



Marin Municipal Water District 2023 Water Rate Study



March 29, 2023



BARTLE WELLS ASSOCIATES
INDEPENDENT PUBLIC FINANCE ADVISORS





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March 29, 2023

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Re: Cost of Service Rate Study

Bartle Wells Associates is pleased to submit the attached *Cost of Service Water Rate Study*. The study develops long-term financial projections for the District's cost of providing water service and calculates new rates designed to proportionally recover those costs. The recommended rates are designed to meet the District's funding needs, comply with legal requirements, and be equitable to all customers.

Over the four year planning period, the proposed rates incorporate modifications to the existing rate structure, which are designed to improve ratepayer equity, and align the rates with current demand levels and the projected cost of providing service.

We enjoyed working on this project and appreciated the assistance and input received from District staff throughout the rate study. Final recommendations were developed with input from the District's project team, the District's Board of Directors, the District's General Counsel's Office and independent legal counsel. Please contact us anytime if you have questions about the recommendations in this report or other issues regarding water rates and finances.

Sincerely,

BARTLE WELLS ASSOCIATES

Erik Helgeson, MBA
Senior Project Manager

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Glossary of Terms

Terms	Descriptions
Active Customer	A service receiving regular water service
AF	Acre foot / Acre feet
AWWA	American Water Works Association
BWA	Bartle Wells Associates
CCF	Hundred Cubic Feet or 748 gallons
CIP	Capital Improvement Projects
CMF	Capital Maintenance Fee
COS	Cost of Service
CPI	Consumer Price Index/Indices
CY	Calendar Year
District	Marin Municipal Water District
EFU	Equivalent fire units
FY	Fiscal Year (July 1 – June 30)
GPCD	Gallons per capita per day
M1 Manual	“Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1”, 6 th edition published by AWWA
MEU	Meter Equivalent Unit
MFR	Multi-Family Residential
O&M	Operations and Maintenance
PAYGO	Pay-As-You-Go
Proposition 218	Article XIII D, Section 6 of the California Constitution
Sonoma Water	Sonoma County Water Agency
Service	A connection to the District's water system
SFR	Single Family Residential

1 EXECUTIVE SUMMARY

1.1 Introduction

The Marin Municipal Water District (District) is a financially self-supporting special district which relies almost solely on revenues from water rates, fees and charges (collectively referred to as “rate” or “rates” herein) to fund the costs of providing water service. As such, the District’s rates need to be set at adequate levels to: (a) fund the costs of operating and maintaining the District’s water and recycled water systems, (b) fund necessary capital improvements to keep the District’s infrastructure in good operating condition, (c) maintain the District’s watershed, its primary source of water supply, which includes seven (7) reservoirs and approximately 22,000 acres on Mount Tamalpais and in West Marin, (d) pay for the wholesale costs of imported water supply from Sonoma Water, and (e) meet its annual debt service requirements. Water rates are used to maintain the District’s seven (7) reservoirs and watershed lands because those resources provide the primary water supply for District customers.

The District has provided proactive financial stewardship by raising rates over the past decade to keep revenues in line with the costs of providing water service. Those rate increases have enabled the District to maintain its financial health. However, the District faces a number of financial challenges, discussed below, that necessitate the need for rate revenue increases.

In 2022, the District retained Bartle Wells Associates (BWA) to develop updated financial projections and a cost of service based water rate study for the District. Final recommendations incorporate input from District staff, the District’s Board of Directors, the District’s General Counsel’s Office, and independent legal review for compliance with the substantive provisions of Proposition 218. The proposed rates are designed to fund the operating and capital needs of the District’s water system, while proportionally and equitably recovering costs from all customers.

1.2 Financial Challenges

The District currently maintains reserves but has faced increased financial pressures in recent years, particularly due to drought. On April 20, 2021, the District declared a water shortage emergency within its service area. The severity of the drought conditions required implementation of numerous water conservation measures, which resulted in reduced water consumption and decreased revenues. These financial pressures were further exacerbated by the need for the District to import additional Sonoma Water to fill shortages in local water supplies from the District’s watershed. Therefore, the District is facing a number of financial challenges that will require immediate and long-term rate increases. These challenges include:

- **Increased Wholesale Water Costs** - Historically, the District has relied on imported water from Sonoma Water for approximately 25% its water supply. The recent drought caused the District to need to import additional water from Sonoma Water, which composed approximately 44%

of its supply during FY 2022. Additionally, Sonoma Water’s wholesale rates are projected to increase by an average of 8.5% per year starting July 1, 2023.

- **Repair and Maintenance of an Aging Water System** – The District takes a proactive approach to maintaining its water system which requires continuous repair and improvement projects. Accounting for construction cost inflation, the District anticipates funding approximately \$245 million of capital improvement projects over the next 4 years, averaging \$61 million per year. The proposed rates will allow the District to fund \$165 million of capital on a pay-as-you-go basis and seek financing for the remaining \$80 million.
- **Water Supply Projects** – The District is actively pursuing water supply enhancement and reliability projects to mitigate the impact of future droughts on District customers. The proposed rate increases will be necessary to pay for the cost of design and environmental work for these projects and to support adequate debt service coverage capacity for future financing.
- **Ongoing Inflation** – On top of rate increases needed for other purposes, annual rate increases are needed to keep revenues aligned with inflation and prevent rates from falling below the cost of providing service. In recent months, inflation has reached forty-year highs as reflected in the CPI, and the ENR CCI increasing over 7% in 2022.

Updated District financial projections indicate the need for water rate revenues to increase over the next four years, the period covered by this rate study. The proposed rates also incorporate modifications to the District’s water rate structure designed to align rates with the current cost of providing service. Due to these modifications, impacts to customer water bills will vary based on customer class, water meter size, and water use when the proposed rates are implemented.

1.3 Water Rate Recommendations

The proposed water rates maintain many similarities with the District’s existing rate structure but incorporate structural modifications designed to better align rates with current projected cost of service and customer demand. Rate structure and customer class recommendations are described as follows:

- Merge the Duplex Class into the Single-Family Residential Class: BWA reviewed the District’s customer usage data in these two classes, including peak and average usage, and identified similar usage trends and shared customer behavior. The similar customer and usage characteristics indicate it is more reasonable to combine these customer classes into the same rate structure.

- Merge the Single-Family Irrigation Class into the Commercial, Institutional, and Irrigation Class: Similarly, analysis of customer usage characteristics and patterns shows that Single-Family Irrigation customers have similar usage characteristics to Irrigation customers in the Commercial, Institutional, and Irrigation class. Customers grouped into this class place varied peak demands on the system and have rate structures tailored to their specific usage.
- Eliminate Seasonal Tiers for Residential Classes: Discontinue seasonal tier changes. The inclining block tier structure accounts for seasonality because customers placing above-average demands on the water system (which will likely occur more often in hotter months) will be paying rates in higher tiers reflecting the increased costs associated with serving their higher water use demands.
- Single Family Residential and Duplex Class: Realign tier break points to reflect current usage patterns, accounting for seasonal variability, the need to meet peak demand and the functional cost allocations to usage categories.
- Recycled: Move from three tiers to a single tier, uniform rate. This reflects the District’s contractual cost structure for purchasing recycled water from the Las Gallinas Valley Sanitary District, which reflects the District’s contributions to the recent upgrades to the Las Gallinas Valley Sanitary District recycled water facility. Under this agreement, the unit costs for the purchase and delivery of recycled water to the District remain relatively flat despite changes in the volume of use.
- Watershed Fee: Charge the watershed fee as a volumetric rate instead of as a fixed charge to proportionally recover the costs of watershed management based on a customer’s utilization of watershed resources.
- Fixed Charge Meter Equivalent Unit Ratios: Adjust meter equivalent ratios to more proportionally reflect current system capacity utilization.
- Drought Rates: Establish drought surcharges tied to water shortage levels as set forth in the District’s recently updated Water shortage Contingency Plan, which helps the District recoup revenue shortfalls during periods of drought and needed water conservation.

The following tables show the proposed water rates, including the changes to fixed fee charges based on the District’s financial projections and the cost of providing service.

Table 1: Existing and Proposed Water Rate Tiers

Single-Family Residential			
Tiers	Existing Summer	Existing Winter	Proposed Summer/ Winter
	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Tier 1	0 - 26	0 - 21	0 - 15
Tier 2	27 - 59	22 - 48	16 - 25
Tier 3	60 - 99	49 - 80	26 - 80
Tier 4	100+	81+	81+
Duplex Tier Allotments			
Tiers	Existing Summer	Existing Winter	Proposed Summer/ Winter
	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Tier 1	0 - 20	0 - 18	0 - 15
Tier 2	21 - 45	19 - 35	16 - 25
Tier 3	46 - 78	36 - 68	26 - 80
Tier 4	79+	69+	81+
Multi-Family Residential Tier Allotments			
Tiers	Existing Summer	Existing Winter	Proposed Summer/ Winter
	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Tier 1	0 - 10	0 - 10	0 - 10
Tier 2	11 - 20	11 - 18	11 - 20
Tier 3	21 - 28	19 - 26	21 - 28
Tier 4	29+	27+	29+
Commercial, Institutional and Irrigation Tier Allotments			
Tiers	Existing	Proposed	
	<i>% of Allocation</i>	<i>% of Allocation</i>	
Tier 1	0 - 85%	0 - 85%	
Tier 2	86 - 150	86 - 150	
Tier 3	151+	151+	
Single-Family Irrigation Tier Allotments			
Tiers	Existing	Proposed	
	<i>% of Allocation</i>	<i>% of Allocation</i>	
Tier 1	0 - 50%	0 - 85%	
Tier 2	51 - 100	86 - 150	
Tier 3	100+	151+	
Recycled Water Tier Allotments			
Tiers	Existing	Proposed	
	<i>% of Allocation</i>	<i>Uniform Volumetric Rate</i>	
Tier 1	0 - 100%	<i>Per CCF</i>	
Tier 2	101 - 150	All use	
Tier 3	151+		

Table 2: Existing and Proposed Volumetric Water Rates Per CCF of Use

Volumetric Charges (\$ per CCF)	FY 2023 <i>Existing</i>	FY 2024 <i>Proposed</i>	FY 2025 <i>Proposed</i>	FY 2026 <i>Proposed</i>	FY 2027 <i>Proposed</i>
Watershed Maintenance Volumetric Rate					
All Use	N/A	\$ 0.61	\$ 0.62	\$ 0.64	\$ 0.66
Single-Family Residential Volumetric Rates					
Tier 1	\$ 4.73	\$ 7.67	\$ 9.16	\$ 10.24	\$ 10.86
Tier 2	8.19	10.02	11.96	13.38	14.19
Tier 3	13.78	16.19	19.33	21.62	22.92
Tier 4	22.15	24.77	29.58	33.08	35.07
Duplex Volumetric Rates					
Tier 1	\$ 4.76	\$ 7.67	\$ 9.16	\$ 10.24	\$ 10.86
Tier 2	8.31	10.02	11.96	13.38	14.19
Tier 3	13.72	16.19	19.33	21.62	22.92
Tier 4	21.53	24.77	29.58	33.08	35.07
Multi-Family Residential Volumetric Rates					
Tier 1	\$ 4.82	\$ 8.19	\$ 9.78	\$ 10.94	\$ 11.60
Tier 2	8.11	10.30	12.30	13.76	14.59
Tier 3	12.85	14.94	17.84	19.95	21.15
Tier 4	21.56	19.69	23.51	26.29	27.87
Commercial, Institutional, Irrigation Volumetric Rates					
Tier 1	\$ 4.62	\$ 8.42	\$ 10.05	\$ 11.24	\$ 11.92
Tier 2	12.37	15.29	18.26	20.42	21.65
Tier 3	18.53	16.09	19.21	21.48	22.77
Single-Family Irrigation Volumetric Rates					
Tier 1	\$ 5.94	\$ 8.42	\$ 10.05	\$ 11.24	\$ 11.92
Tier 2	\$ 7.10	15.29	18.26	20.42	21.65
Tier 3	\$ 12.32	16.09	19.21	21.48	22.77
Recycled Water Rates					
Tier 1	\$ 3.70	\$ 5.43	\$ 5.63	\$ 5.84	\$ 6.06
Tier 2	11.49	5.43	5.63	5.84	6.06
Tier 3	21.35	5.43	5.63	5.84	6.06
Raw Water Rates					
All Use	\$ 4.31	\$ 5.32	\$ 6.35	\$ 7.10	\$ 7.53

Table 3: Existing and Proposed Fixed Bi-Monthly Service Charge and Capital Maintenance Fee

Bi-Monthly Fixed Charges	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Meter Size	Existing	Proposed	Proposed	Proposed	Proposed
Service Charge					
<i>SFR + Duplex</i>					
5/8"	\$ 44.62	\$ 48.04	\$ 50.44	\$ 52.96	\$ 55.61
3/4"	57.09	61.99	65.09	68.34	71.76
1"	82.01	72.46	76.08	79.88	83.87
1.5"	144.30	142.22	149.33	156.80	164.64
2"	219.05	222.45	233.57	245.25	257.51
<i>All Other Customer Classes (Except Private Fire Lines)</i>					
5/8"	\$ 44.62	\$ 48.04	\$ 50.44	\$ 52.96	\$ 55.61
3/4"	57.09	65.48	68.75	72.19	75.80
1"	82.01	100.36	105.38	110.65	116.18
1.5"	144.30	187.57	196.95	206.80	217.14
2"	219.05	292.22	306.83	322.17	338.28
3"	455.77	710.82	746.36	783.68	822.86
4"	804.63	1,408.48	1,478.90	1,552.85	1,630.49
6"	1,763.97	2,454.97	2,577.72	2,706.61	2,841.94
8"	3,009.87	4,722.38	4,958.50	5,206.43	5,466.75
10"	4,754.13	6,989.78	7,339.27	7,706.23	8,091.54
Capital Maintenance Fee					
<i>SFR + Duplex</i>					
5/8"	\$ 30.42	\$ 31.50	\$ 33.08	\$ 34.73	\$ 36.47
3/4"	45.61	44.11	46.32	48.64	51.07
1"	76.03	53.56	56.24	59.05	62.00
1.5"	152.07	116.57	122.40	128.52	134.95
2"	243.32	189.03	198.48	208.40	218.82
<i>All Other Customer Classes (Except Private Fire Lines)</i>					
5/8"	\$ 30.42	\$ 31.50	\$ 33.08	\$ 34.73	\$ 36.47
3/4"	45.61	47.26	49.62	52.10	54.71
1"	76.03	78.76	82.70	86.84	91.18
1.5"	152.07	157.52	165.40	173.67	182.35
2"	243.32	252.04	264.64	277.87	291.76
3"	532.26	630.10	661.61	694.69	729.42
4"	958.09	1,260.19	1,323.20	1,389.36	1,458.83
6"	2,129.09	2,205.34	2,315.61	2,431.39	2,552.96
8"	3,649.85	4,253.15	4,465.81	4,689.10	4,923.56
10"	5,778.95	6,300.97	6,616.02	6,946.82	7,294.16

Table 4: Existing and Proposed Fixed Bi-Monthly Base Charge and CMF

Bi-Monthly Fixed Charges	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
<i>Meter Size</i>	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
Watershed Management Fee					
5/8"	\$ 11.59				
3/4"	13.86				
1"	18.35				
1.5"	29.61				
2"	43.12				
3"	85.91				
4"	148.96				
6"	322.37				
8"	547.56				
10"	862.84				
Proposed volumetric rate per CCF shown above in Table 2					
Private Fire Line Service Charge					
2"	\$ 40.59	\$ 21.41	\$ 22.48	\$ 23.60	\$ 24.78
4"	101.89	49.29	51.75	54.34	57.06
6"	202.33	95.66	100.44	105.46	110.73
8"	332.76	157.55	165.43	173.70	182.39
10"	515.38	240.06	252.06	264.66	277.89

2 BACKGROUND, OBJECTIVES, AND LEGAL REQUIREMENTS

2.1 Background

The Marin Municipal Water District is a public utility that provides high-quality and safe drinking water to central and southern Marin County, California, excluding west Marin. The District's 147-square-mile service area includes the cities and towns of San Rafael, Mill Valley, Fairfax, San Anselmo, Ross, Larkspur, Corte Madera, Tiburon, Belvedere, and Sausalito. Marin Municipal Water District is the first municipal water district in California, formed on April 25, 1912. Today, the District serves over 191,000 residents through over 60,000 accounts. The District's water system includes 7 reservoirs, 3 treatment plants, 97 pump stations, 130 storage tanks, and 908 miles of pipelines.

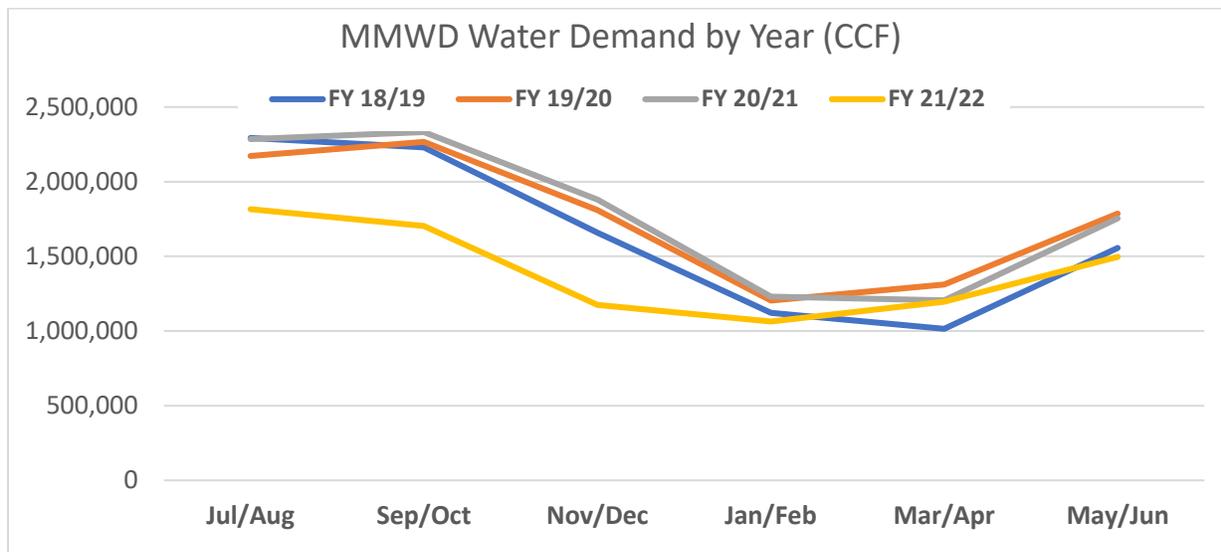
Historically, about seventy-five percent of the District's water comes from its 22,000 acres of protected watershed on Mt. Tamalpais and in the grassy hills of west Marin. Rainfall on the watershed flows into the District's seven reservoirs and is then treated at the District's potable water treatment plants before being delivered to its customers. The remainder of the District's water supply consists of wholesale water purchased from the Sonoma County Water Agency (Sonoma Water) and recycled water purchased from the Las Gallinas Valley Sanitary District (LGVSD). The water from Sonoma Water originates in Lake Sonoma and Lake Mendocino before flowing into the Russian River. Marin Water has a longstanding partnership with LGVSD and helped fund an expansion of their Recycled Water Facility to increase recycled water use. The District also continues to engage in multiple water conservation efforts to reduce customer water demands and preserve supply.

