a minimum target equal to the District's annual depreciation in today's dollars. The Capital Asset Fund ensures that the District can continue to reinvest in the water system's necessary capital repair and replacement without any delays or deferments due to cash flow concerns. This reserve also provides assurance when awarding construction contracts as well as matching funds when applying and securing potential grants.

Emergency Reserve – The emergency reserve is used primarily to meet mitigate risk in system failures that may occur from time-to-time while mitigating any significant rate impacts to District customers to fix the system. The District's current emergency target is set as a percent of total revenues; however, the target should be more closely related to system existing assets and potential cost of improvements when system failures occur. Therefore, the recommended target for the emergency reserve is 3% percent of the District's asset value in today's dollars by taking the replacement cost of the system less depreciation.

Rate Stabilization Reserve – A rate stabilization reserve is used to fund costs in the event of any unforeseen circumstances or mitigate significant rate increases by offsetting certain expenses. The District's rate stabilization target is currently set at 50% of commodity revenue and we recommend adjusting it to 35% percent of commodity revenue as current commodity revenue fluctuates around thirty percent of total revenue recovery.

4.6.2. Proposed Financial Plan

Overall, the proposed financial plan for the water system aims to strike a balance between maintaining a strong financial position and minimizing rate increases to its customers through a multi-year measured approach. The District will utilize a portion of its reserves to fund a portion of its capital expenses in Calendar Year 2019 and 2020 as a rate adjustment is not planned for the remainder of Calendar Year 2019. Through this temporary use of reserves, the District's revenue adjustments are 5% in CY 2020, with 4% adjustments in CY 2021, followed by 3% adjustments in CY 2022 through 2024. The proposed calculated rates herein, were based on an effective date of January 1, 2020. Each additional adjustment will occur on each January 1. Under the proposed plan, the District will maintain a positive net income and will meet the 5-year financial reserve targets by Calendar Year End 2023. Although these are the anticipated revenue adjustments for each year of the Study Period, the District will review and confirm the required revenue adjustments on a yearly basis, which will account for any water transfer revenue to mitigate rate increases and/or reach minimum reserve levels prior to CY 2023.

Applying these adjustments results in the proposed financial plan in Table 4-9 (see Appendix A – Exhibit A-2 for a detailed financial plan). The line for Rate Revenues includes the additional revenue from the revenue adjustments assuming they become effective January 1 of each year. The rates presented in Section 5.4 are based on this financial plan.

Table 4-9: Recommended Water Financial Plan

Line #	Category	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024
1	**Revenues**					
2	Rate Revenues	$45,758,787	$47,589,138	$49,016,812	$50,487,317	$52,001,936
3	Other Revenues	$2,283,361	$2,369,969	$2,368,797	$2,373,511	$2,372,119
4	**Total Revenues**	**$48,042,148**	**$49,959,108**	**$51,385,609**	**$52,860,828**	**$54,374,055**
5						
6	**Less: Expenditures**					
7	Water Costs	$3,847,131	$4,039,488	$4,241,462	$4,453,535	$4,676,212
8	Groundwater	$498,745	$523,682	$549,866	$577,359	$606,227
9	Electrical Costs	$1,711,381	$1,796,950	$1,886,797	$1,981,137	$2,080,194
10	Water Conservation	$31,620	$32,252	$32,897	$33,555	$34,227
11	Salaries	$5,602,298	$5,770,367	$5,943,478	$6,121,782	$6,305,436
12	Benefits	$5,301,610	$5,647,686	$6,015,836	$6,407,588	$6,824,574
13	Supplies	$1,274,290	$1,302,635	$1,331,636	$1,361,309	$1,391,670
14	Finance & Administration	$2,247,764	$2,292,719	$2,338,573	$2,385,345	$2,433,052
15	Engineering	$2,382,533	$2,431,785	$2,482,072	$2,533,416	$2,585,839
16	General	$591,945	$604,569	$617,486	$630,702	$644,226
17	Maintenance	$682,436	$703,655	$725,534	$748,093	$771,353
18	Meters	$861,000	$881,000	$775,000	$0	$0
19	**Subtotal Operating Expenditures**	**$25,032,753**	**$26,026,788**	**$26,940,639**	**$27,233,823**	**$28,353,010**
20	Total Debt Service	$7,426,107	$7,432,995	$7,404,113	$5,668,864	$5,712,244
21	**Total Expenditures**	**$32,458,859**	**$33,459,783**	**$34,344,751**	**$32,902,687**	**$34,065,254**
22						
23	**Net Cashflow** *(Line 4 – Line 21)*	**$15,583,288**	**$16,499,324**	**$17,040,858**	**$19,958,141**	**$20,308,801**
24						
25	**Reserves**					
26	Beginning Reserve Balance	$38,055,990	$33,417,612	$35,169,855	$40,126,387	$44,686,808
27	Net Cashflow *(Line 23)*	$15,583,288	$16,499,324	$17,040,858	$19,958,141	$20,308,801
28	Interest Income	$543,333	$515,919	$577,674	$673,281	$766,694
30	CIP Expenditures *(Table 4-8)*	($20,765,000)	($15,263,000)	($12,662,000)	($16,071,000)	($16,271,000)
31	**Ending Reserve Balance**	**$33,417,612**	**$35,169,855**	**$40,126,387**	**$44,686,808**	**$49,491,303**

Figure 4-4 through Figure 4-6 display the CY 2020 through CY 2024 financial plan in graphical format. Figure 4-4 illustrates the operating position of the District where expenses, inclusive of reserve funding, are shown by stacked bars and total revenues at both current rates and recommended rates are shown by the horizontal trend lines.

Figure 4-4: Proposed Operating Financial Plan

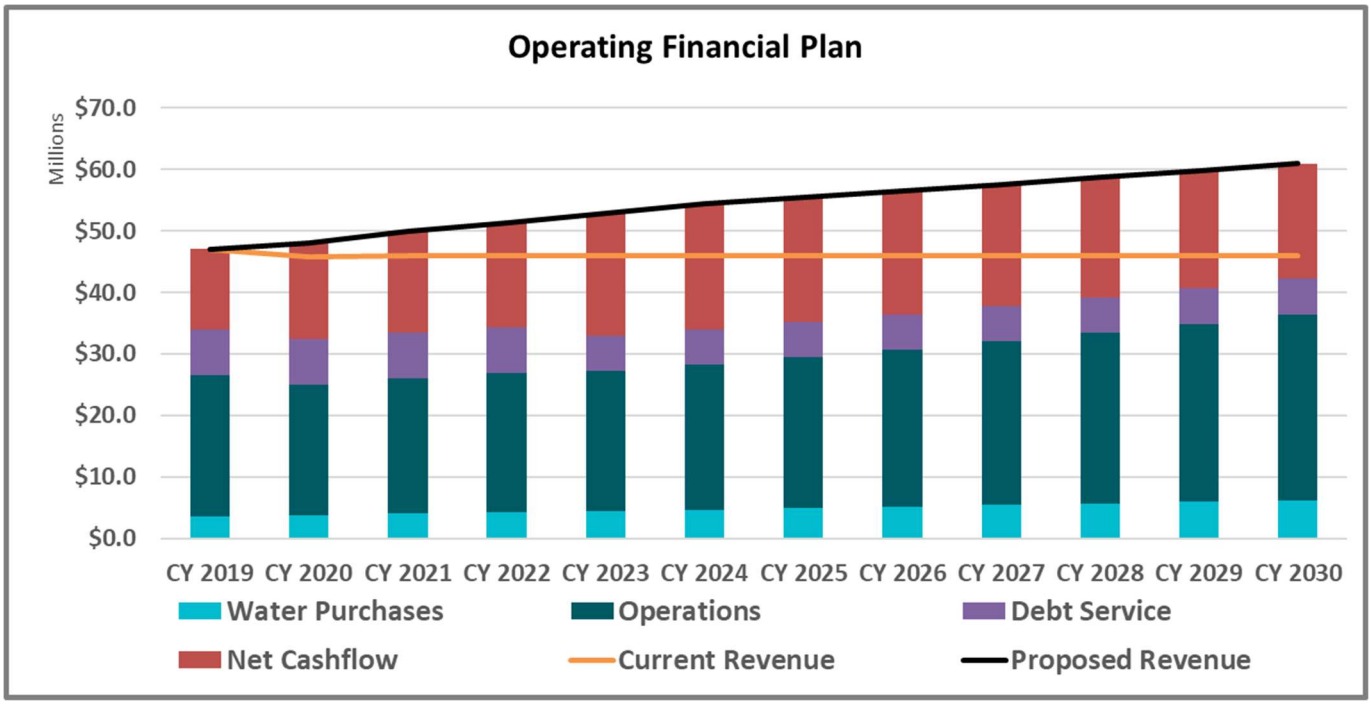


Figure 4-5 summarizes the projected CIP and its funding sources (100% PAYGO).