Severe conditions brought on by the drought over the last several years have intensified the District's focus on strengthening the reliability of its water supply. The District recently adopted a Strategic Water Supply Assessment Roadmap intended to augment the District's current baseline water supply in the face of climate-change-driven droughts and to evaluate the impact of potential future water management alternatives that could improve the District's long-term water supply resiliency. These efforts identify short-term water supply projects and will help the District ultimately determine which long-term options are viable, affordable, and make the most sense for the community and the region.

The following figure shows the District's water demands over the last four years. The District has a seasonal demand pattern, with substantially higher usage in the hotter, summer months largely due to landscape irrigation, which is two to three times the level of use during the lowest-use wet winter months. However, there is some annual variability in the timing and magnitude of minimum and maximum demands. These increased demands require the District to maintain additional infrastructure (i.e., larger storage tanks, bigger pumps, larger pipes, etc.), increased water supplies and require the District to incur other related costs that would otherwise not be required, except for this increased usage. These additional expenditures required to support increased water usage serve

as the basis for the District’s tier water rates, and the associated costs vary depending on the level of water usage by individual customers.

Figure 1: MMWD Water Use by Month (CCF)



The District operates as a self-supporting special district and revenues are derived almost solely from water rates. As such, the District must establish rates adequate to fund the costs of providing water service, including costs for ongoing operations, wholesale water supply, debt service, and capital improvements needed to keep the District’s aging infrastructure in safe and reliable operating condition.

2.2 Rate Study Objectives

In 2022, the District retained BWA to develop a cost of service based water rate study. The District has historically adopted rate increases in order to keep revenues in line with the escalating costs of providing service. Key goals and objectives of this study include developing water rates that:

- Recover the costs of providing service, including operating, capital, and debt funding needs;
- Are proportionate, fair and equitable to all customers;
- Are easy to understand and implement;
- Comply with the substantive requirements of the California Constitution, Article 13D, Section 6 (which was adopted by the voters as Proposition 218 in 1996) and the general mandate of Article 10, Section 2 that prohibits the wasteful use of water;
- Support the long-term operational and financial stability of the District.

2.3 Rate-Study Process

The general process used for this cost-of-service rate study is summarized on the following diagram.

Figure 2: Cost-of-Service Rate Study Process



Key elements of the study include:

- 1) **Project Initiation and Data Collection** – Review financial policies; collect financial, and other relevant data; and review rate structures; and
- 2) **Demand Analysis** – Analyze past water demands and customer characteristics and forecast future demands; and
- 3) **Long Range Financial Plans** - Develop financial projections to evaluate annual revenue requirements from rates and the overall level of rate increases needed to fund the costs of providing service and support long-term financial stability; and
- 4) **Cost Allocation** – Group the District’s costs in terms of the function they serve as a basis to proportionally allocate the revenue requirement from rates; and
- 5) **Cost of Service Rate Design** - Develop rate structures that proportionately recover costs between customer classes (i.e., residential and commercial), as well as from customers within their designated customer class; and
- 6) **Prop 218 Process** – Ensure compliance with the substantive and procedural requirements of Proposition 218.

2.4 Constitutional Requirements for Rates

The water rates proposed in this report are designed to comply with two key articles of the California Constitution: Article 13D and Article 10, as explained below.

2.4.1 Article 13D, Section 6

Proposition 218 was adopted by California voters in 1996 and added Articles 13C and 13D to the California Constitution. Article 13D, Section 6 governs property-related charges, which the California Supreme Court has ruled includes rates imposed for water delivered through pipes connected to property. Article 13D, Section 6 establishes both a) procedural requirements for imposing or increasing property-related charges, and b) substantive requirements for those charges. Article 13D requires voter approval for new or increased property-related charges but exempts rates for water, wastewater, and garbage service from this voting requirement if rates are adopted by the appropriate procedure and meet the substantive requirements. This report recommends water rates designed to comply with the substantive requirements of Proposition 218.

The substantive requirements of Article 13D, Section 6 require property-related charges, such as the District's water rates, to meet the following conditions:

- 1) Revenues derived from the fee or charge shall not exceed the costs required to provide the property related service.
- 2) Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.
- 3) The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.
- 4) No fee or charge may be imposed for a service unless that service is actually used by, or immediately available to the property in question.
- 5) No fee or charge may be imposed for general governmental services, such as police or fire services, where the service is available to the public at large in substantially the same manner as it is to property owners.

2.4.2 Article 10, Section 2

Article 10, Section 2 of the California Constitution states that:

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.

2.5 Statute of Limitations

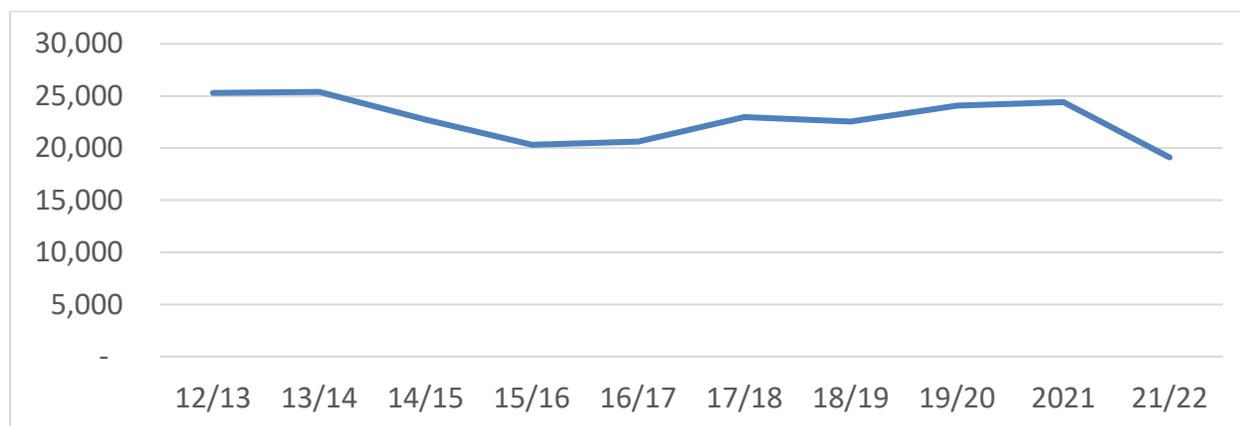
Pursuant to California Government Code 53759, there is a 120-day statute of limitations for challenging any new, increased, or extended fees. This statute of limitations applies to the water rates proposed in this rate study and included in the Proposition 218 Notice.

3 PROJECTED WATER DEMAND AND CUSTOMER CHARACTERISTICS

3.1 Marin Water Supply and Metered Water Demand Projection

Water demand in the District has been trending down for quite some time. However, the District experienced a sharp reduction in demand due to drought and a declared water shortage emergency in FY 21/22. The District is projecting demand will partially rebound from the drought in the short term, similar to the years after the previous drought in FY 15/16, but will continue to follow the gradual downward trend in water use. The following chart shows the District’s metered potable water demand for the previous ten years. The data in the chart was derived by reviewing the District’s historic billing and consumption data.

Figure 3: Metered Potable Water Demand



Projected FY 23/24 water demand is based on partial year actual use in FY 22/23 and a gradual rebound from the drought. Water demand projections are conservative to reflect: (1) an uptick in customer investments, due in part to District rebates, in water efficiency upgrades during the drought that will result in long-term water use reductions, (2) elevated awareness of drought conditions and water efficiency messaging statewide, and (3) price signals provided to customers by the proposed rate structure. The projected water loss was based on the average of the last five years, as water loss is not related to water demand.

Table 5: Historic and Projected Potable Supply and Metered Demand

Water Supply and Metered Demand	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
	<i>Actual</i>	<i>Actual</i>	<i>Actual</i>	<i>Projected</i>	<i>Projected</i>
Potable Water Supply (AF)	26,828	26,196	20,418	21,463	21,892
Potable Water Supply (CCF)	11,686,466	11,410,836	8,893,960	9,349,333	9,536,320
Water Loss	10.3%	6.8%	7.7%	8.4%	8.4%
Total Potable Water Sold (CCF)	10,482,897	10,632,895	8,211,004	8,567,156	8,738,499

Source: Actual water supply, water loss, and metered water sales provided by the District.

3.2 Water Services and Equivalent Capacity

Each connection to the District's water system is considered one service. Some of the District's fixed costs are reasonably recovered on a per-customer basis, while others should be recovered based on the capacity required to serve each customer. The size of a customer's meter reflects the portion they require of the water system's capacity. A significant percentage of the costs of any water system is related to its requirement to deliver water to any customer instantaneously at any time, up to the maximum safe flow capacity of a customer's meter. Simply put, as the size of a customer's water meter increases, the instantaneous demand it can place on the District's water system increases.

Fixed charges for each meter size are based on the capacity of a meter relative to the capacity of smallest meter size (e.g., a 5/8 inch meter) in the District's system. In this study, the relative capacity of a meter size, referred to as a meter equivalent ratio (MEU), is calculated by dividing the capacity of a given meter size by the capacity of a 5/8" meter. The sum of all MEU's reflects the total capacity of the District.

For this rate study, MEUs for the Single-Family and Duplex classes are calculated based on a three-year average of the maximum bi-monthly billing period demand for each meter size relative to the maximum bi-monthly billing period demand of a 5/8" meter. The decision to base Single-Family and Duplex MEUs on actual demand is to more closely align their respective MEUs with their proportion of system capacity. Water use in these two customer classes is relatively homogenous and all meters are 2" or smaller.

The meter equivalent ratios used for all other customer classes are proportional to the maximum safe flow of a 5/8" meter, which is 20 gallons per minute (GPM). For example, a 1" meter with a maximum safe flow of 50 GPM will have a meter equivalent ratio of 2.5 MEUs. The maximum safe flow for each meter size will continue to be the basis for these customers' MEUs, since their use varies and they have a wider range of meter sizes (from 5/8" to 8"). The maximum safe flow in gallons per minute (GPM) for each meter size is set forth in Appendix A.

The following table contains the counts of water services and calculations of meter equivalent units. Total meter equivalent units for each meter size are derived by multiplying the meter equivalent ratio by the number of services at each meter size.

Table 6: Water Services and Meter Equivalent Units

Count of Services	Single Family & Duplex		Raw Water	Recycled Water	Fire	Total Services
	Other Potable					
Connection Size	#		#	#	#	#
5/8"	38,234	2,378	-	3	-	40,615
3/4"	3,678	291	-	3	-	3,972
1"	10,832	1,868	-	113	-	12,813
1.5"	633	1,554	-	102	-	2,289
2"	29	568	-	38	63	698
3"	-	88	-	-	-	88
4"	-	40	-	3	629	672
6"	-	16	1	-	518	535
8"	-	5	-	-	154	159
10"	-	-	-	-	4	4
Total	53,406	6,808	1	262	1,368	61,845

Base Water Charge & CMF	Meter Equivalent Water Services	Meter Equivalent Ratios	Meter Equivalent Units (MEU)s	Total Annual MEUs
Meter Size	#	#	MEU	MEU
Single Family and Duplex Customers				
5/8"	38,234	1.00	38,234	229,404
3/4"	3,678	1.40	5,149	30,895
1"	10,832	1.70	18,414	110,486
1.5"	633	3.70	2,342	14,053
2"	29	6.00	174	1,044
All Other Customer Classes (Except Private Fire Lines)				
5/8"	2,381	1.00	2,381	14,286
3/4"	294	1.50	441	2,646
1"	1,981	2.50	4,953	29,715
1.5"	1,656	5.00	8,280	49,680
2"	606	8.00	4,848	29,088
3"	88	20.00	1,760	10,560
4"	43	40.00	1,720	10,320
6"	17	70.00	1,190	7,140
8"	5	135.00	675	4,050
10"	-	200.00	-	-
Total	60,477		90,561	543,367

Note: District provided service counts by meter size as of December 2022. Maximum safe flow GPM based on the standard meters used by the District for new connections and replacement meters.

3.3 Fire Line Service Capacity

The following table contains the counts of fire line services and calculations of equivalent fire units (EFU)s used for deriving the private fire line service charges. In this study, the relative capacity of a fire meter size, an EFU, is derived by calculating the Fire Capacity Factor equivalent to a 2" fire meter. EFUs reflect the total fire protection capacity of the District. The number of EFUs for each meter size are derived by multiplying the EFU by the number of services at each meter size. The District's fire service capacity includes the capacity of fire hydrants and private fire lines connected to the District's water system. Private fire line services account for 12.65% of the District's fire service capacity.

Table 7: Fire Protection Services and Equivalent Units

Fire Service Capacity Allocation							
Fire Service Size	Number of Services	Maximum Safe Fire Meter Flow	Equivalent Fire Unit Ratios (EFU)	Fire Capacity EFUs	Fire Capacity %	Annual Fire Services #	Annual EFUs #
<i>Service Size"</i>	<i>#</i>	<i>GPM</i>	<i>EFU</i>	<i>EFU</i>	<i>%</i>	<i>#</i>	<i>#</i>
Public Hydrants							
6	7,463	1,600	10.00	74,630	87.4%		895,560
Private Fireline Services							
2	63	160	1.00	63		756	756
3	0	350	2.19	0		0	0
4	629	700	4.38	2,755		7,548	33,060
6	518	1,600	10.00	5,180		6,216	62,160
8	154	2,800	17.50	2,695		1,848	32,340
10	4	4,400	27.50	<u>110</u>		<u>48</u>	<u>1,320</u>
Total Private Fireline	<u>1368</u>			<u>10,803</u>	12.65%	<u>16,416</u>	<u>129,636</u>
Total Fire Protection	8,831			85,433		16,416	1,025,196

Note: The District provided the number of fire services as of December 2022. The EFU are based on the maximum flow capacity of the standard fire service meters used for new connections and replacement meters.

4 DISTRICT FINANCES AND RATES

4.1 Water Financial Overview

Marin Municipal Water District is a special district that relies almost solely on revenues from water rates to fund the costs of providing service. Water rate revenues are projected to account for over 95% of total annual revenues, with the remaining revenues coming from interest earnings, rents, capacity charges from new or upsized connections, and other miscellaneous revenues. As such, water rates must be set at levels adequate to fund the costs of operating and maintaining the water system, pay for wholesale water purchases, and fund necessary capital improvements to keep the water system in good operating condition.

4.2 Current and Historical Water Rates

The following tables show a 10-year history of the District’s water rates. Those water rates include the following components:

- Volumetric tiered water rates that vary by customer class
- Fixed bi-monthly service charges based on a fixed per customer portion and meter size
- Fixed bi-monthly Capital Maintenance Fee (CMF) based on meter size that recovers a portion of the District’s capital improvement costs
- Fixed bi-monthly Watershed Management Fee (WMF) based on a fixed per customer portion and meter size portion that recovers part of the District’s watershed maintenance costs
- Fixed bi-monthly Private Fire Line charges levied on accounts with private fire service connections

Table 8: Historical Non-Potable Volumetric Water Rates

Non-Potable Volumetric Rates	Effective Date							
	6/1/2011	5/1/2012	1/1/2016	5/1/2016	7/1/2017	7/1/2019	4/1/2021	7/1/2022
Recycled Water								
Tier 1	\$2.42	\$2.57	\$2.65	\$2.76	\$3.17	\$3.27	\$3.41	\$3.55
Tier 2	4.84	5.13	7.27	7.56	10.05	10.20	10.61	11.04
Tier 3	9.68	10.26	15.17	15.78	18.73	18.94	19.70	20.49
Raw Water								
Tier 1	\$3.40	\$3.65	\$3.80	\$4.23	\$3.82	\$3.98	\$4.14	\$4.31
Tier 2	6.81	6.45	6.70	4.23	3.82	3.98	4.14	4.31
Tier 3	13.61	14.62	15.21	4.23	3.82	2.98	4.14	4.31

Table 9: Historical Potable Volumetric Water Rates

Potable Volumetric Rates	Effective Date							
	7/1/2012	3/1/2016	7/1/2016	7/1/2017	7/1/2019	4/1/2021	7/1/2021	7/1/2022
Residential								
Tier 1	\$3.74	\$3.81	\$3.96	\$4.07	\$4.19	\$4.36	\$4.54	\$4.73
Tier 2	7.48	6.40	6.66	7.13	7.26	7.56	7.87	8.19
Tier 3	14.97	10.96	11.40	12.07	12.25	12.74	13.25	13.78
Tier 4	22.45	18.85	19.60	19.45	19.68	20.47	21.29	22.15
Duplex								
Tier 1	\$3.74	\$3.81	\$3.95	\$4.10	\$4.22	\$4.39	\$4.57	\$4.76
Tier 2	7.48	6.52	6.77	7.24	7.38	7.68	7.99	8.31
Tier 3	14.97	10.69	11.11	12.02	12.19	12.68	13.19	13.72
Tier 4	22.45	18.17	18.89	18.90	19.13	19.90	20.70	21.53
Multi-Family								
Tier 1	\$3.74	\$3.83	\$3.93	\$4.16	\$4.27	\$4.45	\$4.63	\$4.82
Tier 2	7.48	6.33	6.50	7.07	7.20	7.49	7.79	8.11
Tier 3	14.97	10.43	10.71	11.25	11.41	11.87	12.35	12.85
Tier 4	22.45	17.88	18.36	18.94	19.16	19.93	20.73	21.56
Commercial/Irrigation								
Tier 1	\$3.74	\$3.65	\$3.80	\$3.98	\$4.09	\$4.26	\$4.44	\$4.62
Tier 2	7.48	9.37	9.75	10.82	10.99	11.43	11.89	12.37
Tier 3	14.97	14.41	14.98	16.26	16.46	17.12	17.81	18.53
Single Family Irrigation								
Tier 1	\$3.74	\$5.19	\$5.40	\$5.14	\$5.27	\$5.49	\$5.71	\$5.94
Tier 2	7.48	6.82	7.09	6.15	6.29	6.55	6.82	7.10
Tier 3	14.97	10.88	11.31	10.76	10.94	11.38	11.84	12.32

Table 10: Historical Fixed Monthly Water Rates

Fixed Charges	Effective Date							
	7/1/2012	3/1/2016	7/1/2016	7/1/2017	7/1/2019	4/1/2021	7/1/2021	7/1/2022
<i>Meter Size</i>								
Service Charge								
5/8"	\$21.53	\$32.55	\$33.85	\$36.79	\$39.66	\$41.25	\$42.90	\$44.62
3/4"	23.81	41.25	42.90	46.62	50.74	52.77	54.89	57.09
1"	32.88	58.60	60.95	66.28	72.89	75.81	78.85	82.01
1.5"	55.66	101.95	106.05	115.43	128.27	133.41	138.75	144.30
2"	82.85	154.00	160.20	174.41	194.72	202.51	210.62	219.05
3"	155.51	318.85	331.70	361.18	405.17	421.38	438.24	455.77
4"	214.69	561.75	584.40	636.42	715.30	743.92	773.68	804.63
6"	463.76	1,229.70	1,279.30	1,393.33	1,568.15	1,630.88	1,696.12	1,763.97
8"	917.90	2,097.20	2,181.80	2,376.33	2,675.75	2,782.78	2,894.10	3,009.87
10"	1,372.04	3,311.70	3,445.30	3,752.53	4,226.39	4,395.45	4,571.27	4,754.13
Watershed Management Fee								
5/8"		\$8.45	\$8.80	\$9.78	\$10.29	\$10.71	\$11.14	\$11.59
3/4"		10.15	10.55	11.69	12.30	12.80	13.32	13.86
1"		13.45	14.00	15.50	16.30	16.96	17.64	18.35
1.5"		21.80	22.65	25.02	26.31	27.37	28.47	29.61
2"		31.80	33.05	36.45	38.32	39.86	41.46	43.12
3"		63.50	66.00	72.65	76.36	79.42	82.60	85.91
4"		110.15	114.60	125.99	132.42	137.72	143.23	148.96
6"		238.55	248.10	272.67	286.57	298.04	309.97	322.37
8"		405.30	421.50	463.17	486.77	506.25	526.50	547.56
10"		638.75	664.30	729.87	767.05	797.74	829.65	862.84
Capital Maintenance Fee								
5/8"					\$27.25	\$28.34	\$29.25	\$30.42
3/4"					40.87	42.50	43.86	45.61
1"					68.12	70.84	73.11	76.03
1.5"					136.24	141.69	146.22	152.07
2"					217.99	226.71	233.96	243.32
3"					476.85	495.92	511.79	532.26
4"					858.34	892.67	921.24	958.09
6"					1,907.42	1,983.72	2,047.20	2,129.09
8"					3,296.86	3,400.65	3,509.47	3,649.85
10"					5,177.29	5,384.38	5,556.68	5,778.95

5 WATER FINANCIAL PLAN

Working closely with District staff, BWA developed long-term cash-flow projections to determine the water utility's annual revenue requirements and project required water rate revenue increases. The financial projections incorporate the latest information available from the District's budget, annual reports, capital spending projections, and metered water demand data as well as a number of reasonable assumptions developed with input from the District.