Figure 4-5: Projected Capital Improvement Plan and Funding Source

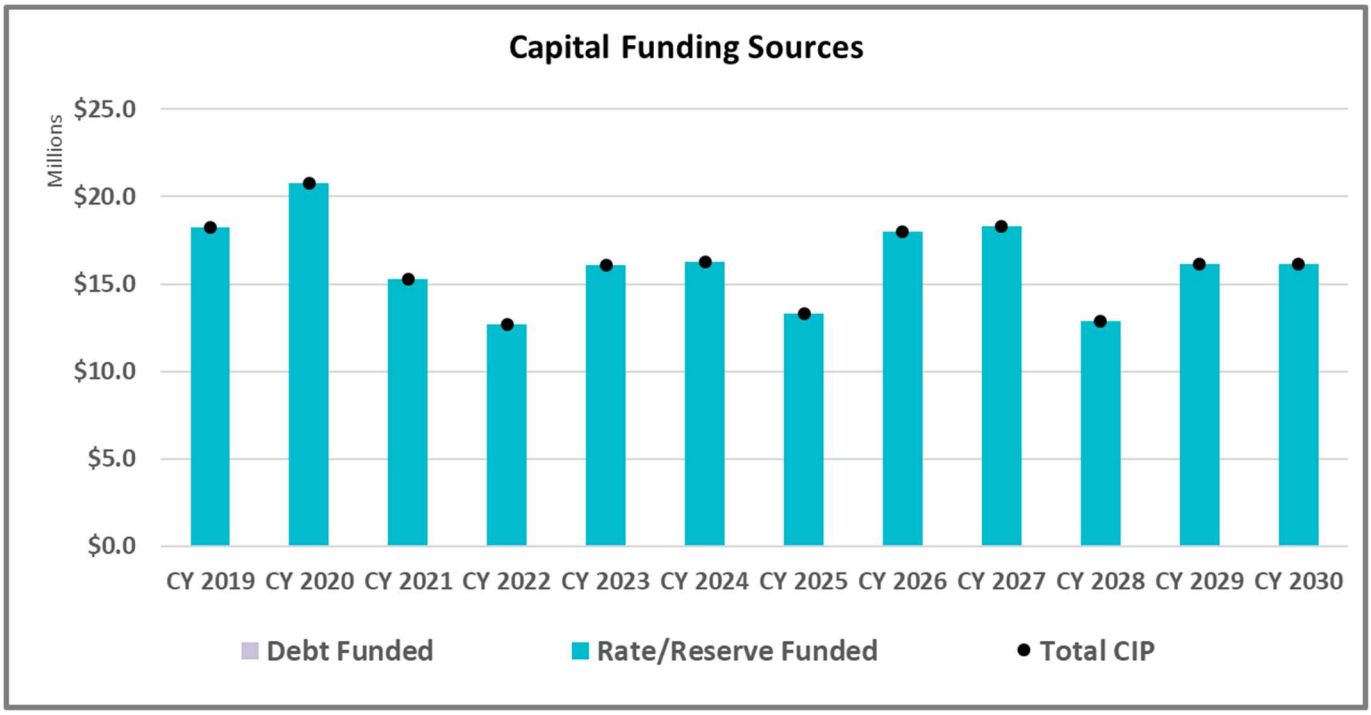
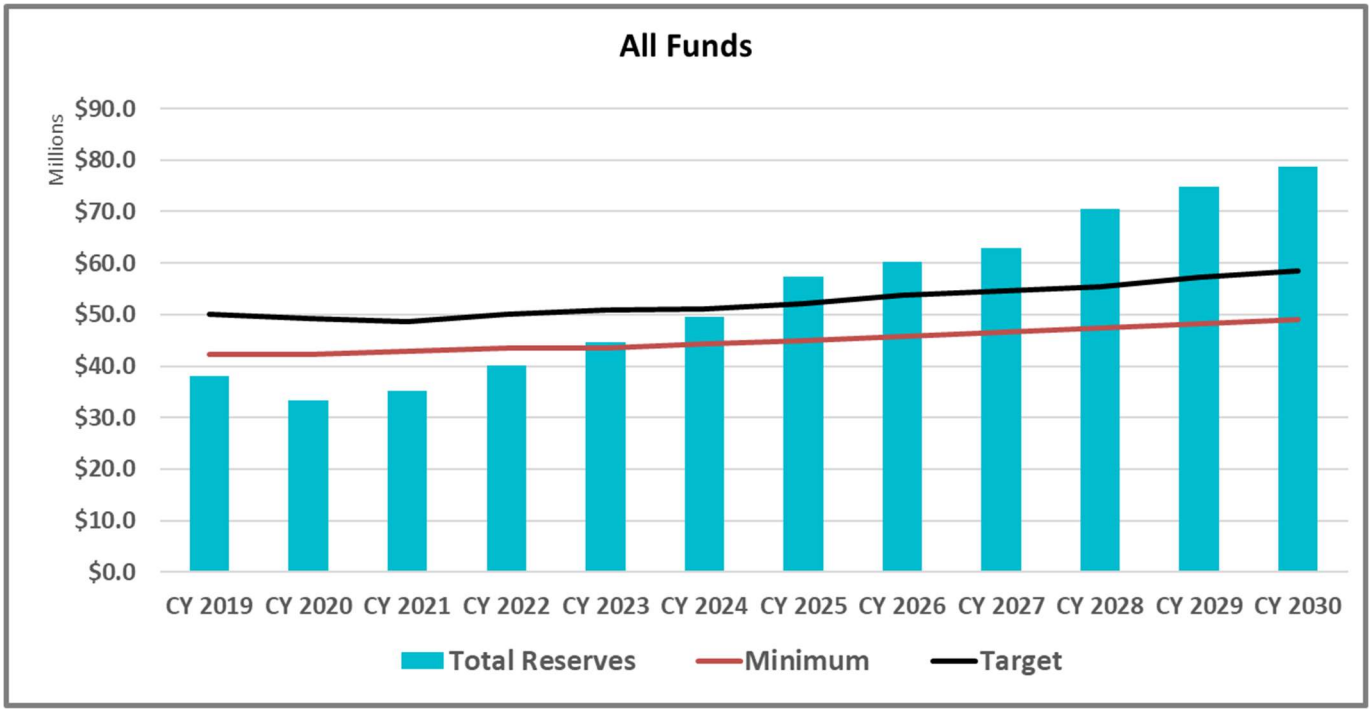


Figure 4-6 displays the ending total reserve balance for the water utility, inclusive of operating and capital funds. The horizontal trend lines indicate the minimum and target reserve balances and the bars indicate ending reserve balance. No new debt is proposed to be issued as part of the proposed five-year financial plan.

Figure 4-6: Projected Operating Fund Ending Balances



5. Cost of Service Study

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

5.1. PROPORTIONALITY

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

Individual customer demands vary depending on the nature of the utility use at the location where service is provided. For example, water service demand for a family residing in a typical single-family home is different than the water service demand for another customer class, primarily due to peak use behavior which drives the need for and costs of sizing infrastructure to meet this demand. The concept of proportionality requires that cost allocations consider both the average quantity of water consumed (base) and the peak rate at which it is consumed (peaking). Use of peaking is consistent with the cost of providing service because a water system is designed to meet peak demands, and the additional costs associated with designing, constructing and maintaining facilities required to meet these peak demands need to be allocated to those customers whose usage requires the need to size facilities to meet peak demand.

In allocating the costs of service, the industry standard, as promulgated by AWWA's M1 Manual, is to group customers with similar system needs and demands into customer classes. Rates are then developed for each customer class, with each individual customer paying the customer class' proportionate, average allocated cost of service.

Generally speaking, customers place the following demands on the District's water system and water supply:

- The system capacity[12] (for treatment, storage, and distribution) that must be maintained to provide reliable service to all customers at all times
- The level of water efficiency as a collective group
- The number of customers requiring customer services such as bill processing, customer service support, and other administrative services

A customer class consists of a group of customers, with common characteristics, who share responsibility for certain costs incurred by the utility. Joint costs are proportionately shared among all customers in the system based on their service requirements.

[12] System capacity is the system's ability to supply water to all delivery points at the time when demanded.

5.2. COST OF SERVICE PROCESS

A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class. Figure 5-1provides a general overview of a cost-of-service analysis. Each step shown below will be described in greater detail in the next section.

Figure 5-1: Cost of Service Process

5.3. COST OF SERVICE ANALYSIS

5.3.1. Step 1 – Determine Revenue Requirement

In this Study, water rates are calculated for CY 2020 (known as the Test Year), by calculating water purchase costs and by using the District's CY 2019 budget and inflationary factors. Test Year revenue requirements are used in the cost allocation process. Subsequent years' revenue adjustments are incremental and the rates for future years are based on 4.0% revenue adjustments in CY 2021 and 2022 and 3.0% revenue adjustments in CY 2022 and 2023 and are applied across-the-board. The District should review the cost of service analysis at least once every five years to ensure that the rates are consistent with the costs of providing service.

The revenue requirement determination is based upon the premise that the utility must generate annual revenues to meet Supply, O&M expenses, any debt service needs, reserve levels, and capital investment needs. Deductions are made to account for the required net cashflows (found in Table 4-9 – Line 23) [13] and any mid-year adjustment[14]. CY 2018 cost of service to be recovered from the District's water customers is shown in Table 5-1.

[13] For the purposes of this Study, capital investments are funded through the Capital Assets Fund. Meeting the minimum reserve target ensures the capital projects can be funded each year of the Study Period.
[14] The revenue requirement needs to be based on the revenue needs for a full calendar year. Since the rates in CY 2020 were assumed to be in effect for 12 months, there is no mid-year adjustment.

Table 5-1: Revenue Requirements

Line #	Revenue Requirements	Specific Allocation	Operating	Capital	Total
1	**Operating Costs**				
2	Water Costs	$3,847,131			$3,847,131
3	Groundwater	$498,745			$498,745
4	Electrical Costs	$1,711,381			$1,711,381
5	Water Conservation		$31,620		$31,620
6	Salaries		$5,602,298		$5,602,298
7	Benefits		$5,301,610		$5,301,610
8	Supplies		$1,274,290		$1,274,290
9	Finance & Administration		$2,247,764		$2,247,764
10	Engineering		$2,382,533		$2,382,533
11	General		$591,945		$591,945
12	Maintenance		$682,436		$682,436
13	**Subtotal Operating Costs**	**$6,057,257**	**$18,975,496**	**$0**	**$25,512,535**
14					
15	**Debt Service**				
16	2009A Adjustable Rate Refunding COPS			$1,534,308	$1,534,308
17	2012A Refunding Revenue Bond			$2,848,225	$2,848,225
18	2018A Taxable Refunding Revenue Bonds			$3,043,573	$3,043,573
19	**Subtotal Debt Service**	**$0**	**$0**	**$7,426,107**	**$7,426,107**
20					
21	**Total Revenue Requirements**	**$18,975,496**	**$7,426,107**	**$32,458,859**	**$18,975,496**
22					
23	**Less: Revenue Offsets**				
24	Wheeling Revenue	$730,000			$730,000
25	Interest Income		$79,361		$79,361
26	Other Revenue		$400,000		$400,000
27	Backflow Device Revenue		$112,000		$112,000
28	Private Fire Service Line Revenues		$962,000		$962,000
29	**Total Revenue Offsets**	**$730,000**	**$1,553,361**	**$0**	**$2,283,361**
30					
31	**Less: Adjustments**				
32	Adjustment for Cash Balance		($1,558,329)	($14,024,960)	($15,583,288)
33	Adjustment for Mid-Year Increase		$0		$0
34	**Total Adjustments**	**$0**	**($1,558,329)**	**($14,024,960)**	**($15,583,288)**
35					
36	**Revenue Requirements from Rates**	**$5,327,257**	**$18,980,464**	**$21,451,066**	**$45,758,787**

5.3.2. Step 2 – Functionalize O&M Costs

O&M Functionalized Expenses

A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class. After determining a utility's revenue requirement, the total cost of water service is analyzed by system functions to proportionately distribute costs in relation to how that cost is generally incurred. The water utility costs were categorized into the following **functions**:

- **Water Costs** – Costs incurred to purchase water
- **Groundwater** – Costs incurred related to pumping and treating groundwater
- **Electrical Costs** – Utilities, gas, and lights related to water pumping
- **Water Conservation** – Rebates for water efficiency
- **Salaries** – Salaries & wages
- **Benefits** – Employee benefits and training
- **Supplies** – Operating supply and material costs
- **Finance & Administration** – Includes costs for insurance, legal, financial, and consulting services
- **Engineering** - Includes construction and contract services, licenses, permits, inspection, and leases
- **General** – Overhead costs
- **Maintenance** – Includes maintenance expenses for equipment, vehicles, and buildings
- **Debt Service** – Principle and Interest costs related to existing/outstanding debt

Table 5-2 summarizes the functionalized costs prior to any offset adjustments (Lines 24 to 28 Table 5-1).