5.1 Financial Plan Assumptions

Financial plan assumptions are based on input from District staff, historical escalations, and conservative projections for future escalations to reasonably ensure that the rates adopted by the District will provide sufficient revenues to meet the District revenue requirements.

REVENUE ASSUMPTIONS

- Rates proposed to be adopted in May 2023 would be effective on July 1, 2023 for the next four years with rate adjustments planned to become effective on July 1 of each of the next three years.
- Water sales revenues are based on the projected volume of water sales and projected water rates. In FY 21/22, water sales declined by 22% but are conservatively projected to gradually rebound from the low use due to the recent drought conditions and water shortage emergency in the District by 5% in FY 22/23 and 2% per year from FY 23/24 to FY 26/27.
- The customer base is projected to remain static (minimal to no growth) because the District is materially built-out and population growth in the District has remained very low as illustrated by the last Census.
- Interest earnings are projected based on the annual beginning fund balance multiplied by the projected interest rate. The interest rate projections are based on recent and anticipated interest rates.
- Discretionary "non-rate" revenues which support rate assistance programs, such as the low-income and medical disability waiver programs, were not included in projected revenues.

EXPENSE ASSUMPTIONS

- Water supply cost assumptions are shown in detail in the Appendix B of this report. Purchased water cost estimates are based on the latest rate information available from Sonoma Water and account for the District's utilization of its local water supply.
- Operating and maintenance expenses (other than wholesale water costs) are based on the District's FY 2022/23 Budget.
- Cost escalation is based on the recent and historical Consumer Price Index (CPI) and Engineering News-Record Construction Cost Index (ENR) changes. This report projects that

during the four year period covered by this rate study, the average annual inflation rate will be 5%.

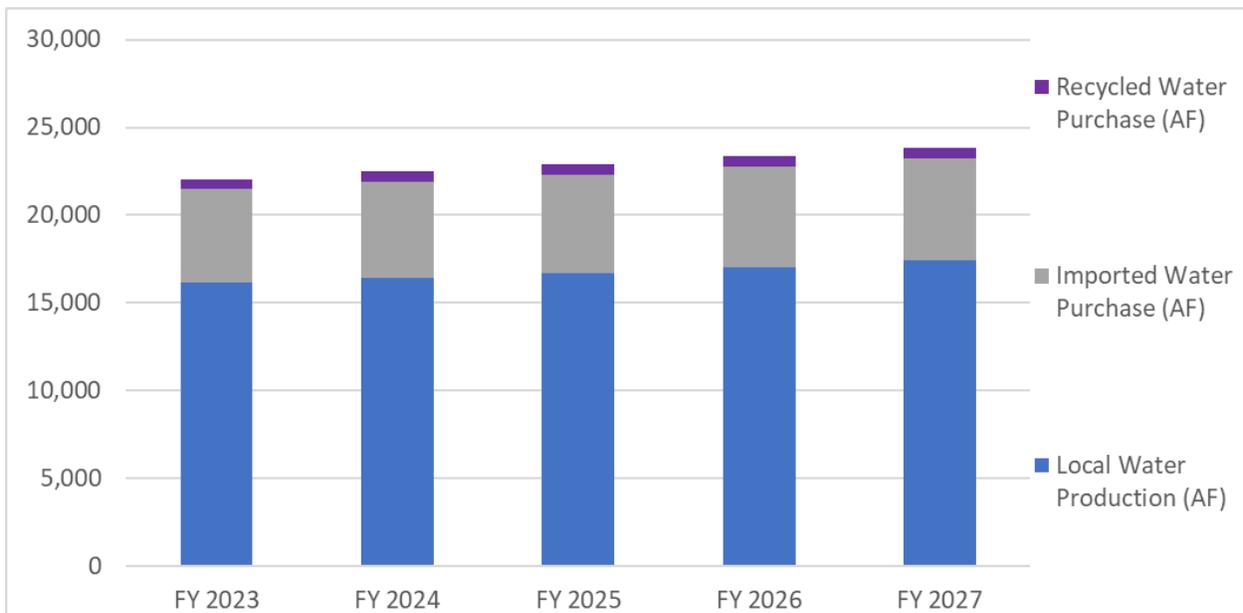
- Debt service projections are based on outstanding debt schedules and projected issuances of new debt.

The District is facing a number of manageable financial challenges that will drive the need for rate increases in upcoming years. Key drivers of future rate increases are summarized below.

Volumetric Water Costs

The District has historically needed to import more costly water from Sonoma Water for roughly 25% of its water supply. At the peak of the recent drought and declared water shortage emergency, the District imported 44% of its water supply from Sonoma Water. Going forward the District projects imported water from Sonoma Water will continue to make up about 25% of its water supply. The District is currently exploring opportunities to increase supply from Sonoma Water to enhance its water supply resiliency. Recycled water accounts for roughly 1.5% of the District’s water supply.

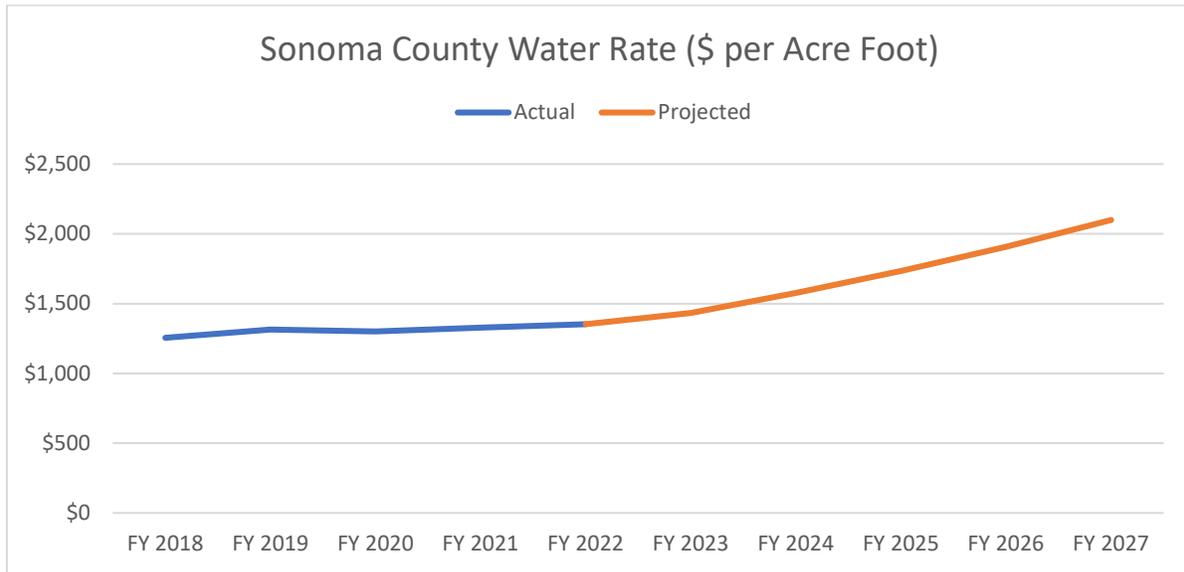
Figure 4: Projected Water Supply Needs (AF)



Over the last ten years, Sonoma Water’s rates for wholesale water have increased 4% per year. Over the next 4 years, Sonoma County Water’s rates are projected to increase by an average of an additional 8.5% per year. Projected wholesale water rates are based on estimates provided to District staff from Sonoma Water. The following figure shows the historical Sonoma Water rates from FY 17/18 and the projected rates through FY 26/27. In addition to the rate charged by

Sonoma Water, the District also incurs wheeling fees to transport the water from Sonoma County to Marin via a complex transmission system. Chemical and electricity costs to import and then treat the imported water to match the quality of the District’s local water supply are also incurred.

Figure 5: Sonoma Water Cost



Costs that vary based on the volume of the District’s local supply sold consist of the chemical and electricity costs associated with treatment and pumping of water. These costs are projected to increase with inflation.

Recycled water is provided to the District by Las Gallinas Valley Sanitary District. The purchase rate is based on a cost sharing agreement between the two districts.

The following table shows the projected water supply costs that vary by the volume of water produced and imported by the District. Fixed water supply costs are not included in the following table. Water supply projections are shown in detail in Appendix B.

Table 11: Projected Volumetric Water Supply Cost Summary

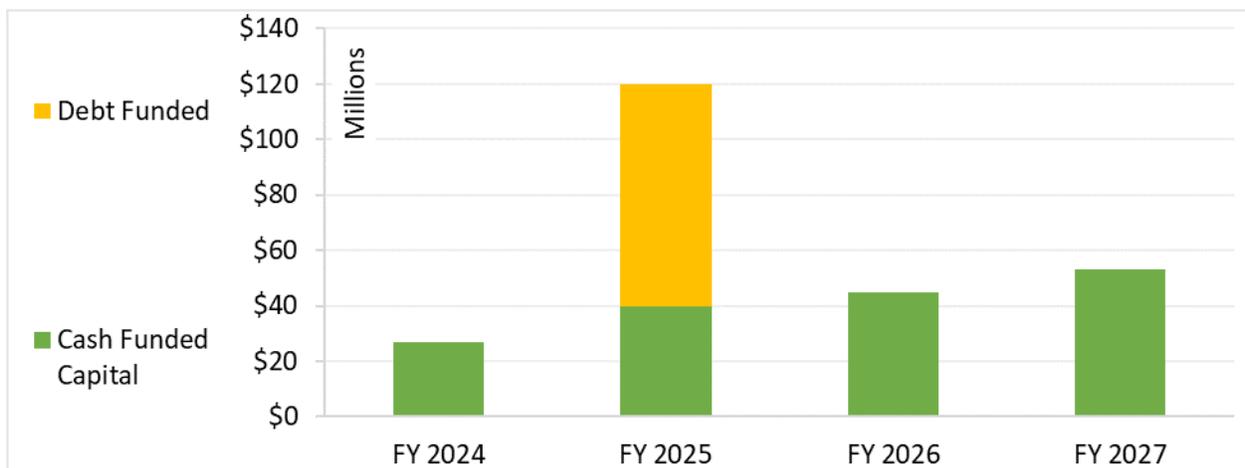
Projected Volumetric Water Cost Summary				
	FY 2024	FY 2025	FY 2026	FY 2027
District Water	\$5,152,502	\$5,518,330	\$5,910,131	\$6,329,751
Recycled Water	\$165,360	\$175,282	\$185,798	\$196,946
Imported Sonoma Water	\$9,278,146	\$10,242,320	\$11,307,539	\$12,484,455
Total Volumetric Water Cost	\$14,596,008	\$15,935,932	\$17,403,469	\$19,011,152

Capital Improvement Funding Needs

The District takes a proactive approach to maintaining its water system which requires ongoing repair and improvement projects. Accounting for construction cost inflation, the District anticipates funding approximately \$245 million of capital improvement projects over the next four years, averaging \$61 million per year. District Staff estimates that an additional \$24 million in ongoing CIP funding for repair and replacement projects would be needed to stabilize the current annual backlog of deferred maintenance. By 2027, the proposed rates will allow the District to fund half of the \$24 million in unfunded annual deferred maintenance needs. With the proposed rate increases, the District will be able to fund \$165 million of capital improvements on a pay-as-you-go basis and seek financing for the remaining \$80 million. Projected capital spending is shown in detail in Appendix A.

For illustrative purposes, the chart below depicts a potential debt issuance in FY 2025 with the first payment in FY 2026. However, debt could be issued at other times during the four-year rate period as District needs arise.

Figure 6: Capital Spending



Water Supply Enhancement

As a result of the recent drought, the District engaged in a comprehensive analysis of its future water supply needs and identified several projects to meet those needs on a short and long term basis as described in the recently approved Strategic Water Supply Assessment Integrated Roadmap. Additional revenue will be needed by the District to fund the implementation of the roadmap, including design and environmental work, as well as the development of short-term projects to augment available water supply. The District has also identified a new water supply reserve fund to ensure sufficient debt service coverage and to have available funds for future financing if necessary.

Ongoing Cost Inflation

The District faces annual cost inflation due to annual increases in a range of expenses including staffing, utilities, insurance, supplies, etc. On top of rate increases needed for capital improvements and water supply enhancements, annual rate increases are needed to keep revenues aligned with cost inflation and prevent rates from falling behind the cost of providing service. Over the past 5 years, inflation has typically ranged between 3% to 4%. In recent months, inflation has reached forty-year highs with the CPI and ENR CCI exceeding 7% in 2022. The District's costs have historically increased in excess of inflation. It is not expected that inflation will remain at such high levels in the future and for the purposes of this rate study average annual inflation is projected to be 5%.

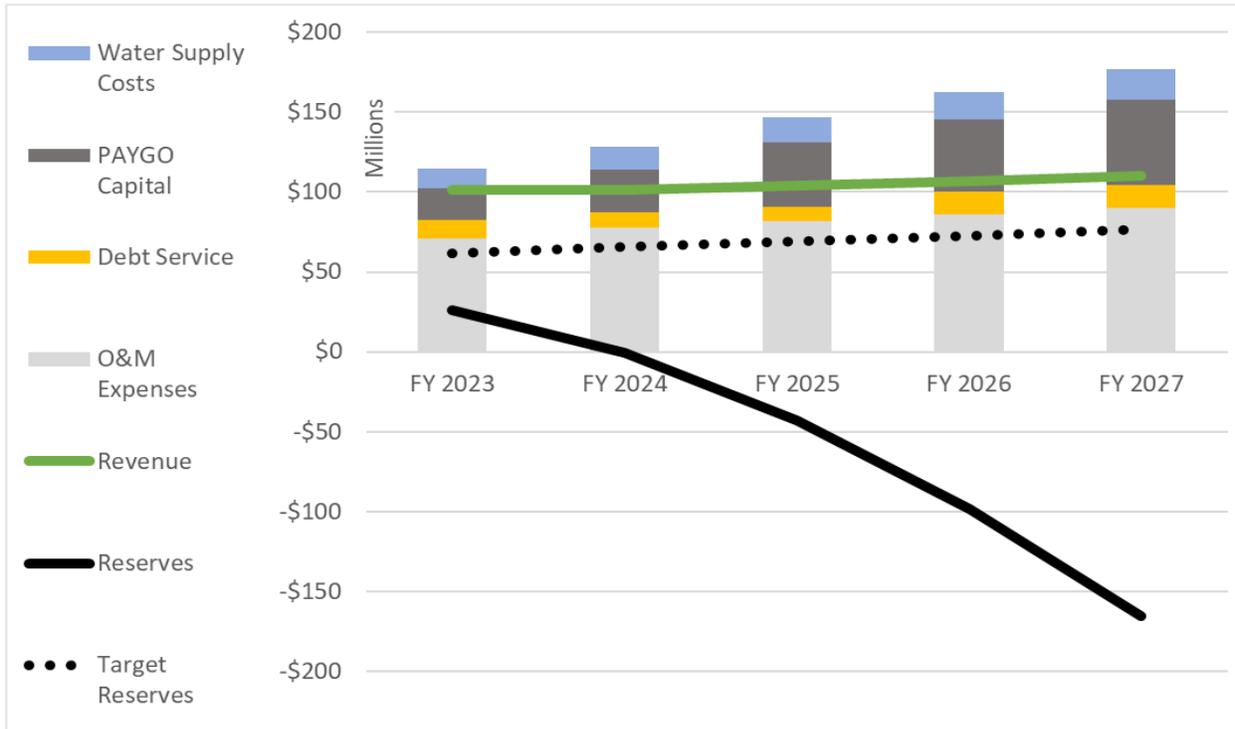
Reserve Replenishment

The recent drought resulted in reduced water sales revenue and the District used its reserves to meet revenue shortfalls and cover additional costs. There is now a need to replenish the District's reserve funds and the recommended rates put the District on a path to gradually rebuild reserves. The financial plan projects the District will meet its current reserve target in eight years. The existing reserve target is six months of operating expenses plus one year of baseline capital spending. The District is in the process of refining its reserve policies to include a reserve fund dedicated to future water supply resiliency and enhancement efforts.

5.2 Cash Flow Projections with Existing Rates

The District is currently operating at a deficit and based on the financial projections, without any rate increases, the District would continue to operate at a deficit and deplete the District's reserves within the next year. The following figure shows a 5-year projection of expenses broken down by key categories, projected annual revenues with no rate increases, and ending reserves compared to the reserve target.

Figure 7: 5-Year Cash Flow Projection without Rate Increases



5.3 Cash Flow Projections and Recommended Rate Increases

Long-term cash-flow projections were developed based on assumptions and key drivers of future rate increases described in Section 5.1. The projections were used to determine the water utility’s annual revenue requirements and project required water rate revenue increases. The long-term cash-flow projections incorporate the latest information available from the District’s budget, annual reports, capital spending projections, and metered water demand data as well as a number of reasonable assumptions developed with input from the District. Detailed revenue, expense and customer demand projections are shown in Appendices A and B. The overall rate revenue increases shown in the following tables are designed to fund the District’s cost of providing service, maintain roughly balanced budgets, maintain healthy debt service coverage, and meet long-term fund reserve targets. The projections indicate the need for increases to water rate revenues each of the next four fiscal years. Actual impacts to customers’ water bills will vary based on customer class and water use due to proposed modifications to the rate structure and the updated cost-of-service analysis.

A summary of the long-term cash-flow projections is displayed in the following table.

Table 12: Projected Revenue Needs

Key Financial Information	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Revenue from Full Year					
Rate Increase	\$0	\$33,431,777	\$17,590,552	\$13,369,954	\$8,244,496
Total Revenue	\$101,060,426	\$134,948,600	\$155,971,742	\$173,144,773	\$185,460,298
Total Expenses	\$114,806,549	\$128,567,515	\$146,470,089	\$162,453,146	\$176,591,372
Net Cash Change	-\$13,746,123	\$6,381,085	\$9,501,653	\$10,691,627	\$8,868,926
Total Reserves	\$26,353,877	\$32,734,962	\$42,236,615	\$52,928,242	\$61,797,168
Reserve Targets	\$61,773,026	\$65,486,142	\$69,065,510	\$72,854,156	\$76,865,618

Detailed, long-term, cash-flow projections described are shown in the following table.