Table 5-2: Functionalized Expenses

Functionalized Expenses	CY 2020 Functionalized Expenses
Water Costs	$3,847,131
Groundwater	$498,745
Electrical Costs	$1,711,381
Water Conservation	$31,620
Salaries	$5,602,298
Benefits	$5,301,610
Supplies	$1,274,290
Finance & Administration	$2,247,764
Engineering	$2,382,533
General	$591,945
Maintenance	$682,436
Debt Service	$7,426,107
Total O&M Expenses	**$32,458,859**

Functionalized Assets

Similar to O&M, assets are also functionalized. The District provided Raftelis with a comprehensive listing of assets[15] for the water utility, which were functionalized based on the asset's purpose. Table 5-3 summarizes the functionalized assets.

[15] A detailed asset listing is on file with the District.

Table 5-3: Functionalized Assets

Functionalized Assets	CY 2020 Functionalized Assets
Build Imp	$1,039,226
Building	$2,211,858
Capacity Entitl	$3,107,034
Computer	$371,592
Easements	$4,843,707
Fleet	$550,670
Land	$2,702,484
Land Imp	$226,535
M & E	$160,347
Meters	$15,594,926
O F & F	$83,383
Reservoirs	$13,930,421
Software	$512,605
T & D < 75 Yrs	$85,545,564
T & D > 75 Yrs	$200,520,245
Wells	$53,467,646
Build Imp	$1,039,226
Total Assets	**$384,868,244**

5.3.3. Step 3 – Allocate Functionalized Costs to Cost Components

The functionalization of costs allows us to better allocate the costs based on how the costs are incurred. This is commonly referred to as **cost causation**. Essentially, cost causation means that the District incurs a cost of providing service because of the demands or burdens the customer places on the system and water resources. Raftelis used the Base-Extra Capacity method to allocate the functionalized costs to various rate components (cost causation components), as described in the M1 Manual. The District's costs were allocated to the following cost causation components:

1. **Customer Service** includes customer related costs such as billing, collecting, customer accounting, and customer call center. These costs are incurred at the same level regardless of the type of land use or the total amount of water that the utility delivers.
2. **Meter Capacity** includes maintenance and capital costs associated with serving meters. These costs are assigned based on the meter size or equivalent meter capacity.
3. **Capital Facilities** is a cost component dedicated to funding a portion of capital repair and replacement that is recovered as part of the fixed charge
4. **Purchased Water** is the cost associated with imported water costs from other agencies, including but not limited to, San Juan Water District, Placer County Water Agency (PCWA) and US Bureau of Reclamation.
5. **Groundwater** includes the cost of energy and chemicals related to the production of local groundwater
6. **Base** are those operating and capital costs of the water system associated with serving customers at a constant, or average, rate of use. These costs tend to vary with the total quantity of water used.
7. **Peaking Costs** or Extra Capacity Costs represent those costs incurred to meet customer peak demands for water in excess of average day usage. Total extra capacity costs are associated with maximum day and maximum hour demands. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour (Max Hour) demand is the maximum usage in an hour on the maximum usage day (Max Day). Various facilities are designed to meet customer peaking needs. For example, reservoirs are designed to meet Max Day requirements and have to be designed larger than they would be if

the same amount of water were being used at a constant rate throughout the year. The cost associated with constructing a reservoir is based on system wide peaking factors. For example, if the Max Day factor is 2.0, then certain system facilities must be designed larger than what would be required if the system only needed to accommodate average daily demand. In this case, half of the cost would be allocated to Base (or average day demand) and the other half allocated to Max Day. The calculation of the Max Hour and Max Day demands is explained below.

Allocating costs into these components allows us to distribute these cost components to the various customer classes based on their respective base, extra capacity, and customer requirements for service.

To allocate costs to delivery and peaking cost components, system peaking factors are used. The base demand is assigned a value of 1.0 signifying no peaking demands. The Max Day and Max Hour factors shown in Table 5-4 were based on the District's Waster Master Plan Update. A max day peaking factor of 2.0 means that the system delivers approximately 2.0 times the average daily demand during a peak day.

Table 5-4: System-Wide Peaking Factors

	Factor	Base	Max Day	Max Hour
Base	1.00	100%	0%	0%
Max Day	2.00	50%	50%	0%
Max Hour	3.00	33%	33%	33%

Specific Allocation

The Specific expenses consists of three functionalized categories: Water Costs, Groundwater, and Electrical Costs. Table 5-5 details the breakdown of these specific allocation costs. The resulting Specific Allocation (%) will be used to allocate the Specific Allocation Requirement, including any revenue offsets that directly connect to the costs incurred, such as wheeling within Table 5-1. The Water Costs were allocated 100% to the Purchased Water cost component as these costs are directly related to the cost of purchasing water. The Groundwater costs were allocated 100% to the Groundwater cost component as these costs are directly related to the cost of groundwater production. To ensure the electrical costs only reflects the costs incurred to pump water to the District, Raftelis specifically allocated Electrical Costs. This prevents the electrical costs from being impacted by revenue adjustments, revenue offsets, or mid-year adjustments. Electrical costs are allocated between groundwater and base. The majority of the electrical costs are related to pumping groundwater with the portion allocated to Base reflecting the electrical costs associated with administration buildings.

Table 5-5: Specific Allocation

Functionalized Expenses	Cost Components			
	Purchased Water	Groundwater	Base	Total
% Allocation				
Water Costs	100%			**100%**
Groundwater		100%		**100%**
Electrical Costs		90%	10%	
$ Allocation				
Water Costs	$3,847,131			**$3,847,131**
Groundwater		$498,745		**$498,745**
Electrical Costs		$1,540,243	$171,138	**$1,711,381**
Total Specific Allocation	**$3,847,131**	**$2,038,987**	**$171,138**	**$6,057,257**
Specific Allocation (%)	**63.5%**	**33.7%**	**2.8%**	**100%**

O&M Allocation

The O&M expenses consist of eight functionalized categories: Salaries, Supplies, Finance & Administration, Engineering, General, Maintenance, Water Conservation, and Meters. Raftelis reviewed the budget details related to the Operating Expenses to determine the most appropriate method for allocating the functional costs to cost causation components. Table 5-6 summarizes the percent allocations for the District O&M Expenses, the costs (prior to offsets and adjustments) allocated to the cost components, and the resulting O&M Allocation (%). The O&M Allocation (%) will be used to allocate the Operating Requirement, including any revenue offsets or adjustments, from the revenue requirements (Table 5-1). Table 5-6 allocates the O&M expenses to each cost causation component.

Salaries were allocated between fixed recovery and variable recovery. Half of the Salary expenses were allocated as a fixed cost and recovered over meter capacity to meet the recommended 6 months operating reserve target by recovering salary expenses in a stable and consistent manner. The remaining 50% of salary expenses were allocated to variable recovery based on the District's max day allocations to account for the District's daily staffing requirements to meet max day demands on the system. Supplies were also allocated to fixed and variable with 50% to fixed based on meter capacity and 50% to variable and recovered as base service need to meet ongoing operation needs. Finance & Administration and General costs related to customer service and billing were allocated to the Customer Service cost component. Engineering, Maintenance, and Water Conservation were allocated based on Max Hour since the system was designed to meet max hour requirements.

Table 5-6: O&M Allocation

Functionalized Expenses	Cost Components					Total
	Customer Service	Meter Capacity	Base	Max Day	Max Hour	
% Allocation						
Salaries		50%	25%	25%		**100%**
Supplies		50%	50%			**100%**
Finance & Administration	100%					
Engineering			33%	33%	33%	
General	100%					
Maintenance			33%	33%	33%	
Water Conservation			33%	33%	33%	
Meters		100%				**100%**
$ Allocation						
Salaries		$2,801,149	$1,400,575	$1,400,575		**$5,602,298**
Supplies		$637,145	$637,145			**$1,274,290**
Finance & Administration	$2,247,764					**$2,247,764**
Engineering			$794,17	$794,178	$794,178	**$2,382,533**
General	$591,945					**$591,945**
Maintenance			$227,479	$227,479	$227,479	**$682,436**
Water Conservation			$10,540	$10,540	$10,540	**$31,620**
Meters		$861,000				**$861,000**
Total O&M Expense	**$2,839,708**	**$4,299,294**	**$3,069,916**	**$2,432,771**	**$1,032,196**	**$13,673,885**
O&M Allocation (%)	**20.8%**	**31.4%**	**22.5%**	**17.8%**	**7.5%**	**100%**

Capital Allocation

It is appropriate to allocate capital costs based on the allocation of system assets. Allocating capital costs individually from year to year would cause the costs to different cost causation components to change significantly from year to year based on the type of projects and would lead to rate spikes. Using the assets for allocation allows a consistent stream of costs to the different cost causation components, and is a rational methodology, consistent with industry practice, given that the assets all must be replaced over time. Table 5-7 summarizes the percent allocations for the capital assets, the replacement cost asset values by asset category as provided within the District's detailed asset listing[16] allocated to the Capital Facilities cost component, and the resulting Capital Allocation (%). The Capital Allocation (%) will be used to allocate debt service (since it will be used to cover capital costs), including any revenue offsets or adjustments, from the revenue requirements (Table 5-1).

[16] Detailed Asset listing is on file with the District.

Table 5-7: Capital Allocation

	Cost Components	
Capital Assets	**Capital Facilities**	**Total**
% Allocation		
Build Imp	100%	**100%**
Building	100%	**100%**
Capacity Entitl	100%	**100%**
Computer	100%	**100%**
Easements	100%	**100%**
Fleet	100%	**100%**
Land	100%	**100%**
Land Imp	100%	**100%**
M & E	100%	**100%**
Meters	100%	**100%**
O F & F	100%	**100%**
Reservoirs	100%	**100%**
Software	100%	**100%**
T & D < 75 Yrs	100%	**100%**
T & D > 75 Yrs	100%	**100%**
Wells	100%	**100%**
$ Allocation		
Build Imp	$1,039,226	**$1,039,226**
Building	$2,211,858	**$2,211,858**
Capacity Entitl	$3,107,034	**$3,107,034**
Computer	$371,592	**$371,592**
Easements	$4,843,707	**$4,843,707**
Fleet	$550,670	**$550,670**
Land	$2,702,484	**$2,702,484**
Land Imp	$226,535	**$226,535**
M & E	$160,347	**$160,347**
Meters	$15,594,926	**$15,594,926**
O F & F	$83,383	**$83,383**
Reservoirs	$13,930,421	**$13,930,421**
Software	$512,605	**$512,605**
T & D < 75 Yrs	$85,545,564	**$85,545,564**
T & D > 75 Yrs	$200,520,245	**$200,520,245**
Wells	$53,467,646	**$53,467,646**
Total Capital Assets	**$384,868,244**	**$384,868,244**
Capital Allocation (%)	**100%**	**100%**

The next step is to use the allocation percentages developed in the preceding section to allocate the Test Year revenue requirements to cost components. The Revenue Requirements (Table 5-1, Line 36) were allocated to cost components as summarized in Table 5-8. Specific revenue requirements were allocated based on the Specific Allocation percent from Table 5-5. Operating revenue requirements were allocated based on the O&M Allocation percent from Table 5-6 and Capital revenue requirements were allocated based on the Capital Allocation percent from Table 5-7.

Table 5-8: Cost of Service Requirements

Revenue Requirement	Customer Service	Meter Capacity	Capital Facilities	Purchased Water	Groundwater	Base	Max Day	Max Hour	Total
Specific Water Costs				$3,847,131	$2,038,987	$171,138			**$6,057,257**
Specific Water Offsets				($730,000)					**($730,000)**
Operating	$3,941,746	$5,967,769				$4,261,293	$3,376,884	$1,432,772	$18,980,464
Capital			$21,451,066						$21,451,066
Cost of Service Requirement	**$3,941,746**	**$5,967,769**	**$21,451,066**	**$3,117,131**	**$2,038,987**	**$4,432,431**	**$3,376,884**	**$1,432,772**	**$45,758,787**

Before we can allocate the net revenue requirements from Table 5-8 to customer class we first need to define the rate structure. Therefore, Step 4 will be discussed in Section 5.4.5.

5.4. RATE DESIGN

A key component of the Study includes evaluating the current rate structures and determining the most appropriate structures to model moving forward. In this step, we have some flexibility as Proposition 218 does not specify the type of rate structure so long as the rates are based on the cost of service (as developed in the preceding section). The following subsections discuss the proposed rate structures, customer classes, and tier definitions for the water utility. Similar to the District's current rate structure, the proposed rates will include a monthly Meter Service Charge for Metered customers, a monthly Flat Service Charge for unmetered customers, a monthly Capital Facilities Charge for all meters or connections, a variable Usage Charge for Metered customers, and a Flat Usage Charge per 1,000 square feet for unmetered.

Tiered Rates, when properly designed and differentiated by customer class as done in this Study, allow a water utility to send consistent price incentives for conservation to customers. Due to the heightened interest in water conservation, tiered rates have seen widespread use, especially in the State of California. The proposed variable rate structures vary by customer class and are discussed below.

5.4.1. Single-Family Residential Water Rate Structure

Metered Single-Family Residential (SFR) customers are currently charged a volumetric use charge on an inclining 2-tier rate structure, where price per unit increases with each tier. Raftelis recommends retaining the 2-tiered rate structure for all residential customers as it provides a straight-forward connection between available water supplies and tiered allotments. The first tier is based on the amount of groundwater allocated to the number of residential accounts. Through this method, the Tier 1 allotment is 15 ccf and is designed to recover the costs associated with delivering groundwater for all providing water for all SFR accounts. Tier 2 would capture any usage above 15ccf, which would be fulfilled through purchased water supplies. The current and recommended tier widths are shown in Table 5-9.

Table 5-9: Single-Family Residential Tier Adjustments

Customer Class / Tiers	Current Tier Width (ccf)	Recommended Tier Width (ccf)
Single-Family Residential		
Tier 1	0-10 ccf	0-15 ccf
Tier 2	>11 ccf	>16 ccf

5.4.2. Multi-Family Residential Water Rate Structure

Raftelis recommends creating a Multi-Family Residential (MFR) customer class with a uniform rate structure. For this Study, MFR accounts are those with more than three residential units. Because the number of units vary between multi-family complexes and each complex has a master meter to serve the total units, a uniform rate structure based on a blended rate is more equitable between MFR accounts. The blended uniform rate would account for groundwater available per account and the amount of purchased water needed to cover the remaining demand. Although implementing uniform rates is recommended, it is important to note that the customer class is still paying its proportionate share of the costs of providing the service based on the demand and burdens the class places on the system and is not being subsidized by another customer class.

5.4.3. Non-Residential Water Rate Structure

Raftelis recommends moving from a seasonal rate structure to a uniform rate for Commercial or Non-Residential accounts. Although implementing uniform rates is recommended, similar to Multi-Family Residential customer class, it is important to note that the customer class is still paying its proportionate share of the costs of providing the service based on the demand and burdens the class places on the system and is not being subsidized by another customer class. A uniform rate provides the most appropriate and equitable rate structure between accounts within this customer class.

5.4.4. Usage Under Proposed Rate Structure

The proposed customer class usage and tiered usage is shown in Table 5-10. Since the recommended Tier 1 allotment increases the width of Tier 1 for SFR customers, usage in Tier 1 will increase when compared to the current rate structure (assuming the same level of usage). For example, a SFR customer using 20 units under the current structure would be billed 10 units at the Tier 1 rate and 10 units at the Tier 2 rate. Under the proposed tier structure, the same customer using 20 units would be billed 15 units at the Tier 1 rate and 5 units at the Tier 2 rate. Table 5-10 shows the usage under the current tier structure by customer class and the usage under the proposed tier structure by customer class. Note that the total usage of 13,137,767 ccf is the same regardless of tier structure – only the usage distribution in each tier is affected.

Table 5-10: Usage by Customer Class and Tier

Customer Class	Current Tier Structure (ccf)	Proposed Tier Structure (ccf)
Single-Family Residential		
Tier 1	2,663,329	3,404,114
Tier 2	3,301,829	2,561,044
Multi-Family Residential	2,989,542	2,989,5420
Non-Residential	2,997,020	2,997,020
Non-Metered	1,186,046	1,186,046
Total	**13,137,767**	**13,137,767**

5.4.5. Step 4 – Distribute Cost Components to Customer Classes and Tiers

To allocate costs to different customer classes, unit costs of service need to be developed for each cost causation component. The unit costs of service are developed by dividing the total annual costs allocated to each parameter by the total annual service units of the respective component. The annual units of service for each cost component from Table 5-8 are derived below and have been rounded up to the nearest whole penny.

Fixed Charge Recovery

Customer Service Component

These costs are incurred at the same level regardless of the type of land use or the total amount of water that the utility delivers, therefore, the Customer Service component is based on the number of bills and does not fluctuate with increases in meter size. The number of bills can be determined by multiplying the number of accounts, 45,526 (39,567 Metered + 5,959 Non-Metered), times the number of billing periods, twelve (12), in a year. The total Customer Service revenue requirement from Table 5-8 of $3,941,746 is divided by the number of bills to determine the unit cost of service shown in Table 5-11.

Table 5-11: Customer Service Component – Unit Rate

Customer Service Component	
Customer Service Revenue Requirements	$3,941,746
÷ # of Bills (45,526 x 12)	546,312
Monthly Unit Rate	**$7.22**

Meter Capacity Component

The Meter Capacity Component includes costs related to maintenance and capital costs. Raftelis allocated these cost components based on meter size. In order to create parity across the various meter sizes, each meter size is assigned a factor relative to a 5/8" meter, which is given a value of one (1). Larger meters have the potential to demand more capacity, or said differently, exert more peaking characteristics compared to smaller meters. The potential capacity demand (peaking) is proportional to the potential flow through each meter size. For the purposes of this study, the safe maximum operating capacity by meter type, as identified in the AWWA M1 Manual, 6th Edition, Table B-2, was used as a basis for calculating the equivalent meter ratio. As shown in Table 5-12, the safe maximum operating capacity for each meter was divided by the base meters safe operating capacity (20 gpm) to determine the equivalent meter ratio. The ratios represent the potential flow through each meter size compared to the flow through a 5/8" meter. Multiplying the number of meters by the AWWA Ratio results in the Equivalent Meter Units (EMUs).

Table 5-12: Equivalent Meter Units

Meter Size	AWWA Capacity (gpm) [A]	Capacity Ratio [B] (A ÷ 20)	Number of Metered Accounts [C]	Number of Non-Metered Accounts [D]	Total Number of Accounts [E]	Equivalent Meter Units [F] (B x E)	Annual EMUs [G] (F x 12)
5/8"	20	1.00	2,174		2,174	2,174	26,088
3/4"	30	1.50	30,609	5,939	36,548	54,822	657,864
1"	50	2.50	3,927	20	3,947	9,868	118,410
1-1/2"	100	5.00	1,012		1,012	5,060	60,720
2"	120	6.00	1,403		1,403	11,224	134,688
3"	300	15.00	306		306	4,896	58,752
4"	600	30.00	104		104	2,600	31,200
6"	1,350	67.50	27		27	1,350	16,200
8"	1,800	90.00	4		4	360	4,320
10"	2,400	120.00	1		1	120	1,440
12"	3,375	168.75	0		0	0	0
Total			**39,567**	**5,959**	**45,526**	**92,474**	**1,109,682**

Based on these ratios and taking into consideration the number of billing periods, the total annual equivalent meters equals 1,109,682 (see Table 5-12). Table 5-13 shows the Meter Capacity costs from Table 5-8 allocated over the total annual equivalent meters.

Table 5-13: Meter Capacity Component – Unit Rate

Meter Capacity Component	
Meter Capacity Revenue Requirements	$5,967,769
÷ Annual EMU's	1,109,682
Monthly Unit Rate	**$5.38**

Capital Facilities Component

The Capital Facilities revenue requirement of $21,451,066 from Table 5-8 was allocated over the annual equivalent meters of 1,109,682 (Table 5-12). Table 5-14 summarizes the determination of the unit rate for the Capital Facilities Component.

Table 5-14: Capital Facilities Component – Unit Rate

Capital Facilities Component	
Capital Facilities Revenue Requirements	$21,451,066
÷ Annual EMU's	1,109,682
Monthly Unit Rate	**$19.34**

Variable Charge Recovery

The District provided Raftelis with the CY 2017 water production and metered sales (consumption) data. This was used to determine the expected amount of water usage generated by non-metered accounts. Table 5-15 summarizes the total water production data and takes into account a 3.5% water loss during this particular year as well as metered usage to derive the amount of expected water usage from non-metered accounts equal to approximately 1.18M ccf. This non-metered usage amount will be used when allocating the variable cost components between metered customer classes and non-metered customers.

Table 5-15: Water Production

	Volume (ccf)
Production	**13,614,266**
Less: Water Loss of 3.5%	(476,499)
Total Available	**13,137,767**
Less: Metered Sales	(11,951,721)
Expected Remaining Water Sales	**1,186,046**

Groundwater Component

The District recovers all of its groundwater costs (as shown in Table 5-5) through a variable rate from its water customers; therefore, the groundwater cost is based on the total units of groundwater available for customers irrespective of customer class. Table 5-16 shows the groundwater costs from Table 5-8 allocated over the total projected units of groundwater available to customers (less water loss) to determine the groundwater unit rate.

Table 5-16: Groundwater Component – Unit Rate

Purchased Water Component	
Groundwater Revenue Requirements	$2,038,987
÷ Total Projected Available Groundwater (ccf)	8,194,680
Unit Rate (per ccf)	**$0.25**

Purchased Water Component

The District recovers all of its purchased water costs (as shown in Table 5-5) through a variable rate from its water customers; therefore, the purchased water cost is based on the total units of purchased water available for sale irrespective of customer class. shows the purchased water costs from Table 5-8 allocated over the total projected units of water available to customers (water purchased less water loss) to determine the purchased water unit rate.