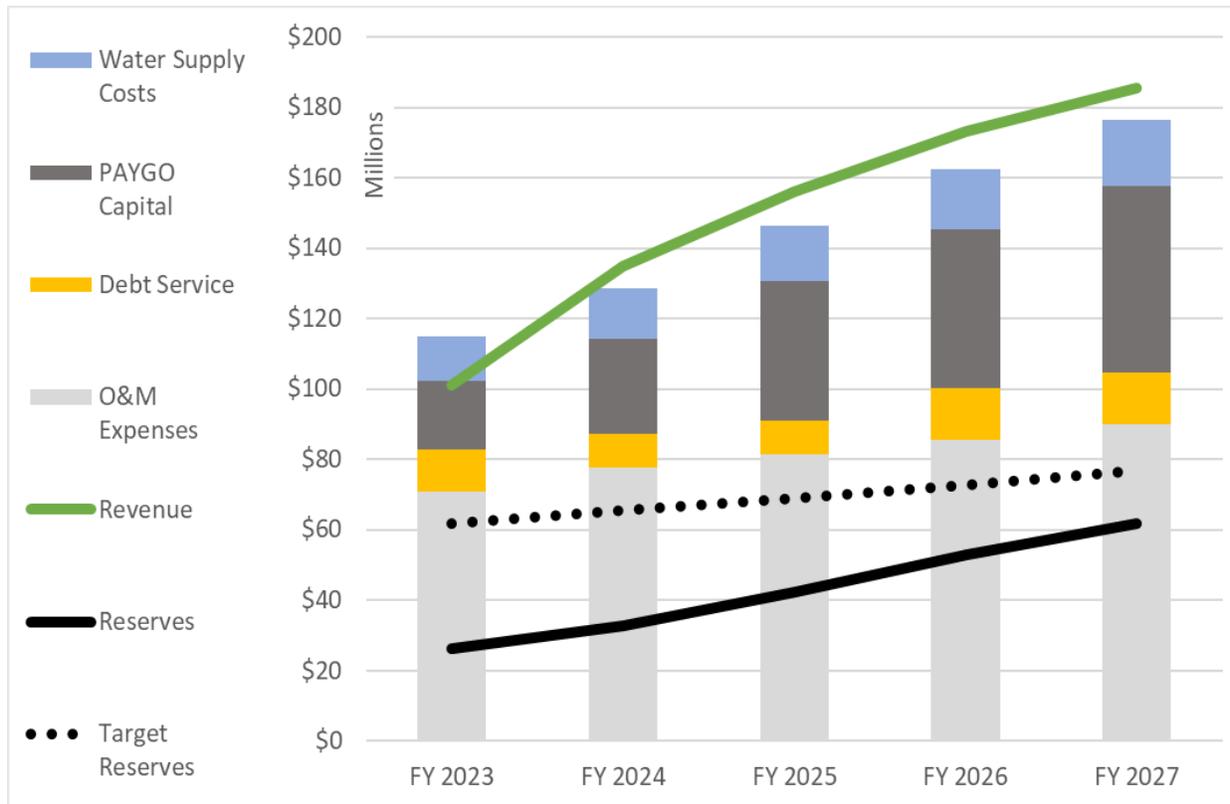
Table 13: Detailed Water Financial Projections

REVENUES	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Revenues from Rates and Charges					
Rate Revenue	\$77,630,031	\$111,180,097	\$131,077,985	\$147,069,499	\$158,144,432
Watershed Management Fee	\$5,048,267	\$5,386,376	\$5,655,695	\$5,938,480	\$6,235,404
Capital Maintenance Fee	\$17,118,698	\$17,118,698	\$17,974,633	\$18,873,365	\$19,817,033
Other Revenue	\$1,263,430	\$1,263,430	\$1,263,430	\$1,263,430	\$1,263,430
TOTAL REVENUES	\$101,060,426	\$134,948,600	\$155,971,742	\$173,144,773	\$185,460,298
EXPENSES	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Operating Expenses					
Water Supply Costs					
Local Treated Water	\$4,369,013	\$5,152,502	\$5,518,330	\$5,910,131	\$6,329,751
Purchased Water	\$8,261,729	\$9,278,146	\$10,242,320	\$11,307,539	\$12,484,455
Other Operating	\$70,915,309	\$77,697,635	\$81,584,170	\$85,665,131	\$89,950,245
Subtotal Operating Expenses	\$83,546,051	\$92,128,283	\$97,344,820	\$102,882,802	\$108,764,451
Non-Operating Expenses					
Water Existing Debt	\$11,838,498	\$9,517,232	\$9,392,169	\$9,384,142	\$9,394,706
Water New Debt	\$0	\$0	\$0	\$5,308,197	\$5,308,197
Cash Funded Capital	\$19,422,000	\$26,922,000	\$39,733,100	\$44,878,005	\$53,124,018
Subtotal Non-Operating Expenses	\$31,260,498	\$36,439,232	\$49,125,269	\$59,570,344	\$67,826,921
TOTAL EXPENSES	\$114,806,549	\$128,567,515	\$146,470,089	\$162,453,146	\$176,591,372
Net Cash Change	(\$13,746,123)	\$6,381,085	\$9,501,653	\$10,691,627	\$8,868,926
RESERVE BALANCES	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Total Reserve Balances					
Beginning Balance	\$40,100,000	\$26,353,877	\$32,734,962	\$42,236,615	\$52,928,242
Ending Balance	\$26,353,877	\$32,734,962	\$42,236,615	\$52,928,242	\$61,797,168
Target Reserve Balances					
Operating (6 months)	\$41,773,026	\$46,064,142	\$48,672,410	\$51,441,401	\$54,382,226
Baseline Capital (1 year)	\$20,000,000	\$19,422,000	\$20,393,100	\$21,412,755	\$22,483,393
Total Reserve Target	\$61,773,026	\$65,486,142	\$69,065,510	\$72,854,156	\$76,865,618

Note: Discretionary non-rate revenues excluded from cashflow projection.

The following figure visually depicts the cash-flow projections with the proposed rate increases for the next four years. Projected expenses are summarized into key categories. The figure also compares fund reserves at the end of each fiscal year to annual fund reserve targets.

Figure 8: Projected Revenues and Expenses



Note: Revenues in excess of expenses are used to rebuild District reserves as detailed in Table 13 and depicted in Figure 8.

6 WATER COST OF SERVICE RATE ANALYSIS

The American Water Works Association (AWWA) is the largest association of water professionals in the world. AWWA publishes the M1 Manual, titled "Principles of Water Rates, Fees, and Charges," which is widely recognized as the preeminent resource for setting water rates. The manual is consistently revised by leading professionals in the industry to incorporate the latest industry best practices and meet regulatory requirements.

The AWWA M1 Manual outlines two methods for deriving water rates, the base-extra capacity and commodity demand method. Both methods recognize that the cost of serving a customer depends not only on the total volume of water used, but also on peak-demand requirements. Similar to the previous cost of service study, the proposed rates presented within this rate study are developed using a base-extra capacity method. The base-extra capacity method was chosen because it ensures that customers with higher levels of water use, who place more demands on the water supply system, pay a proportionate share of the costs associated with providing that additional capacity. It also encourages conservation and ensures that those who use more water pay for the additional infrastructure, maintenance, and other costs required to meet their annual needs over the long term. By allocating the incremental costs of providing extra-capacity in the system to those customers whose use necessitates it, the base-extra capacity method ensures that rates for average and below-average users do not include costs for capital investments and imported water supplies that they do not require. This method also provides an incentive for customers to conserve water, as they can reduce their bills by reducing their usage, while ensuring that the water system can continue to provide reliable service to all customers.

In using the base-extra capacity method, costs are typically separated into four cost components: (1) Base (average), (2) Extra Capacity, (3) Customer, and (4) Fire. As noted in the AWWA M1 Manual, in detailed rate studies, such as the one performed for this rate study, some of these elements might be broken down further into two or more subcomponents.

Based on the District's expenditures and system characteristics, the Customer (or fixed monthly) component was separated into two subcomponents: (1) Customer (accounts) and (2) Capacity (meter equivalent units). This bifurcation of the Customer component is done to better identify and allocate costs that vary based on capacity needs (as defined by the size of the meter) from those that should be equally shared by each customer account. A meter equivalent unit (MEU) is a ratio of any given meter size relative to the baseline 5/8-inch meter. The ratio is developed by comparing the potential flow capacity of each meter with the baseline.

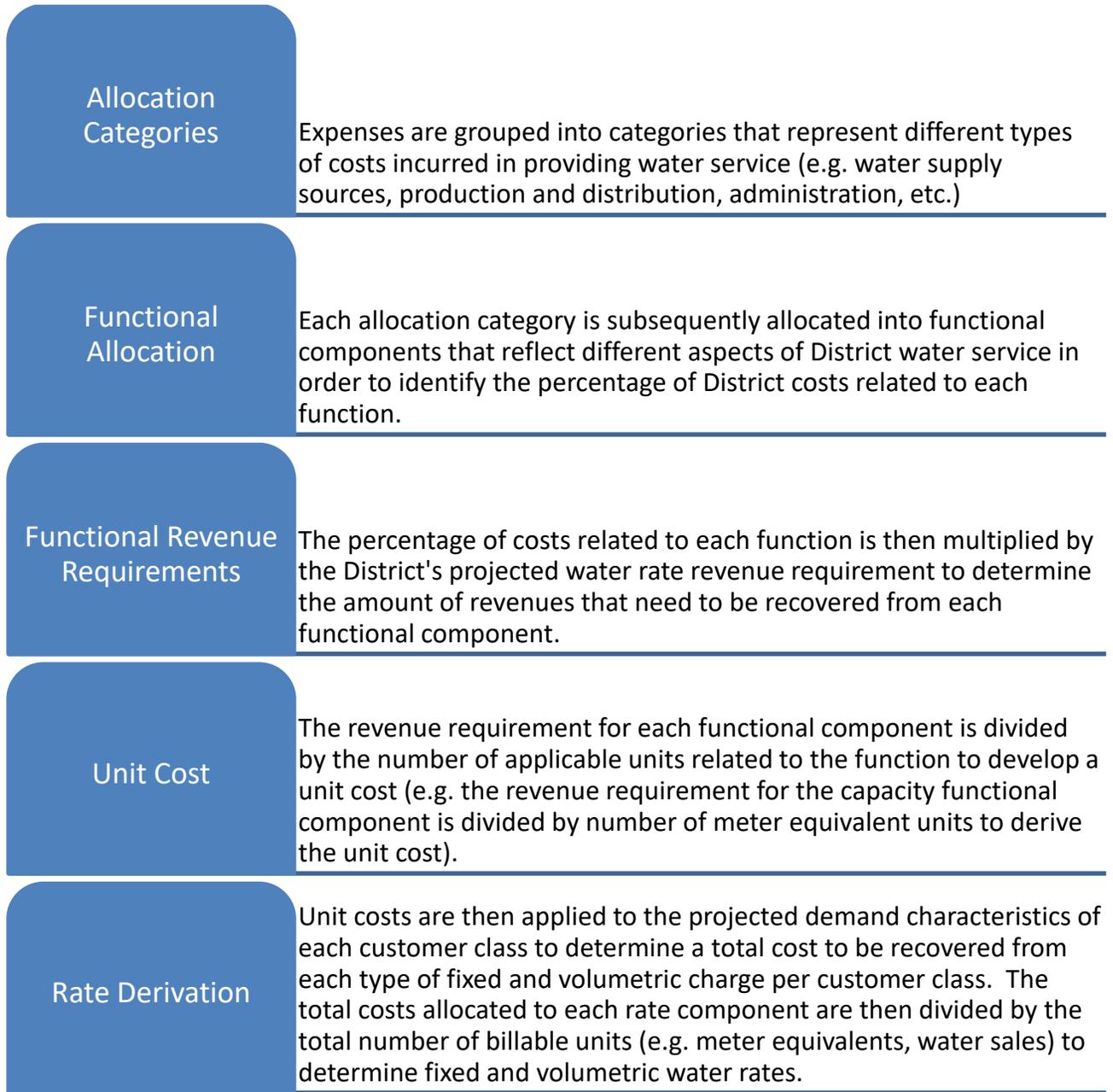
Base-Extra Capacity was split into four subcomponents: (1) Base Demands, (2) Average Demands, (3) Summer Demands, and (4) Peak Demands. These subcomponents are used to allocate the incremental costs of providing extra-capacity in the system equitably to those users who benefit

from the extra capacity and whose use necessitates the extra capacity. This cost allocation method ensures that those users with more expensive demands cover the additional infrastructure, water supply and other costs associated with their increased demands. This is described in more detail in Section 6.1.1.

The proposed rates are developed based on a detailed cost allocation that reflects the District's costs of providing service based on analysis of operations and input from District staff. As part of the process, BWA met with District staff from finance, administration, engineering, and operations to gain input on water system design and operations.

The following chart shows the general process for deriving water rates that reflect the District's costs of service to each customer class.

Figure 9: Cost of Service Analysis Process



6.1.1 Base-Extra Categories

There must be a nexus between the water used in each tier and the cost of providing that water. Base-Extra Categories are used to allocate the incremental costs of providing extra-capacity in the system needed to serve those customers whose use necessitates increased costs. This cost allocation method ensures that those users with more expensive demands cover the additional infrastructure, water supply and other costs associated with their increased demands. Said

differently, this method ensures that rates for users with average and below-average water usage do not include costs for capital investments and imported water supplies that are not required by their levels of use. FY 2021/22 consumption was used as a basis for determining the percentage of use in the Base-Extra Categories and projecting use in each tier. FY 2021/22 was used as a base because it reflects conservation demand patterns due to the drought. Demand patterns are projected to continue to reflect conservation as customers have become more aware of the need to conserve water and as water becomes more costly. To clearly demonstrate the nexus between the increased costs to the District and increased or peak customer demand, using District water usage data, BWA identified the volume of water used in each Base-Extra Category based on applying the following definitions to water usage in each bi-monthly billing period.

Base-Extra Category Definitions

Base Demand in this study is the lowest level of demand that was supplied by the District's watershed in the last ten years, based on the District's customer usage and consumption data. Base demand includes water usage that is at or below 56% of the bi-monthly average demand. This reflects the minimum level of demand the District can expect to serve in a year.

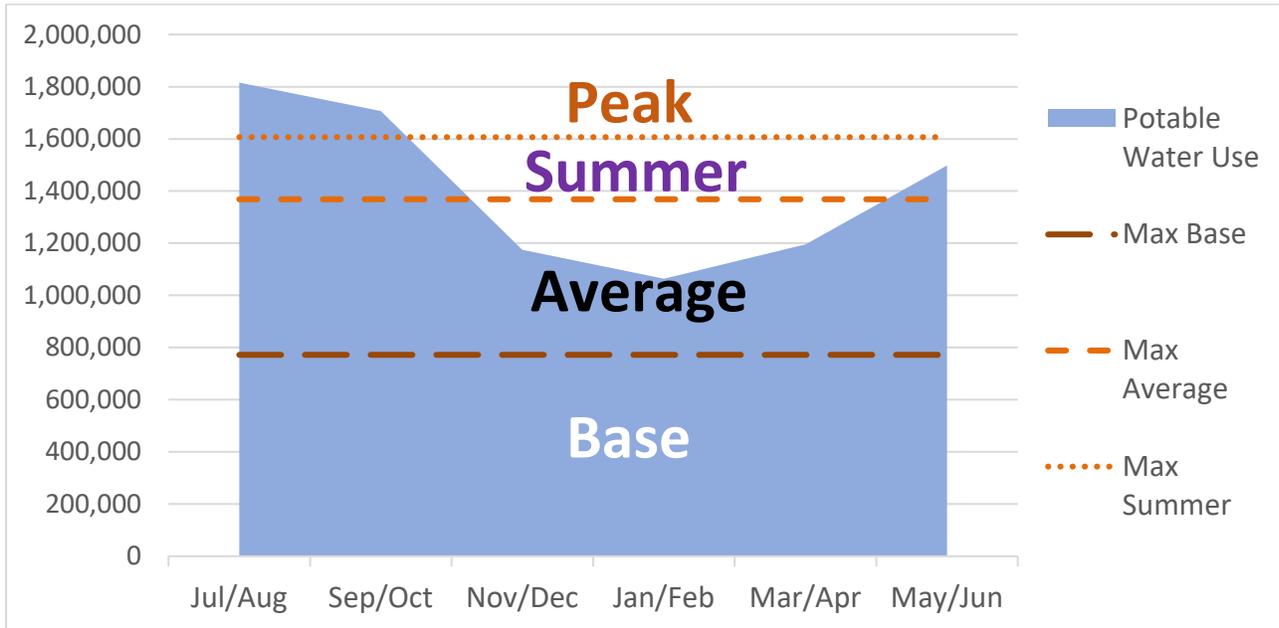
Average Demand in this study equals the average demand calculated from the District's customer usage data in FY 21/22. Average demand exceeds base demand.

Summer Demand in this study equals the average summer demand in the months of May through October, calculated from the District's customer usage data in FY 21/22.

Peak Demand in this study is defined as use greater than the bi-monthly, average summer demand calculated from the District's customer usage data in FY 21/22. Use in this category includes maximum day and maximum hour demands.

The following figure shows the Base-Extra Category definitions applied to the projected FY 23/24 water demand. In the figure Base demand consists of all water usage below the dashed Max Base line; Average demand consists of all water usage above the dashed Max Base line but below the dashed Max Average line; Summer demand consists of all water usage above the dashed Max Average line but below the dotted Max Summer line; and Peak demand consists of all water usage above the dotted Max Summer line.

Figure 10: Projected FY 23/24 Demand and Base-Extra Categories



Water use in the District is higher in the summer and lower in the winter. Most of the potable portion of a water system is sized to accommodate maximum (peak) usage. To ensure that rates fairly reflect the costs of the water system sized to meet peak demands, these costs are allocated to Base-Extra Categories based on peak billing period usage but recovered in the rates based on the total annual use in each Base-Extra Category.

The following table shows the thresholds for each Base-Extra Category based on the descriptions above, the total use by Base-Extra Category in FY 21/22, and the maximum bi-monthly use in each Base-Extra Category. The percentages are used for cost allocation. The calculation of the bi-monthly use in each Base-Extra category by customer class is shown in Appendix A.

Table 14: Base-Extra Category Percentages

Demand Categories	Base-Extra Use Category Bi-Monthly Upper Threshold	FY 21/22	FY 21/22	FY 21/22	FY 21/22
		Annual Demand	Annual Demand	Peak Bi-Monthly Demand	Peak Bi-Monthly Demand
	CCF	CCF	%	CCF	%
Base	772,217	4,631,931	56.4%	772,217	44.3%
Average	1,368,501	2,861,645	34.9%	595,959	34.2%
Summer	1,606,762	530,931	6.5%	236,500	13.6%
Peak		186,497	2.3%	137,248	7.9%
Total		8,211,004	100.0%	1,741,924	100.0%

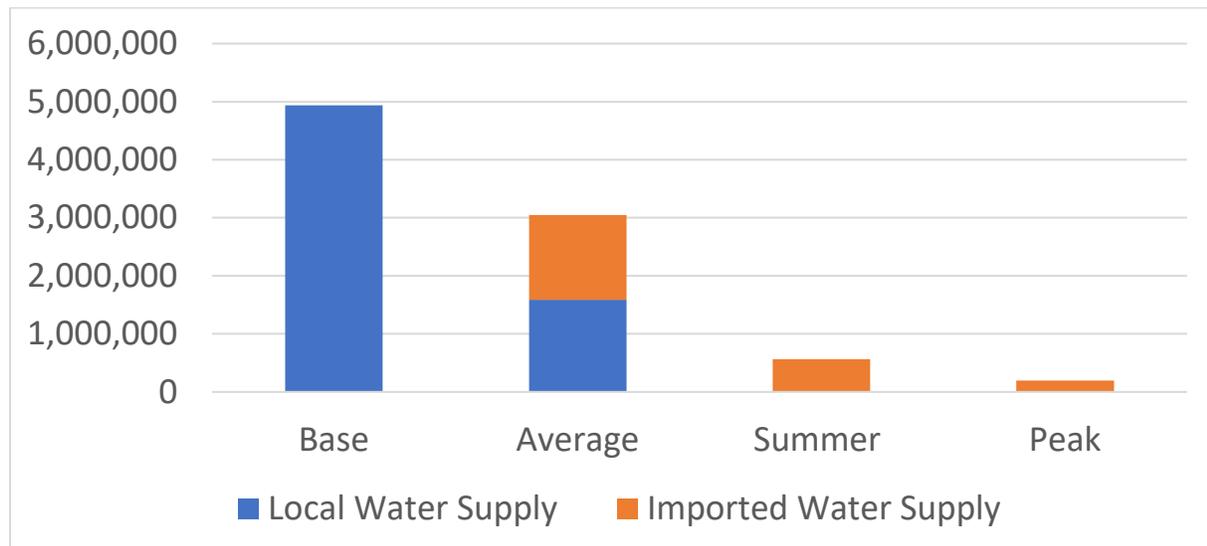
Potable Water Supply Utilization by Use Category

As described previously, the District’s potable water is supplied by its watershed and water imported from Sonoma Water. The least expensive water comes from the District's watershed, which is stored in its reservoirs. Once the lower cost, local supply water is exhausted, Sonoma Water purchases are necessary. The water supply utilization of each use category was determined by exhausting the lower cost, local supply used to meet base demands (watershed) through the Base-Extra Categories from base to peak. More costly purchased water then fulfills the remainder of the demand in each tier. The table below details how these source of supply costs are allocated.