Table 5-17: Purchased Water Component – Unit Rate

Purchased Water Component	
Purchased Water Revenue Requirements	$3,117,131
÷ Total Projected Available Purchased Water (ccf)	4,398,255
Unit Rate (per ccf)	**$0.71**

Base/Delivery Component

Delivery costs are those operating and capital costs of the water system associated with delivering water to all customers at a constant average rate of use. Therefore, delivery costs are spread over all units of water, irrespective of customer class, tiers or source, to calculate a uniform rate. Table 5-18 summarizes the determination of the unit rate for the Base/Delivery Component.

Table 5-18: Base/Delivery Component – Unit Rate

Base/Delivery Component	
Base/Delivery Revenue Requirements	$4,432,431
÷ Total Projected Water Sales (ccf)	13,137,767
Unit Rate (per ccf)	**$0.34**

Peaking Component

Extra capacity or peaking costs represent those costs incurred to meet customer peak demands for water in excess of a baseline usage. Total extra capacity costs are apportioned between maximum day and maximum hour demands based on the type of expense. 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 are designed to meet different peaking characteristics. Therefore, extra capacity costs include capital improvements and power related costs, and have been apportioned between base, maximum day, and maximum hour. Costs allocated to base are part of the delivery costs as defined above. The Peaking Revenue Requirements, $4,809,656, was determined by adding the Max Day Requirements of $3,376,884 and the Max Hour Requirements of $1,432,772.

Costs associated with peaking are apportioned to each defined customer class based on its total demand (total water used, weighted by a peaking factor). Peaking was calculated for four customer classes: Single-Family Residential, Multi-Family Residential, Non-Residential, and Non-Metered. Peaking for these four customer classes is based on District consumption data, which ensures that accounts within each customer class will only recover the costs allocated to their respective customer class in proportion to the cost of providing service. Table 5-19 provides the peak factor for each customer class by taking the max month usage compared to the average month usage. Table 5-20 shows the peaking costs allocated to each customer class as well as the derivation of the unit rate. The peaking cost allocated to each customer class is derived by weighting the peaking factor based on the total amount of water usage (Table 5-10) that is generating the peaking factor (product of Usage and Peaking Factor). The result is the weighted peaking factor and peak costs are apportioned based on the percentage of peak (Table 5-20 & Table 5-21). Table 5-22 summarizes the Metered and Non-Metered variable revenue requirements by component

Table 5-19: Customer Class Peaking Factors

Customer Class	Max Month Usage [A]	Average Month Usage [B]	Peaking Factor [A ÷ B]
Single-Family Residential	**942,234**	**497,097**	**1.90**
Tier 1	374,045	272,889	1.37
Tier 2	568,189	224,207	2.53
Multi-Family Residential	**366,065**	**249,129**	**1.47**
Non-Residential	**444,133**	**249,752**	**1.78**
Non-Metered[17]			**1.90**

Table 5-20: Peaking Costs Allocated to Classes

Customer Class	Projected Usage (ccf) [A]	Peaking Factor [B]	Weighted Peaking Factor (A x B) = [C]	% Allocation [D]	Revenue Requirements ($4,809,656 x D) [E]	Unit Rate (E ÷ A) = [F]
Single-Family Residential	5,965,158	1.90	11,306,814	49%	$2,336,261	*Further Allocated to Tiers*
Multi-Family Residential	2,989,542	1.47	4,392,780	19%	$907,655	$0.31
Non-Residential	2,997,020	1.78	5,329,596	23%	$1,101,223	$0.37
Non-Metered	1,186,046	1.90	2,248,122	10%	$464,516	*Further Allocated*
Total	**13,137,767**		**23,277,312**	**100.0%**	**$4,809,656**	

Table 5-21: Peaking Costs Allocated to Tiers

Tiers	Projected Usage (ccf) [A]	Peaking Factor [B]	Weighted Peaking Factor (A x B) = [C]	% Allocation [D]	Revenue Requirements ($2,336,261 x D) [E]	Unit Rate (E ÷ A) = [F]
Single-Family Residential						
Tier 1	3,404,114	1.37	4,665,971	42%	$977,118	$0.29
Tier 2	2,561,044	2.53	6,490,230	58%	$1,359,143	$0.54
Total	**5,965,158**		**11,156,201**	**100.0%**	**$2,336,261**	

Table 5-22: Variable Component Revenue Requirements

Account Type	Groundwater	Purchased Water	Base	Peaking	Total
Metered	$1,772,100	$3,422,877	$4,032,281	$4,345,139	$13,572,397
Non-Metered	$266,888	$80,388	$400,149	$464,516	$1,211,941
Total	**$2,038,987**	**$3,503,264**	**$4,432,431**	**$4,809,656**	**$14,784,338**

[17] Non-Metered customers are assumed to have similar peaking as metered Single-Family Residential customers as almost all non-metered accounts are residential customers.

Non-Metered Variable Component

The total cost of service allocations to Non-Metered accounts are summed to determine the total revenue requirement. Table 5-22 shows the Non-Metered variable revenue requirements by component. The total cost of service allocation of $1,233,495 is allocated to the annual number of square feet (projected square feet from Table 4-4 multiplied by 12) the Non-Metered properties on a per 1,000 square ft basis. Table 5-23 identifies the monthly variable charge for Non-Metered customers.

Table 5-23: Non-Metered Variable Charge – Unit Rate

Base/Delivery Component	
Non-Metered Variable Revenue Requirements	$1,211,941
÷ Annual square footage (**Table 4-4** x 12)	516,739
Unit Rate (per 1,000 sq ft)	**$2.35**

5.5. PROPOSED WATER RATES

5.5.1. Fixed Charges

Currently, the District's fixed monthly water charges generate approximately 70% of total rate revenues. The new rate structure will recover approximately the same percentage of rate revenues on the fixed monthly charges. Table 5-24 summarizes the Monthly Service Charges by meter/connection size based on the unit rates developed in the Rate Design section. The Monthly Service Charges apply to both Metered and Non-Metered customers/accounts.

Table 5-24: CY 2020 Proposed Monthly Service Charges ($/Meter or $/Connection)

Meter Size	Capacity Ratio	Metered Accounts	Non-Metered Accounts	Customer Service Charge [A]	Meter Service Charge [B]	Capital Facilities Charge	CY 2020 Proposed Service Charge (A + B) = [C]
5/8"	1.00	2,174		$7.22	$5.38	$19.34	**$31.94**
3/4"	1.50	30,609	5,939	$7.22	$8.07	$29.01	**$44.30**
1"	2.50	3,927	20	$7.22	$13.45	$48.35	**$69.02**
1-1/2"	5.00	1,012		$7.22	$26.90	$96.70	**$130.82**
2"	8.00	1,403		$7.22	$43.04	$154.72	**$204.98**
3"	16.00	306		$7.22	$86.08	$309.44	**$402.74**
4"	25.00	104		$7.22	$134.50	$483.50	**$625.22**
6"	50.00	27		$7.22	$269.00	$967.00	**$1,243.22**
8"	90.00	4		$7.22	$484.20	$1,740.60	**$2,232.02**
10"	120.00	1		$7.22	$645.60	$2,320.80	**$2,973.62**
12"	168.75			$7.22	$907.88	$3,263.63	**$4,178.72**

As shown in the table above, the Customer Service Components do not vary based on meter size whereas the Meter Service and Capital Facilities charges increase as the size of the meter increases. The Meter Service Charge and Capital Facility Charge are determined by multiplying the unit costs of $5.54 and $19.30, respectively, by the appropriate capacity ratios. Applying the proposed revenue adjustments to the proposed Monthly Service Charges for each of the remaining years of the Study Period yields the proposed Monthly Service Charges shown in Table 5-25.

Table 5-25: Proposed 5-Year Monthly Fixed Monthly Charges ($/Meter or $/Connection)

Meter / Connection Size	CY 2020 Proposed Fixed Charge	CY 2021 Proposed Fixed Charge	CY 2022 Proposed Fixed Charge	CY 2023 Proposed Fixed Charge	CY 2024 Proposed Fixed Charge
Effective Date	1/1/2020	1/1/2021	1/1/2022	1/1/2023	1/1/2024
5/8"	$31.94	$33.54	$34.89	$35.94	$37.02
3/4"	$44.30	$46.52	$48.39	$49.85	$51.35
1"	$69.02	$72.48	$75.38	$77.65	$79.98
1-1/2"	$130.82	$137.37	$142.87	$147.16	$151.58
2"	$204.98	$215.23	$223.84	$230.56	$237.48
3"	$402.74	$422.88	$439.80	$453.00	$466.59
4"	$625.22	$656.49	$682.75	$703.24	$724.34
6"	$1,243.22	$1,305.39	$1,357.61	$1,398.34	$1,440.30
8"	$2,232.02	$2,343.63	$2,437.38	$2,510.51	$2,585.83
10"	$2,973.62	$3,122.31	$3,247.21	$3,344.63	$3,444.97
12"	$4,178.72	$4,387.66	$4,563.17	$4,700.07	$4,841.08

No changes were made to the rate structure for the District's Private Fire Service Line and Backflow Device charges during the COS analysis outlined in the previous section. Applying the proposed revenue adjustments to the existing charges for each of the remaining years of the Study Period yields the proposed Monthly Private Fire Line Service Charge and Monthly Backflow Device Charge shown in Table 5-28 and Table 5-29, respectively.

Table 5-26: CY 2020-2024 Proposed Monthly Private Fire Line Service Charge

Connection Size	CY 2020 Proposed Monthly Charge	CY 2021 Proposed Monthly Charge	CY 2022 Proposed Monthly Charge	CY 2023 Proposed Monthly Charge	CY 2024 Proposed Monthly Charge
2"	$13.95	$14.51	$14.95	$15.40	$15.87
3"	$26.17	$27.22	$28.04	$28.89	$29.76
4"	$42.62	$44.33	$45.66	$47.03	$48.45
6"	$84.82	$88.22	$90.87	$93.60	$96.41
8"	$150.05	$156.06	$160.75	$165.58	$170.55
10"	$234.44	$243.82	$251.14	$258.68	$266.45
12"	$261.28	$271.74	$279.90	$288.30	$296.95

Table 5-27: CY 2020-2024 Proposed Monthly Backflow Charge

	CY 2020 Proposed Monthly Charge	CY 2021 Proposed Monthly Charge	CY 2022 Proposed Monthly Charge	CY 2023 Proposed Monthly Charge	CY 2024 Proposed Monthly Charge
Per Connection	$2.31	$2.41	$2.49	$2.57	$2.65

5.5.2. Variable Rates

The components of the variable rate are added together to produce rates for each customer class. Table 5-28 shows each component rate and the final proposed CY 2020 commodity rates. Applying the proposed revenue adjustments to the proposed District commodity rates yields the proposed five-year rate schedule shown in Table 5-29.

Table 5-28: CY 2020 Proposed Monthly Commodity Rates ($/ccf)

Customer Class	Proposed Tier Width	Water Supply Component	Base Component	Peaking Component	Proposed CY 2020 Commodity Rates
Single-Family Residential					
Tier 1	0-15 ccf	$0.25	$0.34	$0.29	**$0.88**
Tier 2	>16 ccf	$0.27	$0.34	$0.54	**$1.15**
Multi-Family Residential	Uniform	$0.61	$0.34	$0.31	**$1.26**
Non-Residential	Uniform	$0.62	$0.34	$0.37	**$1.33**

Table 5-29: Proposed 5-Year Monthly Usage Charges ($/ccf)

Customer Class	CY 2020 Proposed Usage Charge	CY 2021 Proposed Usage Charge	CY 2022 Proposed Usage Charge	CY 2023 Proposed Usage Charge	CY 2024 Proposed Usage Charge
Effective Date	**1/1/2020**	**1/1/2021**	**1/1/2022**	**1/1/2023**	**1/1/2024**
Single-Family Residential					
Tier 1	$0.88	$0.93	$0.97	$1.00	$1.03
Tier 2	$1.15	$1.21	$1.26	$1.30	$1.34
Multi-Family Residential	$1.26	$1.33	$1.39	$1.44	$1.49
Non-Residential	$1.33	$1.40	$1.46	$1.51	$1.56
Flat Usage Charge (per 1,000 sq ft)	$2.35	$2.47	$2.57	$2.65	$2.73

5.5.3. Non-Metered Conversions

The District is in the process of converting its Non-Metered accounts, with plans to fully convert all remaining customers, 5,959 accounts (Table 4-2) and 43,062 square feet (Table 4-4), over the next five years with a conversion rate of 1,192 meters and 8,612 square feet per year. Table 5-30 details the number of accounts, assumed square footage, and Metered consumption that will be converted during the Study Period. Assumed square footage conversions shown on Line 2 were obtained by multiplying 8,612 square feet by 12 months. Based on 1,192 Non-Metered to Metered conversions per year at an assumed 16 ccf of metered usage (current average monthly usage of metered SFR), the amount of usage in Tier 1 would be 214,560 ccf annually (Line 5) and the amount of usage in Tier 2 would be 14,304 ccf annually (Line 6). Lines 8 and 9 in Table 5-30 reflect the cumulative usage of all Non-Metered conversions through CY 2023 and Line 18 shows the fiscal impact generated by the Non-Metered to Metered conversion.

Table 5-30: Provisional Schedule of Meter Conversions

Line #		CY 2019	CY 2020	CY 2021	CY 2022	CY 2023
1	**Meter Conversions**	1,192	1,192	1,192	1,192	1,192
2	**Assumed Sq ft Conversions**	103,344	103,344	103,344	103,344	103,344
3						
4	**Metered Consumption (ccf)**[18]					
5	Tier 1	214,560	214,560	214,560	214,560	214,560
6	Tier 2	14,304	14,304	14,304	14,304	14,304
7						
8	**Cumulative Tier 1 (ccf)**	214,560	429,120	643,680	858,240	1,072,620
9	**Cumulative Tier 2 (ccf)**	14,304	28,608	42,912	57,216	71,508
10						
11	**SFR Metered Rates ($/ccf)**					
12	Tier 1	$0.88	$0.93	$0.97	$1.00	$1.03
13	Tier 2	$1.15	$1.21	$1.26	$1.30	$1.34
14	**Non-Metered Rate ($/1,000 sq ft)**	$2.35	$2.47	$2.57	$2.65	$2.73
15						
16	Projected Converted Meter Revenue	$205,262	$433,697	$678,439	$932,621	$1,200,619
17	Non-Metered Flat Revenue[19]	$242,858	$510,519	$796,782	$1,095,446	$1,410,711
18	**Cumulative Fiscal Impact**	**($37,596)**	**($76,822)**	**($118,344)**	**($162,826)**	**($210,092)**

The shortfall of revenue shown on Line 18 of Table 5-30 will be recovered over the all monthly fixed charges. Table 5-31 shows the incremental amount added to the calculated projected number of EMUs.

Table 5-31: Adjustment to Monthly Fixed Charge Due to Conversions

Line #		CY 2019	CY 2020	CY 2021	CY 2022	CY 2023
1	Cumulative Fiscal Impact	($37,596)	($76,822)	($118,344)	($162,826)	($210,092)
2	÷ Projected Annual EMU[20]	1,109,682	1,109,682	1,109,682	1,109,682	1,109,682
3	**Projected Rate per EMU**	**$0.03**	**$0.07**	**$0.11**	**$0.15**	**$0.19**

The increase per EMU results in a revised monthly fixed charge that will be assessed in subsequent years to adjust for Non-Metered accounts that have been converted to Metered accounts, as shown in Table 5-32.

[18] Estimated increase in consumption due to conversions.
[19] Prior to conversion.
[20] Projected Annual EMUs are calculated in Table 5-12

Table 5-32: Proposed 5-Year Fixed Monthly Charges ($/Meter or $/Connection) after Conversion of Non-Metered Customers

Meter Size	CY 2020 Proposed Fixed Charge	CY 2021 Proposed Fixed Charge	CY 2022 Proposed Fixed Charge	CY 2023 Proposed Fixed Charge	CY 2024 Proposed Fixed Charge
Effective Date	1/1/2020	1/1/2021	1/1/2022	1/1/2023	1/1/2024
5/8"	$32.01	$33.65	$35.04	$36.13	$37.21
3/4"	$44.40	$46.68	$48.61	$50.13	$51.63
1"	$69.19	$72.75	$75.75	$78.12	$80.45
1-1/2"	$131.17	$137.90	$143.60	$148.11	$152.53
2"	$205.53	$216.08	$225.01	$232.07	$238.99
3"	$403.85	$424.59	$442.15	$456.03	$469.62
4"	$626.95	$659.16	$686.42	$707.97	$729.07
6"	$1,246.68	$1,310.72	$1,364.95	$1,407.81	$1,449.77
8"	$2,238.25	$2,353.23	$2,450.59	$2,527.55	$2,602.87
10"	$2,981.93	$3,135.11	$3,264.82	$3,367.35	$3,467.69
12"	$4,190.40	$4,405.66	$4,587.93	$4,732.02	$4,873.03

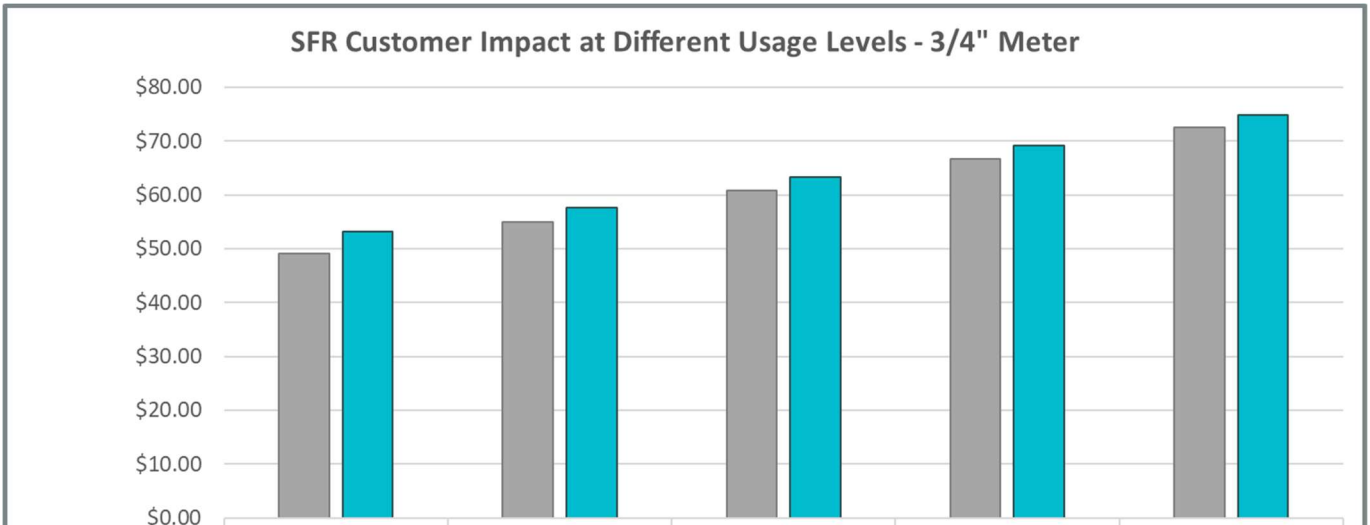
6. Customer Impacts

The following figures provide sample impacts to customers at various levels of usage. The grey bars represent the projected bills at current rates and the blue bars represent projected bills at proposed 2020 rates.

6.1. SINGLE-FAMILY RESIDENTIAL BILL IMPACTS

Figure 6-1 reflects the single-family residential (SFR) bill impacts at various usage levels for customers with a 3/4" meter.

Figure 6-1: SFR Bill Impact

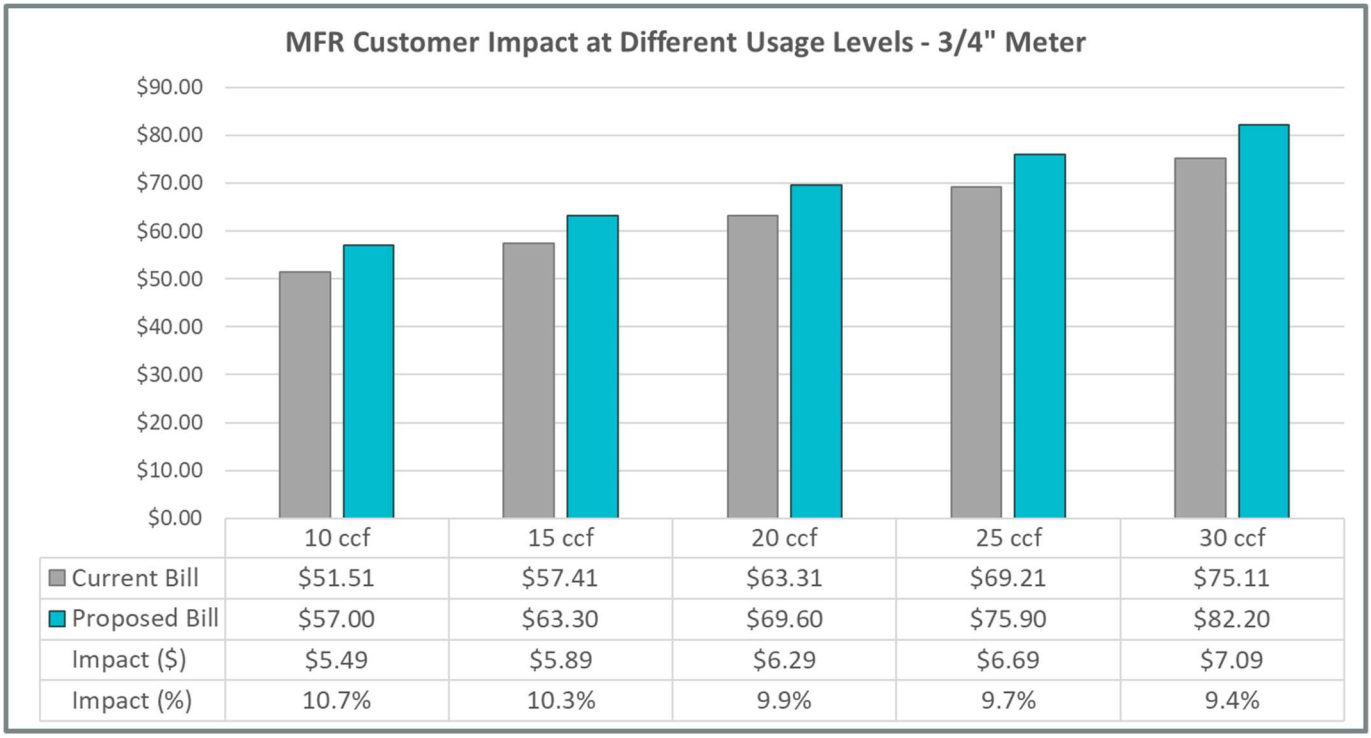


	10 ccf	15 ccf	20 ccf	25 ccf	30 ccf
Current Bill	$49.11	$54.96	$60.81	$66.66	$72.51
Proposed Bill	$53.20	$57.60	$63.35	$69.10	$74.85
Impact ($)	$4.09	$2.64	$2.54	$2.44	$2.34
Impact (%)	8.3%	4.8%	4.2%	3.7%	3.2%

6.2. MULTI-FAMILY RESIDENTIAL BILL IMPACTS

Figure 6-2 reflects the multi-family residential (MFR) impacts at various usage levels for customers with a 3/4" meter.