Table 15: Cost Allocation to Variable Cost Recovery Functional Components

Supply by Base- Extra Category	Demand %	Total CCF	Local Water Supply CCF	Imported Water Supply CCF	Total Local Production CCF	Sonoma Water Imported (acre- feet) CCF
Total Supply	100.00%	8,738,499	6,543,140	2,195,359	100.0%	100.0%
<u>Base-Extra Category</u>						
Base	56.43%	4,930,955	4,930,955	0	75.4%	0.0%
Average	34.88%	3,047,773	1,612,184	1,435,589	24.6%	65.4%
Summer	6.46%	564,570	0	564,570	0.0%	25.7%
Peak	2.23%	195,200	0	195,200	0.0%	8.9%

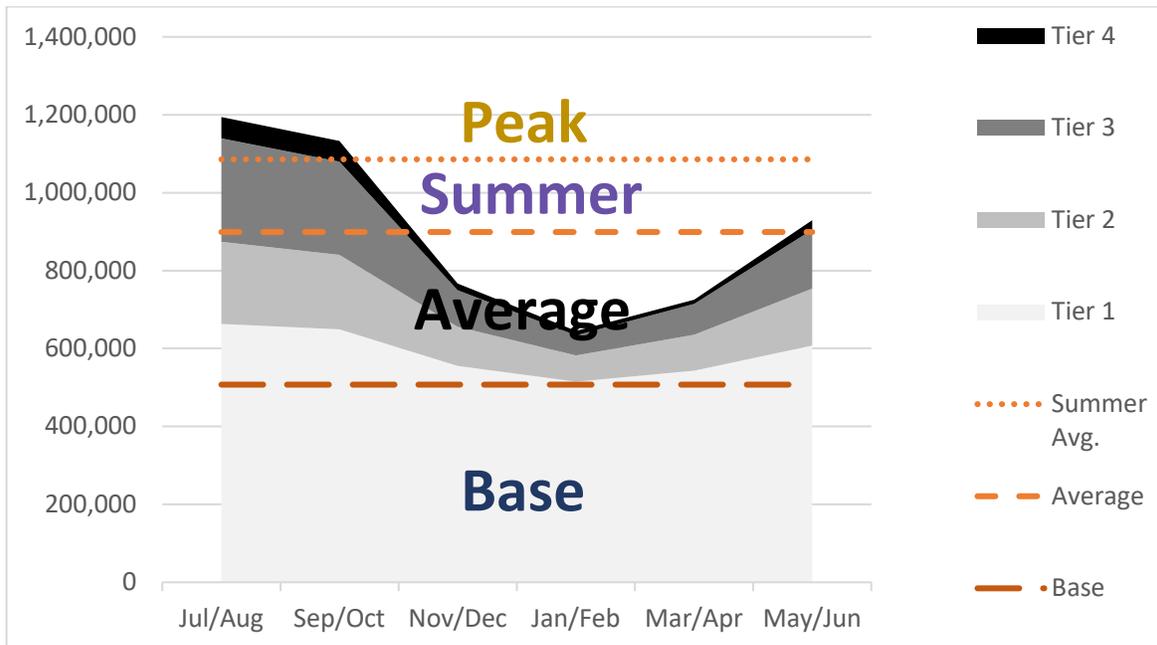
Figure 11: Supply Utilization by Base-Extra Use Categories (CCF)



Base-Extra Use Category Utilization by Tier

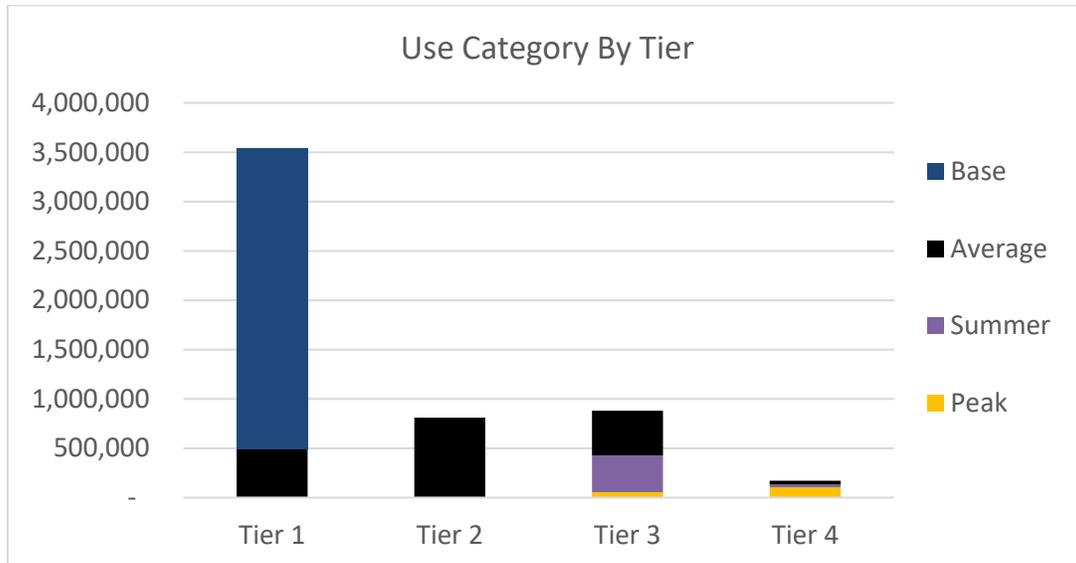
In order to develop tiered rates that reflect the underlying proportional costs of service, the volume of water by Base-Extra Category in each tier must be identified. This ensures that the costs allocated to each tier reflect the blended cost from the volume of each category used in each tier. The projected volume of use is based on bi-monthly tier usage in FY 21/22. The following figures show the water use categories that comprise each tier for the residential and duplex customer class. The calculation of the bi-monthly use in each Base-Extra category by customer class and tier is shown in Appendix A.

Figure 12: Single Family Residential and Duplex Tier Demand by Base-Extra Category



The following figure shows the total volume of each Base-Extra Category by Single Family Residential and Duplex tier.

Figure 13: Base-Extra Category by Tier (CCF)



6.2 Revenue and Expense Allocation Categories

The first step in the cost of service evaluation process is to develop allocation categories where revenues and expenses related to the same purpose are grouped together. BWA worked with District staff to analyze the District’s budget on a line-by-line basis and to assign each expenditure and revenue to the appropriate allocation category. The following contains descriptions of the allocation categories and an explanation of how they are allocated to functional components:

- **Customer** costs are fixed expenditures that relate to operational support activities, including billing, customer service, and meter reading support. These expenditures are common to all customers, regardless of the meter size serving a property or actual water use.
- **Marin Water** expenses are the District’s chemical and electricity costs to treat water from the District’s watershed. These costs are allocated to Base-Extra Categories based on the supply allocation described later in this section.
- **Sonoma Water** expenses are costs related to purchasing water from Sonoma Water and treating it to blend with the District’s local water supplies. These costs are allocated to Base-Extra Categories based on the supply allocation described later in this section.
- **Recycled Water** expenses are costs related to purchasing and distributing recycled water.
- **Administration Support** expenses are related to the District’s administrative overhead functions such as finance, information technology, and human resources. These costs are related to system capacity and recovered partially by MEUs and per unit of water demand.

- **Conservation** expenses are related to the District's efforts to encourage customers to conserve water and reduce peak summer demands. Conservation costs are allocated to the Summer and Peak Demands.
- **Watershed** expenses and offsetting revenues from the WMF are related to the operation and maintenance of the District's watershed. Watershed expenses are fixed and benefit all customers, as the watershed is the primary source of water supply. These costs are recovered per unit of potable and raw water sold.
- **Facility Support** expenses are related to the District's general and administrative functions such as warehousing, facilities and automotive service costs. Facility Support costs are related to the capacity of the District and recovered per MEU.
- **Water Quality Lab** expenses are related to testing and monitoring water quality. These costs are recovered per unit of potable water sold.
- **Electricity** expenses are related to the electricity expenses incurred by the District excluding electricity used for water treatment. These costs are recovered per unit of potable water sold and partially by MEUs.
- **Public Information** expenses are related to the public information activities and are recovered by a combination of MEU's, per unit of potable water sold and through the Base-Extra categories.
- **Potable Supply** expenses are related to improving the District's potable water supply. These costs are allocated to Base-Extra categories based on peak month demands.
- **Backflow** expenses are related to preventing backflow in the system including providing and testing backflow prevention devices a portion of these devices are specifically used to prevent recycled water backflow. These costs are recovered by MEUs and per unit of recycled water sold.
- **CIP** expenses are related to baseline capital projects including cash funded capital and debt service. These expenses are offset by capital related revenue including connection charges and fees as well as the CMF. These costs are recovered through Base-Extra Categories based on peak month use as well as raw water units and private fire capacity charges.
- **Distribution** expenses are related to maintaining and operating the District's potable water and recycled water distribution systems. These costs are recovered through, Base-Extra Categories based on peak month use as well as recycled water charges and private fire capacity charges.
- **Water System** expenses are the costs of maintaining and operating the water system, not including distribution. These costs are recovered through Base-Extra Categories based on peak month use as well as raw water units and private fire capacity charges.
- **Treatment** expenses consist of the costs to operate and maintain the District's water treatment plants, which are not related to the volume of water treated. These costs are recovered per unit of potable water sold.

The following table shows the projected expenses and offsetting revenues for FY 2024 in each allocation category. The final allocation amount for each allocation category is the net of expenses less offsetting revenues. Offsetting revenues consist of interest revenue, special read fees, connection fees, the CMF, and the WMF and offset specific allocation categories related to the revenue. Detailed line item revenues, functional allocations, and expenses are shown in Appendix A.

Table 16: Allocation Categories for Functional Allocation

Allocation Category	Allocation Expenses	Offsetting Revenues	Allocation Amount
Customer Only	\$4,482,707	\$0	\$4,482,707
Marin Water	\$5,152,502	\$0	\$5,152,502
Sonoma Water	\$9,483,466	\$0	\$9,483,466
Recycled Water	\$529,347	\$0	\$529,347
Admin Support	\$19,358,104	\$453,248	\$18,904,857
Conservation	\$2,709,766	\$0	\$2,709,766
Watershed	\$7,779,465	\$5,386,376	\$2,393,089
Facility Support	\$6,726,240	\$0	\$6,726,240
Water Quality Lab	\$2,574,021	\$0	\$2,574,021
Electricity	\$1,897,941	\$0	\$1,897,941
Public Information	\$1,195,871	\$0	\$1,195,871
Potable Supply	\$6,894,221		\$6,894,221
Backflow	\$919,290	\$0	\$919,290
As CIP	\$37,632,094	\$17,928,880	\$19,703,214
Distribution	\$6,603,277		\$6,603,277
Water System	\$15,987,819		\$15,987,819
Treatment	\$5,022,469		\$5,022,469
Functional Allocation \$	\$134,948,600	\$23,768,504	\$111,180,096
Functional Allocation %			100%
Revenue Requirement			\$111,180,097

6.3 Allocations Between Fixed Capacity and Variable Water Usage Functions

Water utilities have employed a wide range of approaches or perspectives for allocating and recovering their costs for providing service, often through a combination of fixed and variable charges. The percentage of revenues derived from the fixed and variable charges should be proportional to each system’s expenditures and must not exceed the cost of providing service.

Many of the District’s costs are fixed costs that do not vary by the level of service provided, such as operational and staff costs, as well as costs for building and maintaining infrastructure. Some of these costs are related to the number of customers but the majority of the fixed costs are related to the total capacity of the water system. Fixed costs related to system capacity can

reasonably be apportioned by meter size or variable, usage-based rate recovery in recognition that both units of measure reasonably reflect customer usage driving the District to incur capacity-related costs. For example, a share of the fixed cost of salaries related to water production can reasonably be recovered from usage-based charges as these costs are incurred to provide water supply to meet customer demand or from a fixed charge based on a customer's meter size which reflects the magnitude of water a customer can pull from the water system. Likewise, debt service payments may be fixed annual costs, but it is reasonable to recover some of these costs from usage-based rates as the costs are incurred to fund infrastructure that will improve the water delivery system.

While there is no single correct approach, BWA believes that costs should be allocated within a reasonable range that reflects both a) underlying cost causation, to the extent such causation can reasonably be determined or estimated, and b) the policy preferences of the agency in cases where a range of reasonable approaches can be justified.

6.4 Functional Cost Allocation

The next step in the cost of service analysis is to allocate the net expenses (expenses less offsetting revenues) in each allocation category to the District's functional components. A functional component is where portions of an allocation category's net expenses are most reasonably recovered by a specific allocation unit. An example of this is costs allocated to the customer functional component are most reasonably recovered on a per customer basis. Just as there is no single correct approach for fixed and variable cost allocation, there is no single correct approach for functional cost allocation. Functional cost allocations should be within a reasonable range that reflects the considerations described in the previous section. This process is intended to proportionately allocate costs to each functional component to determine the revenue requirement for each component. The allocations to each functional component were based on input from District staff and BWA analysis of customer, water supply, and metered water demand data. A description of the allocations for each allocation category is included in Section 6.2. Supporting calculations for the allocations are included in Appendix A.

6.5 Allocation to Fixed Cost Functional Components

The following section describes the functional components where the revenue requirement is recovered from fixed units (e.g., services, MEUs and EFUs).

Fixed Cost Functional Components

- Costs allocated to the **Customer** functional component are related to the number of accounts and are reasonably recovered on a per account basis.
- Costs allocated to the **Capacity** functional component are related to the size of the District's water system and are reasonably recovered per meter equivalent unit (MEU).

- Costs allocated to the **Private Fire Capacity** functional component are related to private fire capacity. The revenue requirement for this functional category is recovered per equivalent fire capacity unit (EFU).

The following table shows a breakdown of the water utility’s allocation to fixed cost functional categories as described in Section 6.2.

Table 17: Allocation to Fixed Cost Functional Components

Allocation Category	Allocation Amount	Customer	Capacity	Private Fire Capacity
Customer Only	\$4,482,707	100.0%		
Marin Water	\$5,152,502			
Sonoma Water	\$9,483,466			
Recycled Water	\$529,347			
Admin Support	\$18,904,857		60.0%	
Conservation	\$2,709,766			
Watershed	\$2,393,089			
Facility Support	\$6,726,240		100.0%	
Water Quality Lab	\$2,574,021			
Electricity	\$1,897,941		20.0%	
Public Information	\$1,195,871	33.3%		
Potable Supply	\$6,894,221			
Backflow	\$919,290		55.0%	
As CIP	\$19,703,214			1.3%
Distribution	\$6,603,277			1.3%
Water System	\$15,987,819			1.3%
Treatment	\$5,022,469			
Functional Allocation \$	\$111,180,096	\$4,881,330	\$18,954,351	\$534,812
Functional Allocation %	100%	4.39%	17.05%	0.48%
Revenue Requirement	\$111,180,097	\$4,881,330	\$18,954,352	\$534,812

A description of the allocations for each allocation category is included in Section 6.2. Supporting calculations for the allocations are included in Appendix A. The Functional Allocation dollars are calculated by taking the sum of the products of the allocation percentages in each functional component multiplied by the allocation amounts. The Functional Allocation percentage is calculated by dividing the Functional Allocation dollars for each functional component by the total Functional Allocation dollars. The Functional Allocation percentage for each functional component is then multiplied by the total revenue requirement. The revenue requirement was identified in Section 5.3.

6.6 Fixed Cost Functional Component Unit Costs

The following table describes the allocation units used to derive the unit cost by functional component. Fixed allocation units are services and MEUs shown in Table 6.

Table 18: Fixed Allocation Units

Functional Component	Allocation Units	Allocation Units	Unit of Measure	Description
Customer	Number of Services Connections	61,845	#	Total number of active water and private fireline services
Water Capacity	Meter Equivalent Units	90,561	MEU	Total amount of active water customer meter equivalent units
Private Fire Capacity	Private Fireline Equivalent Fire Units	10,803	EFU	Total amount of private fireline equivalent fire units per month

The following table shows the allocation units and total revenue requirement by functional component. The allocation units used for each functional component are the units related to the service provided by the functional component. The revenue requirement divided by the allocation units for each functional component provide each functional component's unit rate.

Table 19: Fixed Annual Unit Costs by Functional Component

Allocation Units	Customer	Water Capacity	Private Fireline Capacity
<i>Allocation Unit of Measure</i>	<i>#</i>	<i>MEU</i>	<i>EFU</i>
Allocation Units	61,845	90,561	10,803
Revenue Requirement	<u>\$4,881,330</u>	<u>\$18,954,352</u>	<u>\$534,812</u>
Annual Unit Cost	\$78.93	\$209.30	\$49.51

6.7 Function Allocation to Variable Cost Components

The following section describes the functional components where the revenue requirement is recovered from variable CCF units (100 cubic feet or 748 gallons). The definition of the functional components are as follows:

- **Potable Water costs** are related to all potable water sold in the District.
- **Base Demand, Average Demand, Summer Demand and Peak Demand** costs are related to meeting different levels of water demand.
- **Recycled** costs are related to purchasing and distributing recycled water.
- **Raw Water** costs are related to providing raw water and exclude treatment and distribution costs.

The following table shows a breakdown of the water utility’s allocation to variable cost functional components as described in Section 6.2.