Figure 6-2: MFR Bill Impact

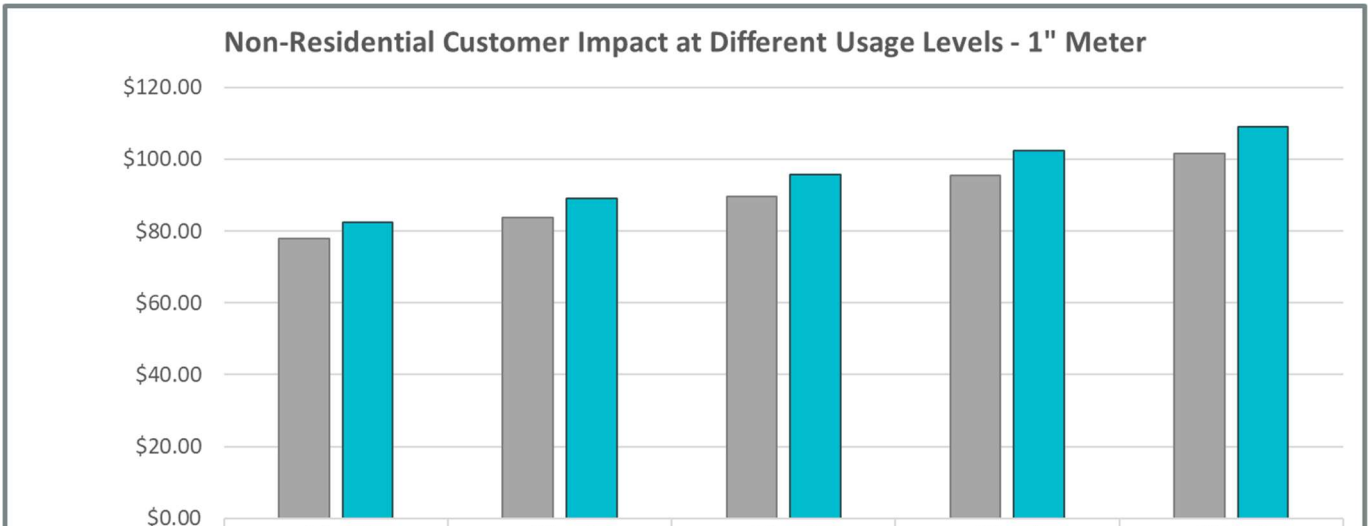


	10 ccf	15 ccf	20 ccf	25 ccf	30 ccf
Current Bill	$51.51	$57.41	$63.31	$69.21	$75.11
Proposed Bill	$57.00	$63.30	$69.60	$75.90	$82.20
Impact ($)	$5.49	$5.89	$6.29	$6.69	$7.09
Impact (%)	10.7%	10.3%	9.9%	9.7%	9.4%

6.3. NON-RESIDENTIAL BILL IMPACTS

Figure 6-3 reflects the Non-Residential impacts at various usage levels for customers with a 1" meter. This figure compares the current Peak commodity rate to the proposed CY 2020 commodity rate.

Figure 6-3: Non-Residential Bill Impact – No Pumping Zone



	10 ccf	15 ccf	20 ccf	25 ccf	30 ccf
Current Bill	$77.89	$83.79	$89.69	$95.59	$101.49
Proposed Bill	$82.49	$89.14	$95.79	$102.44	$109.09
Impact ($)	$4.60	$5.35	$6.10	$6.85	$7.60
Impact (%)	5.9%	6.4%	6.8%	7.2%	7.5%

Appendix A

Exhibit A-1 –Detailed Capital Improvement Plan

Scenario 3 - CIP Projections (adjusted)

Source: Updated based on CIP.xlsx provided by Dan Bills on 3/8/2019

Capital Improvement Plan		CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026	CY 2027	CY 2028	CY 2029	CY 2030
Supply Projects													
Supply Projects		$3,870,000	$4,800,000	$4,751,000	$1,500,000	$4,751,000	$4,751,000	$1,500,000	$4,751,000	$4,751,000	$1,500,000		
Transmission Projects													
Transmission Projects		$50,000	$180,000	$500,000	$600,000	$100,000	$600,000	$3,000,000	$2,000,000	$2,000,000	$0		
Distribution Projects													
Distribution Project		$11,000,000	$12,510,000	$7,000,000	$7,000,000	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$10,000,000		
Meter Retrofit		$2,500,000	$2,800,000	$2,092,000	$2,092,000	$0	$0	$0	$0	$0	$0		
Storage Projects													
Storage Projects		$735,000	$330,000	$20,000	$570,000	$320,000	$20,000	$380,000	$320,000	$620,000	$500,000		
Special Projects													
Special Projects		$105,000	$335,000	$900,000	$900,000	$900,000	$900,000	$900,000	$900,000	$900,000	$900,000		
CY 2017 & 2018													
10 Yr Avg (beyond 2028)	$16,440,400											$16,440,400	$16,440,400
Total Capital Improvement Plan		**$18,260,000**	**$20,955,000**	**$15,263,000**	**$12,662,000**	**$16,071,000**	**$16,271,000**	**$15,780,000**	**$17,971,000**	**$18,271,000**	**$12,900,000**	**$16,440,400**	**$16,440,400**

Exhibit A-2 –Detailed Financial Plan

Operating Cashflow

Rate Revenue + Adjustments	CY 2019	CY 2020	CY 2021	CY 2022	CY 2023	CY 2024	CY 2025	CY 2026	CY 2027	CY 2028	CY 2029	CY 2030
Revenue from Rates	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**	**$43,579,797**
Additional Revenue												
Year												
CY 2019	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
CY 2020		$2,614,788	$2,614,788	$2,614,788	$2,614,788	$2,614,788	$2,614,788	$2,614,788	$2,614,788	$2,614,788	$2,614,788	$2,614,788
CY 2021			$1,847,783	$1,847,783	$1,847,783	$1,847,783	$1,847,783	$1,847,783	$1,847,783	$1,847,783	$1,847,783	$1,847,783
CY 2022				$1,921,695	$1,921,695	$1,921,695	$1,921,695	$1,921,695	$1,921,695	$1,921,695	$1,921,695	$1,921,695
CY 2023					$1,498,922	$1,498,922	$1,498,922	$1,498,922	$1,498,922	$1,498,922	$1,498,922	$1,498,922
CY 2024						$1,543,890	$1,543,890	$1,543,890	$1,543,890	$1,543,890	$1,543,890	$1,543,890
CY 2025							$1,060,137	$1,060,137	$1,060,137	$1,060,137	$1,060,137	$1,060,137
CY 2026								$0	$0	$0	$0	$0
CY 2027									$0	$0	$0	$0
CY 2028										$0	$0	$0
CY 2029											$0	$0
CY 2030												$0
Total Additional Revenue	**$0**	**$2,614,788**	**$4,462,571**	**$6,384,266**	**$7,883,188**	**$9,427,077**	**$10,487,215**	**$10,487,215**	**$10,487,215**	**$10,487,215**	**$10,487,215**	**$10,487,215**
Revenue	**CY 2019**	**CY 2020**	**CY 2021**	**CY 2022**	**CY 2023**	**CY 2024**	**CY 2025**	**CY 2026**	**CY 2027**	**CY 2028**	**CY 2029**	**CY 2030**
Revenue from Rates	**$43,579,797**	**$46,194,585**	**$48,042,368**	**$49,964,063**	**$51,462,985**	**$53,006,874**	**$54,067,012**	**$54,067,012**	**$54,067,012**	**$54,067,012**	**$54,067,012**	**$54,067,012**
Other Revenue												
Wheeling Revenue	$730,000	$730,000	$730,000	$730,000	$730,000	$730,000	$730,000	$730,000	$730,000	$730,000	$730,000	$730,000
Water Transfers	$940,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Interest Income	$72,398	$79,820	$168,086	$167,499	$172,849	$172,145	$172,190	$178,840	$185,670	$192,932	$200,746	$209,092
Grant Income	$275,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Revenue	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000	$400,000
Backflow Revenue	$112,000	$112,000	$112,000	$112,000	$112,000	$112,000	$112,000	$112,000	$112,000	$112,000	$112,000	$112,000
FireLine Revenues	$962,000	$962,000	$962,000	$962,000	$962,000	$962,000	$962,000	$962,000	$962,000	$962,000	$962,000	$962,000
Total Other Revenue	**$3,491,398**	**$2,283,820**	**$2,372,086**	**$2,371,499**	**$2,376,849**	**$2,376,145**	**$2,376,190**	**$2,382,840**	**$2,389,670**	**$2,396,932**	**$2,404,746**	**$2,413,092**
Total Revenue	**$47,071,195**	**$48,478,405**	**$50,414,454**	**$52,335,562**	**$53,839,834**	**$55,383,019**	**$56,443,201**	**$56,449,851**	**$56,456,682**	**$56,463,944**	**$56,471,758**	**$56,480,104**
Operating Expenditures	**CY 2019**	**CY 2020**	**CY 2021**	**CY 2022**	**CY 2023**	**CY 2024**	**CY 2025**	**CY 2026**	**CY 2027**	**CY 2028**	**CY 2029**	**CY 2030**
Water Costs	$3,663,935	$3,847,131	$4,039,488	$4,241,462	$4,453,535	$4,676,212	$4,910,023	$5,155,524	$5,413,300	$5,683,965	$5,968,163	$6,266,571
Groundwater	$474,995	$498,745	$523,682	$549,866	$577,359	$606,227	$636,539	$668,366	$701,784	$736,873	$773,717	$812,403
Electrical Costs	$1,629,887	$1,711,381	$1,796,950	$1,886,797	$1,981,137	$2,080,194	$2,184,204	$2,293,414	$2,408,085	$2,528,489	$2,654,913	$2,787,659
Water Conservation	$31,000	$31,620	$32,252	$32,897	$33,555	$34,227	$34,911	$35,609	$36,321	$37,048	$37,789	$38,545
Salaries	$5,439,124	$5,711,081	$5,996,635	$6,296,466	$6,611,290	$6,941,854	$7,288,947	$7,653,394	$8,036,064	$8,437,867	$8,859,761	$9,302,749
Benefits	$5,343,184	$5,672,610	$6,022,686	$6,396,836	$6,794,588	$7,219,574	$7,671,539	$8,154,348	$8,669,000	$9,216,629	$9,850,691	$10,528,585
Supplies	$1,246,585	$1,274,290	$1,302,635	$1,331,636	$1,361,309	$1,391,670	$1,422,735	$1,454,522	$1,487,049	$1,520,333	$1,554,393	$1,589,247
Finance and Admin	$2,203,690	$2,247,764	$2,292,719	$2,338,573	$2,385,345	$2,433,052	$2,481,713	$2,531,347	$2,581,974	$2,633,614	$2,686,286	$2,740,012
Engineering	$2,334,294	$2,382,533	$2,431,785	$2,482,072	$2,533,416	$2,585,839	$2,639,366	$2,694,019	$2,749,824	$2,806,805	$2,864,986	$2,924,396
General	$579,604	$591,945	$604,569	$617,486	$630,702	$644,226	$658,066	$672,230	$686,728	$701,569	$716,761	$732,316
Maintenance	$661,857	$682,436	$703,655	$725,534	$748,093	$771,353	$795,337	$820,066	$845,564	$871,856	$898,964	$926,916
Settlement	$2,600,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Meters	$695,000	$861,000	$881,000	$775,000	$0	$0	$0	$0	$0	$0	$0	$0
Total Operating Expenditures	**$26,903,154**	**$25,512,535**	**$26,628,056**	**$27,674,627**	**$28,110,330**	**$29,384,428**	**$30,723,378**	**$32,132,841**	**$33,615,694**	**$35,175,046**	**$36,866,424**	**$38,649,397**
Debt Service												
2009A Adjustable Rate Refunding COPS	$1,534,308	$1,534,308	$1,534,308	$1,534,308	$2,679,308	$2,737,432	$2,741,997	$2,744,728	$2,750,624	$5,779,481	$5,815,865	$5,849,912
2012A Refunding Revenue Bond	$2,838,025	$2,848,225	$2,838,238	$2,818,838	$1,454,600	$1,436,850	$1,432,100	$1,419,600	$1,419,600	$0	$0	$0
2018A Taxable Refunding Revenue Bonds	$3,020,424	$3,043,573	$3,060,449	$3,050,967	$1,534,956	$1,537,962	$1,541,678	$1,531,584	$1,558,050	$0	$0	$0
Total Debt Service	**$7,392,758**	**$7,426,107**	**$7,432,995**	**$7,404,113**	**$5,668,864**	**$5,712,244**	**$5,715,775**	**$5,695,912**	**$5,728,274**	**$5,779,481**	**$5,815,865**	**$5,849,912**
Total Expenses	**$34,295,912**	**$32,938,642**	**$34,061,051**	**$35,078,740**	**$33,779,194**	**$35,096,673**	**$36,439,154**	**$37,828,753**	**$39,343,968**	**$40,954,527**	**$42,682,289**	**$44,499,309**
Net Cashflow *(after direct transfers)*	**$12,775,283**	**$15,539,763**	**$16,353,404**	**$17,256,822**	**$20,060,640**	**$20,286,346**	**$20,004,048**	**$18,621,098**	**$17,112,713**	**$15,509,416**	**$13,789,469**	**$11,980,795**

Detailed Financial Plan Continued

Fund Balances												
Reserve Interest Rate	1%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Accumulated Capital Inflationary Factor	103%	106%	110%	113%	117%	120%	124%	128%	132%	136%	140%	144%
Operating Fund	**CY 2019**	**CY 2020**	**CY 2021**	**CY 2022**	**CY 2023**	**CY 2024**	**CY 2025**	**CY 2026**	**CY 2027**	**CY 2028**	**CY 2029**	**CY 2030**
Beginning Balance	$7,390,000	$8,573,978	$8,234,660	$8,515,263	$8,769,685	$8,444,799	$8,774,168	$9,109,788	$9,457,188	$9,835,992	$10,238,632	$10,670,572
Net Cashflow	$12,775,283	$15,539,763	$16,353,404	$17,256,822	$20,060,640	$20,286,346	$20,004,048	$18,621,098	$17,112,713	$15,509,416	$13,789,469	$11,980,795
Transfers to Capital Assets	($11,591,305)	($15,879,080)	($16,072,801)	($17,002,400)	($20,385,526)	($19,956,977)	($19,668,427)	($18,273,699)	($16,733,909)	($15,106,777)	($13,357,528)	($11,526,540)
Ending Balance	**$8,573,978**	**$8,234,660**	**$8,515,263**	**$8,769,685**	**$8,444,799**	**$8,774,168**	**$9,109,788**	**$9,457,188**	**$9,835,992**	**$10,238,632**	**$10,670,572**	**$11,124,827**
Interest Income	$79,820	$168,086	$167,499	$172,849	$172,145	$172,190	$178,840	$185,670	$192,932	$200,746	$209,092	$217,954
Operating Reserve Min Target	$8,573,978	$8,234,660	$8,515,263	$8,769,685	$8,444,799	$8,774,168	$9,109,788	$9,457,188	$9,835,992	$10,238,632	$10,670,572	$11,124,827
Operating Reserve Max Target	$17,147,956	$16,469,321	$17,030,525	$17,539,370	$16,889,597	$17,548,336	$18,219,577	$18,914,376	$19,671,984	$20,477,264	$21,341,145	$22,249,655
Capital Assets	**CY 2019**	**CY 2020**	**CY 2021**	**CY 2022**	**CY 2023**	**CY 2024**	**CY 2025**	**CY 2026**	**CY 2027**	**CY 2028**	**CY 2029**	**CY 2030**
Beginning Balance	$17,960,655	$11,438,223	$6,540,309	$7,489,014	$12,022,599	$16,620,722	$20,675,973	$25,016,804	$25,822,866	$24,786,862	$27,511,444	$24,947,972
Transfers from Operating Fund	$11,591,305	$15,879,080	$16,072,801	$17,002,400	$20,385,526	$19,956,977	$19,668,427	$18,273,699	$16,733,909	$15,106,777	$13,357,528	$11,526,540
New Debt Proceeds	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Expenditures	($18,260,000)	($20,955,000)	($15,263,000)	($12,662,000)	($16,071,000)	($16,271,000)	($15,780,000)	($17,971,000)	($18,271,000)	($12,900,000)	($16,440,400)	($16,440,400)
Subtotal prior to transfer	$11,291,960	$6,362,303	$7,350,110	$11,829,414	$16,337,125	$20,306,699	$24,564,401	$25,319,503	$24,285,775	$26,993,639	$24,428,572	$20,034,111
Transfers to Emergency	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal after Transfer	$11,291,960	$6,362,303	$7,350,110	$11,829,414	$16,337,125	$20,306,699	$24,564,401	$25,319,503	$24,285,775	$26,993,639	$24,428,572	$20,034,111
Interest Income	$146,263	$178,005	$138,904	$193,184	$283,597	$369,274	$452,404	$503,363	$501,086	$517,805	$519,400	$449,821
Ending Balance	**$11,438,223**	**$6,540,309**	**$7,489,014**	**$12,022,599**	**$16,620,722**	**$20,675,973**	**$25,016,804**	**$25,822,866**	**$24,786,862**	**$27,511,444**	**$24,947,972**	**$20,483,932**
Remaining Proceeds	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
Selected Capital Assets Min Target	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028	$17,373,028
Capital Assets Max Target	$16,642,200	$16,244,400	$15,209,400	$15,751,000	$16,872,800	$16,238,600	$16,272,480	$16,404,560	$16,098,440	$15,732,320	$16,440,400	$16,440,400
Emergency	**CY 2019**	**CY 2020**	**CY 2021**	**CY 2022**	**CY 2023**	**CY 2024**	**CY 2025**	**CY 2026**	**CY 2027**	**CY 2028**	**CY 2029**	**CY 2030**
Beginning Balance	$11,255,000	$11,367,550	$11,594,901	$11,826,799	$12,063,335	$12,304,602	$12,550,694	$12,801,708	$13,057,742	$13,318,897	$13,585,275	$13,856,980
Transfers from Capital Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal prior to transfer	$11,255,000	$11,367,550	$11,594,901	$11,826,799	$12,063,335	$12,304,602	$12,550,694	$12,801,708	$13,057,742	$13,318,897	$13,585,275	$13,856,980
Transfers to Rate Stabilization	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal after Transfer	$11,255,000	$11,367,550	$11,594,901	$11,826,799	$12,063,335	$12,304,602	$12,550,694	$12,801,708	$13,057,742	$13,318,897	$13,585,275	$13,856,980
Interest Income	$112,550	$227,351	$231,898	$236,536	$241,267	$246,092	$251,014	$256,034	$261,155	$266,378	$271,705	$277,140
Ending Balance	**$11,367,550**	**$11,594,901**	**$11,826,799**	**$12,063,335**	**$12,304,602**	**$12,550,694**	**$12,801,708**	**$13,057,742**	**$13,318,897**	**$13,585,275**	**$13,856,980**	**$14,134,120**
Emergency Target	$11,905,048	$12,275,211	$12,656,884	$13,050,424	$13,456,200	$13,874,593	$14,305,995	$14,750,811	$15,209,457	$15,682,364	$16,169,975	$16,672,748
Rate Stabilization	**CY 2019**	**CY 2020**	**CY 2021**	**CY 2022**	**CY 2023**	**CY 2024**	**CY 2025**	**CY 2026**	**CY 2027**	**CY 2028**	**CY 2029**	**CY 2030**
Beginning Balance	$6,244,500	$6,306,945	$6,433,084	$6,561,746	$6,692,980	$6,826,840	$6,963,377	$7,102,644	$7,244,697	$7,389,591	$7,537,383	$7,688,131
Transfers from Emergency	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal	$6,244,500	$6,306,945	$6,433,084	$6,561,746	$6,692,980	$6,826,840	$6,963,377	$7,102,644	$7,244,697	$7,389,591	$7,537,383	$7,688,131
Interest Income	$62,445	$126,139	$128,662	$131,235	$133,860	$136,537	$139,268	$142,053	$144,894	$147,792	$150,748	$153,763
Ending Balance	**$6,306,945**	**$6,433,084**	**$6,561,746**	**$6,692,980**	**$6,826,840**	**$6,963,377**	**$7,102,644**	**$7,244,697**	**$7,389,591**	**$7,537,383**	**$7,688,131**	**$7,841,893**
Rate Stabilization Target	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103	$4,537,103