Table 20: Cost Allocation to Variable Cost Recovery Functional Components

Allocation Category	Allocation Amount	Potable Water	Base Demand	Average Demand	Summer Demand	Peak Demand	Recycled	Raw Water
Customer Only	\$4,482,707							
Marin Water	\$5,152,502		75.4%	24.6%	0.0%	0.0%		
Sonoma Water	\$9,483,466		0.0%	65.4%	25.7%	8.9%		
Recycled Water	\$529,347						100.0%	
Admin Support	\$18,904,857	38.5%					0.9%	0.6%
Conservation	\$2,709,766				63.3%	33.7%		3.0%
Watershed	\$2,393,089	98.5%						1.5%
Facility Support	\$6,726,240							
Water Quality Lab	\$2,574,021	100.0%						
Electricity	\$1,897,941	80.0%						
Public Information	\$1,195,871	32.0%			20.8%	12.1%	0.9%	1.0%
Potable Supply	\$6,894,221		44.3%	34.2%	13.6%	7.9%		
Backflow	\$919,290						45.0%	
As CIP	\$19,703,214		43.1%	33.3%	13.2%	7.7%		1.5%
Distribution	\$6,603,277		42.5%	32.8%	13.1%	7.6%	2.7%	
Water System	\$15,987,819		43.1%	33.3%	13.2%	7.7%		1.5%
Treatment	\$5,022,469	100.0%						
Functional Allocation \$	\$111,180,096	\$19,135,762	\$25,127,179	\$23,868,866	\$10,921,086	\$5,690,846	\$1,300,896	\$764,967
Functional Allocation %	100%	17.21%	22.60%	21.47%	9.82%	5.12%	1.17%	0.69%
Revenue Requirement	\$111,180,097	\$19,135,762	\$25,127,179	\$23,868,867	\$10,921,086	\$5,690,846	\$1,300,896	\$764,967

A description of the allocations for each allocation category is included in Section 6.2. Supporting calculations for the allocations are included in Appendix A. The functional allocation dollars are calculated by taking the sum of the products of the allocation percentages in each functional component multiplied by the allocation amounts. The functional allocation percentage is calculated by dividing the functional allocation dollars for each functional component by the total functional dollars. The functional allocation percentage for each functional component is then multiplied by the total revenue requirement. The revenue requirement was identified in Section 5.3.

6.8 Volumetric Unit Costs by Functional Components

The following table describes the volumetric allocation demand units used to derive the unit cost by function.

Table 21: Volumetric Allocation Units (FY 2024)

Functional Component	Allocation Units (CCF)	Description
Potable Water	8,738,499	Projected potable water units sold by the District
Base Demand	4,930,955	Projected base demand water units sold by the District
Average Demand	3,047,773	Projected average demand water units sold by the District
Summer Demand	564,570	Projected summer demand water units sold by the District
Peak Demand	195,200	Projected peak demand water units sold by the District
Recycled	239,494	Projected recycled water units sold by the District
Raw Water	143,748	Projected raw water units sold by the District
Watershed	8,882,246	Projected potable water and raw water units sold by the District

The following table shows the allocation units and total revenue requirement by functional component. The allocation units (Table 21) used for each functional component (Table 20) are the units related to the service provided by the functional component. The revenue requirement divided by the allocation units for each functional component provide each functional component's unit cost.

Table 22: Volumetric Unit Costs by Function

Allocation Units	Potable Water	Base	Average Demand	Summer Demand	Peak Demand	Recycled	Raw Water	Watershed
Allocation Unit of Measure	CCF	CCF	CCF	CCF	CCF	CCF	CCF	CCF
Allocation Units	8,738,499	4,930,955	3,047,773	564,570	195,200	239,494	143,748	8,882,246
Revenue Requirement	<u>\$19,135,762</u>	<u>\$25,127,179</u>	<u>\$23,868,867</u>	<u>\$10,921,086</u>	<u>\$5,690,846</u>	<u>\$1,300,896</u>	<u>\$764,967</u>	<u>\$111,180,097</u>
Unit Cost (\$/CCF)	\$2.19	\$5.10	\$7.83	\$19.34	\$29.15	\$5.43	\$5.32	\$12.52

6.9 Multi-Year Revenue Requirements

Some of the District's rates recover costs which increase independently of the overall rate revenue increases. Costs allocated to fixed charges are projected to increase related to inflation. Recycled water cost increases are also related to inflation and debt service payments. Volumetric rates recover the remaining rate revenue requirement.

Table 23: Multi-Year Revenue Requirements

Multi-Year Revenue Requirements	FY 2024	FY 2025	FY 2026	FY 2027
<i>Inflation</i>		5.0%	5.0%	5.0%
Rate Revenue (excluding demand changes)	\$111,180,097	\$131,077,985	\$147,069,499	\$158,144,432
Revenue Increasing Independently				
Customer	\$4,881,330	\$5,125,397	\$5,381,667	\$5,650,750
Capacity	\$18,954,352	\$19,902,069	\$20,897,173	\$21,942,031
Fire Capacity	\$534,812	\$561,553	\$589,631	\$619,112
Recycled				
Recycled Purchase	\$165,360	\$175,282	\$185,798	\$196,946
Recycled Debt	\$363,987	\$364,049	\$364,447	\$364,111
Backflow and Admin	<u>\$771,549</u>	<u>\$810,127</u>	<u>\$850,633</u>	<u>\$893,165</u>
Total Recycled	\$1,300,896	\$1,349,457	\$1,400,879	\$1,454,223
Total Recycled		3.73%	3.81%	3.81%
Total Amount Increasing with Cost Inflation	<u>\$25,671,390</u>	<u>\$26,938,476</u>	<u>\$28,269,349</u>	<u>\$29,666,116</u>
Revenue Requirement Linked to Revenue Increases	\$85,508,706	\$104,139,509	\$118,800,151	\$128,478,316
Projected Demand (CCF)	8,738,499	8,913,269	9,091,534	9,273,365
Revenue Requirement (\$ per CCF)	\$9.79	\$11.68	\$13.07	\$13.85
Revenue Requirement Linked to Revenue Increases		19.40%	11.84%	6.03%

7 WATER RATE DERIVATION

7.1 Rate Structure Recommendations

The proposed rates incorporate some modifications to the District's water rate structure designed to align rates with the current cost of providing service and reflect policy input provided by the District. Due to these modifications, impacts to water bills will vary based on customer class and water use when the first-year proposed rates are implemented.

The proposed water structure remains relatively consistent with the District's existing rate structure but incorporates some modifications designed to align rates with current projected costs of service and changes in customer use patterns. Rate structure recommendations are described as follows:

- Merge the Duplex Class into the Single-Family Residential Class: BWA reviewed the District's customer usage data in these two classes, including peak and average usage, and identified similar usage trends and shared customer behavior. The similar customer and usage characteristics indicate it is more reasonable to combine these customer classes into the same rate structure.
- Merge the Single-Family Irrigation Class into the Commercial, Institutional, and Irrigation Class: Similarly, analysis of customer usage characteristics and patterns shows that Single-Family Irrigation customers have similar usage characteristics to Irrigation customers in the Commercial, Institutional, and Irrigation class. Customers grouped into this class place varied peak demands on the system and have rate structures tailored to their specific usage.
- Eliminate Seasonal Tiers for Residential Classes: Discontinue seasonal tier changes. The inclining block tier structure accounts for seasonality because customers placing above-average demands on the water system (which will likely occur more often in hotter months) will be paying rates in higher tiers reflecting the increased costs associated with serving their higher water use demands.
- Single Family Residential and Duplex Class: Realign tier break points to reflect current usage patterns, accounting for seasonal variability, the need to meet peak demand and the functional cost allocations to usage categories.
- Recycled: Move from three tiers to a single tier, uniform rate. This reflects the District's contractual cost structure for purchasing recycled water from the Las Gallinas Valley Sanitary District, which reflects the District's contributions to the recent upgrades to the Las Gallinas Valley Sanitary District recycled water facility. Under this agreement, the unit costs for the purchase and delivery of recycled water to the District remain relatively flat despite changes in the volume of use.

- **Watershed Fee:** Charge the watershed fee as a volumetric rate instead of as a fixed charge to proportionally recover the costs of watershed management based on a customer’s utilization of watershed resources.
- **Fixed Charge Meter Equivalent Unit Ratios:** Adjust meter equivalent ratios to more proportionally reflect current system capacity utilization.
- **Drought Rates:** Establish drought surcharges tied to water shortage levels as set forth in the District’s recently updated Water shortage Contingency Plan, which helps the District recoup revenue shortfalls during periods of drought and needed water conservation.

7.2 Potable Unit Cost

The potable volumetric rates are determined by the amount of each classes’ projected use by Base-Extra Category. The total unit cost for each Base-Extra Category is the sum of the potable water unit rate, which applies to every unit of potable water, and the Base-Extra Category unit rate. The unit rates in the table below are used to calculate all the potable rates in the following sections.

Table 24: Potable Water Unit Cost by Base-Extra Category

Total Demand Category Unit Cost	Potable Water	Base Demand	Average Demand	Summer Demand	Peak Demand
<i>Allocation Unit of Measure</i>	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Allocation Units	8,738,499	4,930,955	3,047,773	564,570	195,200
Revenue Requirement	<u>\$19,135,762</u>	<u>\$24,730,250</u>	<u>\$23,562,434</u>	<u>\$10,799,230</u>	<u>\$5,620,062</u>
Unit Cost (\$/CCF)	\$2.19	\$5.02	\$7.73	\$19.13	\$28.79
Potable Water Unit Cost (\$/CCF)		<u>\$2.19</u>	<u>\$2.19</u>	<u>\$2.19</u>	<u>\$2.19</u>
Total Demand Category Unit Cost (\$/CCF)		\$7.21	\$9.92	\$21.32	\$30.98

7.3 Single-Family and Duplex Tier Rate Derivation

The recommended single-family and duplex rate structure consists of four tiers. Tier amounts are for the bi-monthly billing periods. The tier breaks reflect reasonable increments of water within each tier given a number of factors, including the seasonal variability of water use within the District (as shown on Table 12), the functional cost allocation within each Base-Extra Category, as well as the requirement that the system must be designed to meet peak use.

- **Tier 1: 0 to 15 CCF** – The Tier 1 breakpoint at 15 CCF captures all of the Base water use which is comprised of local supply, and some Average water use to capture seasonal variability. Roughly 66% of use is projected to occur in Tier 1.
- **Tier 2: >15 to 25 CCF** – The Tier 2 breakpoint at 25 CCF consists of only Average use, which reflects local supply as well imported water. Roughly 15% of use is projected to occur in Tier 2.

- **Tier 3: >25 to 80 CCF** – The Tier 3 breakpoint at 80 CCF includes a blend of Average, Summer and Peak use, and is mostly comprised of imported water supply. Roughly 16% of use is projected to occur in Tier 3.
- **Tier 4: > 80 CCF** – Usage in Tier 4 is comprised of Average, Summer and Peak use, but reflects mostly Peak use. Tier 4 is comprised of imported water supply. Roughly 3% of use is projected to occur in Tier 4.

These tier breaks facilitate the proportional allocation of cost within the Single-Family and Duplex class and reflect the District’s current consumption pattern.

Single-Family and Duplex Tier Revenue Requirement

Building off the revenue requirement for each Base-Extra Category the revenue requirement for each tier must be determined. The tier revenue requirement for a Base-Extra Category is calculated by multiplying the Base-Extra Category total unit cost, found in Table 24, by the projected tier use in each Base-Extra Category, shown in Appendix A, (i.e., Base-Extra Category Unit Cost x Projected Units of Demand = Revenue Requirement). The total revenue requirement for each of these tiers is the sum of the revenue requirements for each Base-Extra Category.

Table 25: Single-Family and Duplex Tier Revenue Requirements (FY 2024)

SFR+DUP Rate Derivation	Base	Average	Summer	Peak	Total
Total Allocation Units	4,930,955	3,047,773	564,570	195,200	8,738,499
Class % of Total Units	61.8%	58.8%	71.6%	79.9%	
Residential Demand (CCF)	3,048,064	1,793,442	404,132	156,054	5,401,692
Unit Rates (\$/CCF)	\$7.29	\$10.02	\$21.53	\$31.34	
Portion of Demand by Tier					
Tier 1	86.1%	13.9%	0.0%	0.0%	65.5%
Tier 2	0.0%	100.0%	0.0%	0.0%	15.0%
Tier 3	0.0%	51.6%	42.4%	6.1%	16.3%
Tier 4	0.0%	22.5%	17.9%	59.6%	3.2%
Projected Units of Demand by Tier (CCF)					
Tier 1	3,048,064	490,706	-	-	3,538,770
Tier 2	-	809,435	-	-	809,435
Tier 3	-	454,316	373,392	53,466	881,174
Tier 4	-	38,985	30,740	102,588	172,313
Revenue Requirement by Tier					
Tier 1	\$22,220,387	\$4,916,879	\$0	\$0	\$27,137,265
Tier 2	\$0	\$8,110,536	\$0	\$0	\$8,110,536
Tier 3	\$0	\$4,552,245	\$8,039,139	\$1,675,627	\$14,267,010
Tier 4	\$0	\$390,627	\$661,830	\$3,215,115	\$4,267,572

Single-Family and Duplex Tier Unit Rates

The unit rate for each residential tier is calculated by dividing the total revenue requirement from the prior table by the projected demand for each residential tier from the previous table.

Table 26: Single-Family and Duplex Tier Unit Rates

Residential Tier Rate Derivation	Total Revenue Requirement	Projected Demand (CCF)	Unit Rate (\$/CCF)
Tier 1	\$27,137,265	3,538,770	\$7.67
Tier 2	\$8,110,536	809,435	\$10.02
Tier 3	\$14,267,010	881,174	\$16.19
Tier 4	\$4,267,572	172,313	\$24.77

7.4 Multi-Family Tier Rate Derivation

The recommended residential rate structure consists of four tiers. Tiers are per living unit and tier amounts are for the bi-monthly billing period. Multi-Family customers are typically also served by an irrigation meter, and as such, place different types of demands on the water system when compared to single-family residences and duplexes. The tier breaks reflect reasonable increments of water within each tier given a number of factors, including the seasonal variability of water use within the District, the functional cost allocation within each Base-Extra Category, as well as the requirement that the system must be designed to meet peak use.

- **Tier 1: 0 to 10 CCF** – The Tier 1 breakpoint at 10 CCF captures all of the Base water use which is comprised of local supply, and some Average water use to capture seasonal variability. Roughly 84% of use is projected to occur in Tier 1.
- **Tier 2: >10 to 20 CCF** – The Tier 2 breakpoint at 20 CCF consists of Average use and some Summer use to capture seasonal variability. Roughly 13% of use is projected to occur in Tier 2.
- **Tier 3: >20 to 28 CCF** – The Tier 3 breakpoint at 28 CCF includes a blend of Average, Summer and Peak use, and is mostly comprised of imported water supply. Roughly 2% of use is projected to occur in Tier 3.
- **Tier 4: > 28 CCF** – Usage in Tier 4 is comprised of Average, Summer and Peak use, but reflects mostly Peak use. Tier 4 is comprised of imported water supply. Roughly 1% of use is projected to occur in Tier 4.

Multi-Family Tier Revenue Requirement

Building off the revenue requirement for each Base-Extra Category the revenue requirement for each tier must be determined. The tier revenue requirement for a Base-Extra Category is calculated by multiplying the Base-Extra Category total unit cost, found in Table 24, by the projected tier use in each Base-Extra Category, shown in Appendix A, (i.e., Base-Extra Category Unit Cost x Projected Units of Demand = Revenue Requirement). The total revenue requirement for each of these tiers is the sum of the revenue requirements for each Base-Extra Category.



Table 27: Multi-Family Residential Tier Revenue Requirements

Multi-Family Rate Derivation	Base	Average	Summer	Peak	Total
Total Allocation Units	4,930,955	3,047,773	564,570	195,200	8,738,499
Class % of Total Units	13.6%	16.3%	3.2%	0.7%	
Residential Demand (CCF)	670,667	498,302	18,110	1,457	1,188,537
Unit Rates (\$/CCF)	\$7.29	\$10.02	\$21.53	\$31.34	
Portion of Demand by Tier					
Tier 1	67.0%	33.0%	0.0%	0.0%	84.3%
Tier 2	0.0%	97.5%	2.5%	0.0%	13.0%
Tier 3	0.0%	57.7%	41.6%	0.6%	2.0%
Tier 4	0.0%	29.8%	54.0%	16.2%	0.7%
Projected Units of Demand by Tier (CCF)					
Tier 1	670,667	330,968	-	-	1,001,635
Tier 2	-	151,196	3,833	-	155,029
Tier 3	-	13,723	9,896	145	23,764
Tier 4	-	2,415	4,381	1,312	8,108
Revenue Requirement by Tier					
Tier 1	\$4,889,161	\$3,316,302	\$0	\$0	\$8,205,464
Tier 2	\$0	\$1,514,981	\$82,533	\$0	\$1,597,514
Tier 3	\$0	\$137,507	\$213,059	\$4,553	\$355,120
Tier 4	\$0	\$24,197	\$94,327	\$41,115	\$159,639

Multi-Family Tier Unit Rates

The unit rate for each multi-family tier is calculated by dividing the total revenue requirement from the prior table by the projected demand for each multi-family tier from the previous table.

Table 28: Multi-Family Tier Unit Rates

Multi-Family Tier Rate Derivation	Total Revenue Requirement	Projected Demand (CCF)	Unit Rate (\$/CCF)
Tier 1	\$8,205,464	1,001,635	\$8.19
Tier 2	\$1,597,514	155,029	\$10.30
Tier 3	\$355,120	23,764	\$14.94
Tier 4	\$159,639	8,108	\$19.69

7.5 Non-Residential Tier Rate Derivation

Where residential and multi-family customers are provided tier allocations (detailed above), non-residential customers are provided a water allocation, or Tier 1 usage, based on the District's estimate of the basic water requirements for that particular property. Unlike the residential and multi-family customer classes whose customer's generally demonstrate homogenous water demand patterns, non-residential water demand patterns can vary significantly between

customers. Consequently, the District develops individual tiers for customers, which are intended to reflect non-peak and peak usage. It is, however, important that the District continually revisit these allocations and adjust them as necessary in order to continue to equitably recover costs from its non-residential customers. The recommended rate structure consists of three tiers.

- **Tier 1: 0% to 85% of Baseline** – The Tier 1 represents efficient use. Roughly 84% of use is projected to occur in Tier 1.
- **Tier 2: >85% to 150% of Baseline** – The Tier 2 represents expected use relative to a customer’s baseline. Roughly 8% of use is projected to occur in Tier 2.
- **Tier 3: > 150% of Baseline** – Usage in Tier 3 represents high use. Roughly 8% of use is projected to occur in Tier 3.

Non-Residential Tier Revenue Requirement

Building off the revenue requirement for each Base-Extra Category the revenue requirement for each tier must be determined. The tier revenue requirement for a Base-Extra Category is calculated by multiplying the Base-Extra Category total unit cost, found in Table 24, by the projected tier use in each Base-Extra Category, shown in Appendix A, (i.e., Base-Extra Category Unit Cost x Projected Units of Demand = Revenue Requirement). The total revenue requirement for each of these tiers is the sum of the revenue requirements for each Base-Extra Category. Figure 12 illustrates the amount of demand of each Base-Extra demand in each tier falls into

Table 29: Non-Residential Tier Revenue Requirements (FY 2024)

Non-Residential Rate Derivation					
	Base	Average	Summer	Peak	Total
Total Allocation Units	4,930,955	3,047,773	564,570	195,200	8,738,499
Class % of Total Units	24.6%	24.8%	25.2%	19.3%	
Non-Residential Demand (CCF)	1,212,225	756,029	142,327	37,688	2,148,270
Unit Rates (\$/CCF)	\$7.29	\$10.02	\$21.53	\$31.34	
Portion of Demand by Tier					
Tier 1	67.5%	30.4%	2.1%	0.0%	83.6%
Tier 2	0.0%	60.9%	31.2%	7.9%	7.7%
Tier 3	0.0%	58.6%	28.1%	13.3%	8.6%
Projected Units of Demand by Tier (CCF)					
Tier 1	1,212,225	546,297	38,353	-	1,796,875
Tier 2	-	100,888	51,704	13,009	165,600
Tier 3	-	108,845	52,270	24,680	185,795
Revenue Requirement by Tier					
Tier 1	\$8,837,117	\$5,473,892	\$825,750	\$0	\$15,136,759
Tier 2	\$0	\$1,010,895	\$1,113,181	\$407,687	\$2,531,763
Tier 3	\$0	\$1,090,628	\$1,125,380	\$773,469	\$2,989,476

Non-Residential Tier Unit Rates

The unit rate for each non-residential tier is calculated by dividing the total revenue requirement from the prior table by the projected demand for each non-residential tier from the previous table.

Table 30: Non-Residential Tier Unit Rates

Non-Residential Tier Rate Derivation	Total Revenue Requirement	Projected Demand (CCF)	Unit Rate (\$/CCF)
Tier 1	\$15,136,759	1,796,875	\$8.42
Tier 2	\$2,531,763	165,600	\$15.29
Tier 3	\$2,989,476	185,795	\$16.09

7.6 Recycled Water Rate Derivation

The recommended recycled rate is calculated by dividing the recycled water revenue requirement by the projected recycled water demand.

Table 31: Recycled Water Rate Derivation

Allocation Units	Recycled
<i>Allocation Unit of Measure</i>	<i>CCF</i>
Allocation Units	239,494
Revenue Requirement	<u>\$1,300,896</u>
Unit Cost (\$/CCF)	\$5.43

7.7 Raw Water Rate Derivation

The recommended raw water rate is calculated by dividing the raw water revenue requirement by the projected raw water demand.

Table 32: Raw Water Rate Derivation

Allocation Units	Raw Water
<i>Allocation Unit of Measure</i>	<i>CCF</i>
Allocation Units	143,748
Revenue Requirement	<u>\$764,967</u>
Unit Cost (\$/CCF)	\$5.32

7.8 Watershed Fee Derivation

The District incurs costs for managing the watershed, including administration, watershed protection, fisheries, vegetation and wildlife management, and watershed maintenance. Managing the watershed is necessary for the provision of water because it maintains and preserves the District's largest source of water supply, and as such, these activities maintain water supply, water quality and reliability. The recommended volumetric watershed fee is calculated by dividing the watershed fee revenue requirement by the projected total potable and raw water demand (allocation units). The fee is assessed on each CCF of water sold as each

customer benefits from the maintenance of the District’s watershed lands regardless of which tier the water is sold. The rate is derived annually in the following table to reflect the allocation units increasing based on water demand projections while the expenses increase with projected inflation. The determination of the watershed revenue requirement is shown in detail in Appendix A.

Table 33: Volumetric Watershed Fee Derivation

Allocation Units	2024	2025	2026	2027
<i>Allocation Unit of Measure</i>	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Allocation Units	8,882,246	9,057,016	9,235,282	9,417,112
Revenue Requirement	<u>\$5,386,376</u>	<u>\$5,655,695</u>	<u>\$5,938,480</u>	<u>\$6,235,404</u>
Unit Cost (\$/CCF)	\$0.61	\$0.62	\$0.64	\$0.66

7.9 Bi-Monthly Fixed Charge Derivations

Proposed fixed charges are designed to recover the standing capacity and per customer (or per service) costs to serve each active service connection.

Bi-Monthly Fixed Service Charge

This charge applies to all active services. It recovers the Customer functional component revenue requirement on a per service basis and the Capacity functional component revenue requirement on a per MEU basis. The Customer unit cost is the same for all meter sizes and the unit costs per MEU varies by meter size. Single-Family and Duplex MEU ratios are based on a three-year annual aggregated maximum bi-monthly billing period demand. The others are based on the AWWA meter equivalent ratio for each meter size as described in Section 3.2. Unit costs were calculated in Section 6.6. Analysis of actual District customer data within meter sizes found that the more similar use patterns among residential single family and duplex classes warranted use of the District’s aggregate data over the past three-years to determine the single family residential and duplex MEU ratios. This analysis also found that the variability of demand within other customer classes supported continued use of existing AWWA ratios, which continue to reasonably reflect the demand these customers place on the water system.

Table 34: Monthly Fixed Water Service Charge Derivation

Base Water Charge Derivation

Allocation Units	Customer	Water Capacity
<i>Allocation Unit of Measure</i>	#	<i>MEU</i>
Allocation Units	61,845	90,561
Revenue Requirement	<u>\$5,508,630</u>	<u>\$18,954,352</u>
Annual Unit Cost	\$78.93	\$209.30

Base Water Charge Derivation	Meter Equivalent Ratio	Annual Customer	Annual Water Capacity	Bi-Monthly Fixed Service Charges
<i>Meter Size</i>	<i>MEU</i>	\$	\$	\$
<i>SFR + Duplex</i>				
5/8"	1.00	\$78.93	\$209.30	\$48.04
3/4"	1.40	\$78.93	\$293.02	\$61.99
1"	1.70	\$78.93	\$355.81	\$72.46
1.5"	3.70	\$78.93	\$774.41	\$142.22
2"	6.00	\$78.93	\$1,255.79	\$222.45
<i>All Other Customer Classes</i>				
5/8"	1.00	\$78.93	\$209.30	\$48.04
3/4"	1.50	\$78.93	\$313.95	\$65.48
1"	2.50	\$78.93	\$523.25	\$100.36
1.5"	5.00	\$78.93	\$1,046.49	\$187.57
2"	8.00	\$78.93	\$1,674.39	\$292.22
3"	20.00	\$78.93	\$4,185.98	\$710.82
4"	40.00	\$78.93	\$8,371.95	\$1,408.48
6"	70.00	\$78.93	\$14,650.92	\$2,454.97
8"	135.00	\$78.93	\$28,255.34	\$4,722.38
10"	200.00	\$78.93	\$41,859.76	\$6,989.78

Bi-Monthly Fixed Capital Maintenance Fee Derivation

The Capital Maintenance Fee (CMF) was implemented to provide a partial funding source for capital projects. This charge applies to active services. It recovers baseline capital costs on a per MEU basis. The unit costs per MEU vary by meter size. Single-Family and Duplex MEU are based on maximum month use while the others are based on the AWWA meter equivalent ratio for each meter size, as explained in the preceding section.

Table 35: Bi-Monthly Fixed Capital Maintenance Fee Derivation

Capital Maintenance Fee (CMF) Derivation			
Allocation Units		Baseline Capital	
<i>Allocation Unit of Measure</i>		<i>MEU</i>	
Allocation Units		90,561	
Revenue Requirement		<u>\$17,118,698</u>	
Unit Cost (per year)		\$189.03	
Monthly Fixed CMF Derivation	Meter Equivalent Ratio	Annual Water Capacity	Bi-Monthly CMF
<i>Meter Size</i>	<i>MEU</i>	<i>\$</i>	<i>\$</i>
<i>SFR + Duplex</i>			
5/8"	1.00	\$189.03	\$31.50
3/4"	1.40	\$264.64	\$44.11
1"	1.70	\$321.35	\$53.56
1.5"	3.70	\$699.41	\$116.57
2"	6.00	\$1,134.17	\$189.03
<i>All Other</i>			
5/8"	1.00	\$189.03	\$31.50
3/4"	1.50	\$283.54	\$47.26
1"	2.50	\$472.57	\$78.76
1.5"	5.00	\$945.15	\$157.52
2"	8.00	\$1,512.23	\$252.04
3"	20.00	\$3,780.58	\$630.10
4"	40.00	\$7,561.16	\$1,260.19
6"	70.00	\$13,232.03	\$2,205.34
8"	135.00	\$25,518.92	\$4,253.15
10"	200.00	\$37,805.81	\$6,300.97

Bi-Monthly Fixed Private Fire Line Service Charge

This charge applies to active private fireline services. It recovers the Customer functional component revenue requirement on a per service basis and the Private Fireline Capacity functional component revenue requirement on a per EFU basis. The Customer unit cost is the same for all meter sizes and the unit costs per EFU are based on the AWWA Equivalent Fire Ratios for each service size. Unit costs were calculated in Section 6.6.

Table 36: Bi-Monthly Fixed Private Fire Service Charge Derivation

Allocation Units	Customer	Private Fireline Capacity
<i>Allocation Unit of Measure</i>	#	EFU
Allocation Units	61,845	10,803
Revenue Requirement	<u>\$4,881,330</u>	<u>\$534,812</u>
Unit Cost (per year)	\$78.93	\$49.51

Bi-Monthly Private Fire Service Charge Derivation	Equivalent Fire Meter Ratio	Customer	Annual Private Fireline Capacity	Bi-Monthly Private Fire Service Charge Derivation
<i>Meter Size</i>	EFU	\$	\$	\$
2"	1.00	\$78.93	\$49.51	\$21.41
4"	4.38	\$78.93	\$216.84	\$49.29
6"	10.00	\$78.93	\$495.06	\$95.66
8"	17.50	\$78.93	\$866.35	\$157.55
10"	27.50	\$78.93	\$1,361.41	\$240.06

7.10 Proposed Water Rates

The following tables show the proposed water rates.

Table 37: Existing and Proposed Water Rate Tiers

Single-Family Residential

Tiers	Existing Summer	Existing Winter	Proposed Summer/ Winter
	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Tier 1	0 - 26	0 - 21	0 - 15
Tier 2	27 - 59	22 - 48	16 - 25
Tier 3	60 - 99	49 - 80	26 - 80
Tier 4	100+	81+	81+

Duplex Tier Allotments

Tiers	Existing Summer	Existing Winter	Proposed Summer/ Winter
	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Tier 1	0 - 20	0 - 18	0 - 15
Tier 2	21 - 45	19 - 35	16 - 25
Tier 3	46 - 78	36 - 68	26 - 80
Tier 4	79+	69+	81+

Multi-Family Residential Tier Allotments

Tiers	Existing Summer	Existing Winter	Proposed Summer/ Winter
	<i>CCF</i>	<i>CCF</i>	<i>CCF</i>
Tier 1	0 - 10	0 - 10	0 - 10
Tier 2	11 - 20	11 - 18	11 - 20
Tier 3	21 - 28	19 - 26	21 - 28
Tier 4	29+	27+	29+

Commercial, Institutional and Irrigation Tier Allotments

Tiers	Existing	Proposed
	<i>% of Allocation</i>	<i>% of Allocation</i>
Tier 1	0 - 85%	0 - 85%
Tier 2	86 - 150	86 - 150
Tier 3	151+	151+

Single-Family Irrigation Tier Allotments

Tiers	Existing	Proposed
	<i>% of Allocation</i>	<i>% of Allocation</i>
Tier 1	0 - 50%	0 - 85%
Tier 2	51 - 100	86 - 150
Tier 3	100+	151+

Recycled Water Tier Allotments

Tiers	Existing	Proposed
	<i>% of Allocation</i>	<i>Uniform Volumetric Rate Per CCF</i>
Tier 1	0 - 100%	All use
Tier 2	101 - 150	
Tier 3	151+	

Table 38: Proposed Water Rates

Volumetric Charges <i>(\$ per CCF)</i>	FY 2023 <i>Existing</i>	FY 2024 <i>Proposed</i>	FY 2025 <i>Proposed</i>	FY 2026 <i>Proposed</i>	FY 2027 <i>Proposed</i>
Watershed Maintenance Volumetric Rate					
All Use	N/A	\$ 0.61	\$ 0.62	\$ 0.64	\$ 0.66
Single-Family Residential Volumetric Rates					
Tier 1	\$ 4.73	\$ 7.67	\$ 9.16	\$ 10.24	\$ 10.86
Tier 2	8.19	10.02	11.96	13.38	14.19
Tier 3	13.78	16.19	19.33	21.62	22.92
Tier 4	22.15	24.77	29.58	33.08	35.07
Duplex Volumetric Rates					
Tier 1	\$ 4.76	\$ 7.67	\$ 9.16	\$ 10.24	\$ 10.86
Tier 2	8.31	10.02	11.96	13.38	14.19
Tier 3	13.72	16.19	19.33	21.62	22.92
Tier 4	21.53	24.77	29.58	33.08	35.07
Multi-Family Residential Volumetric Rates					
Tier 1	\$ 4.82	\$ 8.19	\$ 9.78	\$ 10.94	\$ 11.60
Tier 2	8.11	10.30	12.30	13.76	14.59
Tier 3	12.85	14.94	17.84	19.95	21.15
Tier 4	21.56	19.69	23.51	26.29	27.87
Commercial, Institutional, Irrigation Volumetric Rates					
Tier 1	\$ 4.62	\$ 8.42	\$ 10.05	\$ 11.24	\$ 11.92
Tier 2	12.37	15.29	18.26	20.42	21.65
Tier 3	18.53	16.09	19.21	21.48	22.77
Single-Family Irrigation Volumetric Rates					
Tier 1	\$ 5.94	\$ 8.42	\$ 10.05	\$ 11.24	\$ 11.92
Tier 2	\$ 7.10	15.29	18.26	20.42	21.65
Tier 3	\$ 12.32	16.09	19.21	21.48	22.77
Recycled Water Rates					
Tier 1	\$ 3.70	\$ 5.43	\$ 5.63	\$ 5.84	\$ 6.06
Tier 2	11.49	5.43	5.63	5.84	6.06
Tier 3	21.35	5.43	5.63	5.84	6.06
Raw Water Rates					
All Use	\$ 4.31	\$ 5.32	\$ 6.35	\$ 7.10	\$ 7.53

Table 39: Proposed Fixed Bi-Monthly Base Charge and CMF

Service Charge					
<i>SFR + Duplex</i>					
5/8"	\$ 44.62	\$ 48.04	\$ 50.44	\$ 52.96	\$ 55.61
3/4"	57.09	61.99	65.09	68.34	71.76
1"	82.01	72.46	76.08	79.88	83.87
1.5"	144.30	142.22	149.33	156.80	164.64
2"	219.05	222.45	233.57	245.25	257.51
<i>All Other Customer Classes (Except Private Fire Lines)</i>					
5/8"	\$ 44.62	\$ 48.04	\$ 50.44	\$ 52.96	\$ 55.61
3/4"	57.09	65.48	68.75	72.19	75.80
1"	82.01	100.36	105.38	110.65	116.18
1.5"	144.30	187.57	196.95	206.80	217.14
2"	219.05	292.22	306.83	322.17	338.28
3"	455.77	710.82	746.36	783.68	822.86
4"	804.63	1,408.48	1,478.90	1,552.85	1,630.49
6"	1,763.97	2,454.97	2,577.72	2,706.61	2,841.94
8"	3,009.87	4,722.38	4,958.50	5,206.43	5,466.75
10"	4,754.13	6,989.78	7,339.27	7,706.23	8,091.54
Capital Maintenance Fee					
<i>SFR + Duplex</i>					
5/8"	\$ 30.42	\$ 31.50	\$ 33.08	\$ 34.73	\$ 36.47
3/4"	45.61	44.11	46.32	48.64	51.07
1"	76.03	53.56	56.24	59.05	62.00
1.5"	152.07	116.57	122.40	128.52	134.95
2"	243.32	189.03	198.48	208.40	218.82
<i>All Other Customer Classes (Except Private Fire Lines)</i>					
5/8"	\$ 30.42	\$ 31.50	\$ 33.08	\$ 34.73	\$ 36.47
3/4"	45.61	47.26	49.62	52.10	54.71
1"	76.03	78.76	82.70	86.84	91.18
1.5"	152.07	157.52	165.40	173.67	182.35
2"	243.32	252.04	264.64	277.87	291.76
3"	532.26	630.10	661.61	694.69	729.42
4"	958.09	1,260.19	1,323.20	1,389.36	1,458.83
6"	2,129.09	2,205.34	2,315.61	2,431.39	2,552.96
8"	3,649.85	4,253.15	4,465.81	4,689.10	4,923.56
10"	5,778.95	6,300.97	6,616.02	6,946.82	7,294.16

Table 40: Proposed Fixed Bi-Monthly Watershed and Private Fire Line Service Charges

Bi-Monthly Fixed Charges	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
<i>Meter Size</i>	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
Watershed Maintenance Fee					
5/8"	\$ 11.59				
3/4"	13.86				
1"	18.35				
1.5"	29.61				
2"	43.12				
3"	85.91	Volumetric rate (See above)			
4"	148.96				
6"	322.37				
8"	547.56				
10"	862.84				
Private Fire Line Service Charge					
2"	\$ 40.59	\$ 21.41	\$ 22.48	\$ 23.60	\$ 24.78
4"	101.89	49.29	51.75	54.34	57.06
6"	202.33	95.66	100.44	105.46	110.73
8"	332.76	157.55	165.43	173.70	182.39
10"	515.38	240.06	252.06	264.66	277.89

8 TEMPORARY DROUGHT RATES

From time to time, the District's water supply may be reduced due to mandatory conservation measures imposed on the District by its wholesaler, the State, or reduction in local supply due to drought or other water shortage emergencies. During these times, customers may be asked or required to meet certain conservation targets in accordance with the District's Water Shortage Contingency Plan.

At the same time, the District collects a portion of its fixed costs through its variable rates, which are imposed per unit of water sold. During these times, while the District's water purchase costs may decrease, the District will still continue to incur fixed costs associated with operating and maintaining the water system, and a portion of these costs will no longer be recovered due to reduced water use. In sum, financial impacts during water shortages and periods of reduced water sales can include:

- A loss of volumetric water rate revenues due to a reduction in the volume of water sales.
- Reduced variable expenses due to reduced volumes of water production and supply, such as reduced costs for water treatment and pumping.
- Additional costs for achieving water demand cutback targets, such as costs for an enhanced conservation program and water demand mitigation efforts.
- Additional costs for supplemental sources of water supply when normal-year supply is depleted or curtailed during a drought.
- Potential costs of compliance for drought-related regulations and potential cost of fines or penalties for non-compliance with State water reduction mandates during periods of severe drought.

In order to ensure continued financial stability during times of reduced water usage and sales and mitigate impacts of water shortages, the District is proposing to authorize a series of drought rates that could be implemented to support financial stability and help ensure adequate funding for water utility operations during periods of water shortages and reduced water sales due to conservation targets. As proposed, these rates would be temporary surcharges, billed based on metered water use that would be levied in addition to the District's regular water rates during drought periods. The proposed rates correspond with the Water Shortage Response Levels identified in the District's Water Shortage Contingency Plan. No surcharges are proposed for Level 1 water shortages. The drought rates will be imposed upon the Board's declaration of a water shortage emergency or drought in accordance with its Water Shortage Contingency Plan.

These surcharges can be phased in corresponding with escalating water shortages in order to support financial stability under associated escalating water reduction requirements. The surcharges can also be phased out as water use gradually rebounds as water supplies are

replenished, or upon declaration of the Board that the District is no longer in a specific Level of drought in accordance with the Water Shortage Contingency Plan.

The surcharges account for a) lost revenues due to reduced water sales, less b) estimated reduced variable expenses due to reduced water supply, plus c) an estimate of the additional conservation program, costs of supplement sources of water supply, compliance related costs, and/or other efforts to reduce water demand, divided by d) the volume of projected water sales with reduced demand. The derivation of the temporary drought rate surcharges is shown in Appendix A.

The proposed drought surcharge percentages set forth in Table 41 represent the maximum percentage surcharge that the District may impose at each drought stage level. These surcharge percentages by drought stage level represent the amount of increase that would be applied to all volumetric rates, including those for raw water and the Watershed Management Fee, but excluding recycled water. Table 42 illustrates the maximum amount surcharge that may be imposed during each year of this rate study.

Table 41: Proposed Drought Surcharge Percentage

Drought Surcharges Applied to All Volumetric Rates including Raw Water and the Watershed Management Fee, excluding Recycled Water

Drought Stage	FY 2024	FY 2025	FY 2026	FY 2027
Stage 1 - Voluntary 10% Reduction				
Stage 2 - Voluntary 20% Reduction	22.0%	23.0%	23.0%	23.0%
Stage 3 - Mandatory 30% Reduction	39.0%	39.0%	40.0%	40.0%
Stage 4 - Mandatory 40% Reduction	61.0%	61.0%	62.0%	62.0%
Stage 5 - Mandatory 50% Reduction	91.0%	92.0%	93.0%	93.0%

Table 42: Proposed Maximum Drought Surcharges (% Applied to Highest Rate)

Temporary Drought Stage Five Surcharges (\$ per CCF)					
Tier	Current	Proposed July 1, 2023	Proposed July 1, 2024	Proposed July 1, 2025	Proposed July 1, 2026
Single-Family and Duplex Residential Volumetric Surcharges					
Tier 1	N/A	\$6.98	\$8.43	\$9.52	\$10.10
Tier 2	N/A	\$9.12	\$11.00	\$12.44	\$13.20
Tier 3	N/A	\$14.73	\$17.78	\$20.11	\$21.32
Tier 4	N/A	\$22.54	\$27.21	\$30.76	\$32.62
Multi-Family Residential Volumetric Surcharges					
Tier 1	N/A	\$7.45	\$9.00	\$10.17	\$10.79
Tier 2	N/A	\$9.37	\$11.32	\$12.80	\$13.57
Tier 3	N/A	\$13.60	\$16.41	\$18.55	\$19.67
Tier 4	N/A	\$17.92	\$21.63	\$24.45	\$25.92
Commercial, Institutional, Irrigation & Single Family Irrigation Volumetric Surcharges					
Tier 1	N/A	\$7.66	\$9.25	\$10.45	\$11.09
Tier 2	N/A	\$13.91	\$16.80	\$18.99	\$20.13
Tier 3	N/A	\$14.64	\$17.67	\$19.98	\$21.18
Raw Water Rates					
All Use	N/A	\$4.84	\$5.84	\$6.60	\$7.00
Watershed Management Rate					
All Use	N/A	\$0.56	\$0.57	\$0.60	\$0.61

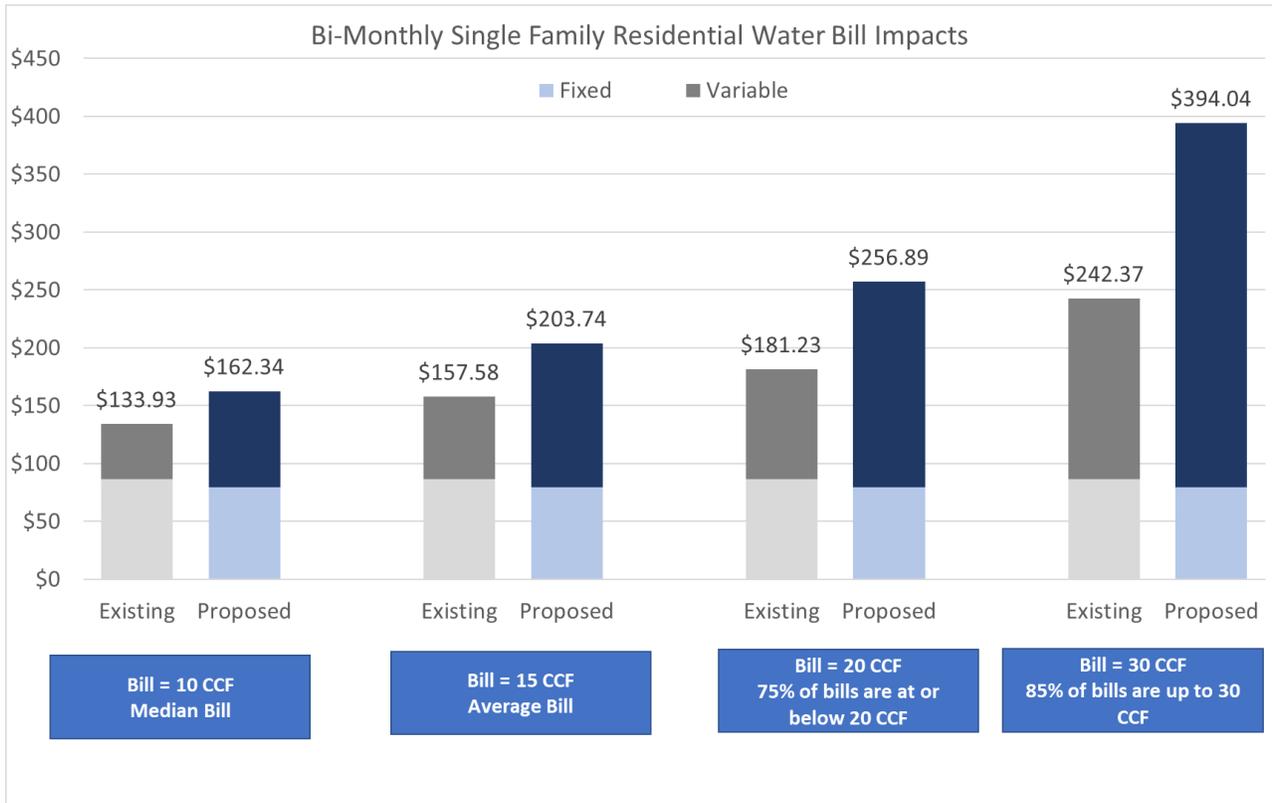
9 WATER RATE BILL IMPACTS

The following table shows the impacts of the proposed water rates on a range of single-family customers with different levels of consumption.

Table 43: Existing and Proposed Bi-Monthly Bills for a Single-Family, 5/8" Meter Customer

Single-Family Bi-Monthly Bill					
Impacts (5/8" Meter, Summer Tiers)	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
<i>CCF</i>	<i>Existing</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>	<i>Proposed</i>
<i>Single-Family Bill</i>					
10	\$133.93	\$162.34	\$181.32	\$196.49	\$207.28
15	\$157.58	\$203.74	\$230.22	\$250.89	\$264.88
20	\$181.23	\$256.89	\$293.12	\$320.99	\$339.13
30	\$242.37	\$394.04	\$455.77	\$502.39	\$531.28
40	\$324.27	\$562.04	\$655.27	\$724.99	\$767.08
50	\$406.17	\$730.04	\$854.77	\$947.59	\$1,002.88
<i>Single-Family Bill \$ Change</i>					
10		\$28.41	\$18.98	\$15.17	\$10.79
15		\$46.16	\$26.48	\$20.67	\$13.99
20		\$75.66	\$36.23	\$27.87	\$18.14
30		\$151.67	\$61.73	\$46.62	\$28.89
40		\$237.77	\$93.23	\$69.72	\$42.09
50		\$323.87	\$124.73	\$92.82	\$55.29
<i>Single-Family Bill % Change</i>					
10		21.21%	11.69%	8.37%	5.49%
15		29.29%	13.00%	8.98%	5.58%
20		41.75%	14.10%	9.51%	5.65%
30		62.58%	15.67%	10.23%	5.75%
40		73.32%	16.59%	10.64%	5.81%
50		79.74%	17.09%	10.86%	5.83%

Figure 14: Single-Family Bi-Monthly Bill Impacts (Existing Summer Tiers)



APPENDIX A – Supporting Tables

Escalation Factors	Escalation Factor	FY 2024	FY 2025	FY 2026	FY 2027
Inflation	Inflation	5.0%	5.0%	5.0%	5.0%
Interest	Interest	2.50%	2.25%	2.00%	1.75%

Revenue	Category	Escalation	FY 2024	FY 2025	FY 2026	FY 2027
			<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Water Rate Revenue			\$111,180,097	\$131,077,985	\$147,069,499	\$158,144,432
Watershed Management Fee	Watershed	Inflation	\$5,386,376	\$5,655,695	\$5,938,480	\$6,235,404
Capital Maintenance Fee	As CIP	Inflation	\$17,118,698	\$17,974,633	\$18,873,365	\$19,817,033
Other Revenue						
Special Read Charge	Admin Support	Non-inflated	\$120,133	\$120,133	\$120,133	\$120,133
Connection Charge	As CIP	Non-inflated	\$710,182	\$710,182	\$710,182	\$710,182
Connection Fees	As CIP	Non-inflated	\$100,000	\$100,000	\$100,000	\$100,000
Interest Revenue	Admin Support	Non-inflated	\$333,115	\$333,115	\$333,115	\$333,115
Total Revenue			\$134,948,600	\$155,971,742	\$173,144,773	\$185,460,298

Existing Debt	Category	Escalation	FY 2024	FY 2025	FY 2026	FY 2027
			<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
2022 Bonds	As CIP	Non-inflated	\$5,065,950	\$5,064,950	\$5,060,150	\$5,071,550
2017 Bonds	As CIP	Non-inflated	\$2,277,750	\$2,275,875	\$2,272,250	\$2,271,750
2016 Bonds	As CIP	Non-inflated	\$1,481,975	\$1,481,975	\$1,481,975	\$1,481,975
CREBS-OFFICE	Facility Support	Non-inflated	\$62,063	\$0	\$0	\$0
CREBS- YARD	Facility Support	Non-inflated	\$60,188	\$0	\$0	\$0
AEEP	Sonoma Water	Non-inflated	\$205,320	\$205,320	\$205,320	\$205,320
LGVSD: RWTF Buy-in Debt Service	Recycled Water	Non-inflated	\$107,559	\$107,559	\$107,559	\$107,559
LGVD 2017 Rev Bond Debt Service	Recycled Water	Non-inflated	\$256,428	\$256,490	\$256,888	\$256,553
Total Existing Debt			\$9,517,232	\$9,392,169	\$9,384,142	\$9,394,706

Capital	Category	Escalation	FY 2024	FY 2025	FY 2026	FY 2027
Inflated Capital						
Baseline	As CIP	Inflation	\$19,422,000	\$20,393,100	\$21,412,755	\$22,483,393
All Water Supply Projects	As CIP	Input	\$4,000,000	\$9,365,000	\$9,684,000	\$10,034,900
Deferred Maintenance	As CIP		\$3,000,000	\$6,300,000	\$9,922,500	\$13,891,500
Large Projects	As CIP		\$0	\$80,000,000	\$0	\$0
Critical Systems	As CIP		\$500,000	\$3,675,000	\$3,858,750	\$6,714,225
Total Inflated Capital			\$26,922,000	\$119,733,100	\$44,878,005	\$53,124,018

Expenses	Category	Escalation	FY 2024	FY 2025	FY 2026	FY 2027
			Projected	Projected	Projected	Projected
Board of Directors	Admin Support	Inflation	\$208,688	\$219,122	\$230,078	\$241,582
Legal	Admin Support	Inflation	\$981,491	\$1,030,566	\$1,082,094	\$1,136,198
General Manager	Admin Support	Inflation	\$743,754	\$780,942	\$819,989	\$860,988
Communications & Public Affairs	Public Information	Inflation	\$1,195,871	\$1,255,665	\$1,318,448	\$1,384,370
Human Resources - GM	Admin Support	Inflation	\$1,379,749	\$1,448,736	\$1,521,173	\$1,597,231
Watershed Administration	Watershed	Inflation	\$1,026,313	\$1,077,629	\$1,131,510	\$1,188,086
Watershed Protection	Watershed	Inflation	\$2,043,872	\$2,146,065	\$2,253,368	\$2,366,037
Fisheries	Watershed	Inflation	\$734,196	\$770,906	\$809,451	\$849,923
Vegetation & Wildlife Management	Watershed	Inflation	\$1,389,575	\$1,459,053	\$1,532,006	\$1,608,606
Watershed Maintenance	Watershed	Inflation	\$2,585,510	\$2,714,786	\$2,850,525	\$2,993,051
Administrative Services - Admin	Admin Support	Inflation	\$544,670	\$571,903	\$600,498	\$630,523
Finance & Accounting	Admin Support	Inflation	\$3,408,662	\$3,579,095	\$3,758,049	\$3,945,952
Customer Services	Customer Only	Inflation	\$1,970,587	\$2,069,116	\$2,172,572	\$2,281,201
Office Support Services	Admin Support	Inflation	\$520,068	\$546,071	\$573,374	\$602,043
Purchasing	Facility Support	Inflation	\$191,920	\$201,516	\$211,592	\$222,172
METER READING	Customer Only	Inflation	\$2,512,120	\$2,637,726	\$2,769,612	\$2,908,092
WATER RESOURCES ADMIN	Potable Supply	Inflation	\$513,136	\$538,792	\$565,732	\$594,019
WATER EFFICIENCY	Conservation	Inflation	\$2,709,766	\$2,845,254	\$2,987,517	\$3,136,893
SAFETY	Admin Support	Inflation	\$725,333	\$761,600	\$799,679	\$839,663
WATER QUALITY LAB	Water Quality Lab	Inflation	\$2,574,021	\$2,702,722	\$2,837,858	\$2,979,751
BACKFLOW & RECLAMATION	Backflow	Inflation	\$919,290	\$965,255	\$1,013,518	\$1,064,194
ENGINEERING SERVICES DIVISION - ADMIN	As CIP	Inflation	\$758,725	\$796,662	\$836,495	\$878,319
Information Technology	Admin Support	Inflation	\$3,448,063	\$3,620,466	\$3,801,489	\$3,991,564
Civil/Structural Design	As CIP	Inflation	\$1,443,242	\$1,515,404	\$1,591,174	\$1,670,733
Construction Administration	As CIP	Inflation	\$1,843,970	\$1,936,169	\$2,032,977	\$2,134,626
Operation & Planning	As CIP	Inflation	\$1,870,171	\$1,963,679	\$2,061,863	\$2,164,956
Engg Support Supervision	As CIP	Inflation	\$329,770	\$346,259	\$363,572	\$381,750
Drafting	Facility Support	Inflation	\$1,253,941	\$1,316,638	\$1,382,470	\$1,451,594
Records and Subdivision	Facility Support	Inflation	\$1,983,957	\$2,083,155	\$2,187,313	\$2,296,678
Right-of-Way Supervision	As CIP	Inflation	\$338,541	\$355,468	\$373,241	\$391,903
OPERATIONS DIVISION ADMIN	Water System	Inflation	\$1,132,797	\$1,189,437	\$1,248,909	\$1,311,354
WATER TREATMENT - OPERATIONS DIVISION	Treatment	Inflation	\$5,022,469	\$5,273,592	\$5,537,272	\$5,814,136
Warehouse	Facility Support	Inflation	\$404,936	\$425,183	\$446,442	\$468,764
Automotive Service	Facility Support	Inflation	\$2,175,418	\$2,284,189	\$2,398,398	\$2,518,318
Facilities & Systems Supervision	Facility Support	Inflation	\$336,882	\$353,726	\$371,412	\$389,983
Systems Maintenance	Water System	Inflation	\$10,215,428	\$10,726,199	\$11,262,509	\$11,825,635
Facilities Maintenance	Water System	Inflation	\$2,948,635	\$3,096,067	\$3,250,870	\$3,413,414
Project Maintenance	Water System	Inflation	\$1,690,958	\$1,775,506	\$1,864,282	\$1,957,496
SYSTEM CONTROL OPERATIONS ADMIN	Distribution	Inflation	\$672,979	\$706,628	\$741,960	\$779,058
SYSTEMS CONTROL - OPERATIONS DIV.	Distribution	Inflation	\$1,035,220	\$1,086,981	\$1,141,330	\$1,198,397
MECHANICAL & ELECTRICAL - OPERATIONS DIV	Distribution	Inflation	\$2,401,680	\$2,521,764	\$2,647,852	\$2,780,245
DISTRIBUTIONS OPERATIONS ADMIN	Distribution	Inflation	\$339,472	\$356,446	\$374,268	\$392,982
CORROSION CONTROL - OPERATIONS DIVISION	Distribution	Inflation	\$705,892	\$741,187	\$778,246	\$817,159
WATER DISTRIBUTION - OPERATIONS DIVISION	Distribution	Inflation	\$1,448,033	\$1,520,435	\$1,596,457	\$1,676,280
Interdepartmental	Admin Support	Inflation	\$7,397,629	\$7,767,510	\$8,155,886	\$8,563,680
General Admin. And Maintenance	Facility Support	Inflation	\$256,935	\$269,782	\$283,271	\$297,434
ELECTRICITY	Electricity	Inflation	\$1,897,941	\$1,992,838	\$2,092,480	\$2,197,104
Recycled Water	Recycled Water	Calculated	\$165,360	\$175,282	\$185,798	\$196,946
Allocation to Capital	As CIP	Inflation	-\$4,700,000	-\$4,935,000	-\$5,181,750	-\$5,440,838
Marin Water	Marin Water	Calculated	\$5,152,502	\$5,518,330	\$5,910,131	\$6,329,751
Imported Water	Sonoma Water	Calculated	\$9,278,146	\$10,242,320	\$11,307,539	\$12,484,455
Total Operating Expenses			\$92,128,283	\$97,344,820	\$102,882,802	\$108,764,451

FY 2022 Billed Demand (CCF)	Class	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total
	SF Residential	1,093,116	1,036,856	697,222	584,719	659,977	849,071	4,920,961
	Duplex	28,747	27,670	23,108	21,675	21,952	24,477	147,629
	Triplex	22,430	22,360	19,220	19,710	18,966	21,243	123,929
	Medium Apt	42,851	44,706	41,287	41,789	39,718	44,924	255,275
	Large Apt	125,574	125,742	121,708	126,036	112,488	124,492	736,040
	Institutional	99,752	91,323	80,796	104,714	117,271	96,617	590,473
	Commercial	178,192	175,836	153,328	141,502	147,323	166,502	962,683
	Irrigation	147,789	113,599	28,019	14,103	50,024	102,362	455,896
	Hydrant	1,571	6,406	1,391	199	571	1,238	11,376
	SF Irrigation	<u>1,902</u>	<u>2,008</u>	<u>1,093</u>	<u>260</u>	<u>549</u>	<u>930</u>	<u>6,742</u>
	Total Potable	1,741,924	1,646,506	1,167,172	1,054,707	1,168,839	1,431,856	8,211,004
	Recycled Water	56,914	48,103	7,420	8,918	22,412	46,742	190,509
	Raw Water	<u>16,789</u>	<u>12,201</u>	<u>0</u>	<u>0</u>	<u>4,090</u>	<u>19,011</u>	<u>52,091</u>
	Total Water Sales	1,815,627	1,706,810	1,174,592	1,063,625	1,195,341	1,497,609	8,453,604

SF + DUP Residential	Mo. Amount	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total
Total		1,121,863	1,064,526	720,330	606,394	681,929	873,548	5,068,590
Base	476,684	476,684	476,684	476,684	476,684	476,684	476,684	2,860,101
Average	844,765	368,081	368,081	243,646	129,710	205,245	368,081	1,682,847
Summer	1,019,979	175,214	175,214	0	0	0	28,783	379,211
Peak		101,884	44,547	0	0	0	0	146,431

Multi Family	Amount	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total
Total		190,855	192,808	182,215	187,535	171,172	190,659	1,115,244
Base	104,885	104,885	104,885	104,885	104,885	104,885	104,885	629,309
Average	185,874	80,989	80,989	77,330	80,989	66,287	80,989	467,574
Summer	191,441	4,981	5,567	0	1,661	0	4,785	16,994
Peak		0	1,367	0	0	0	0	1,367

Inst + Com + Irr + SF IRR	Amount	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total
Total		427,635	382,766	263,236	260,579	315,167	366,411	2,015,794
Base	189,579	189,579	189,579	189,579	189,579	189,579	189,579	1,137,471
Average	335,966	146,387	146,387	73,657	71,000	125,588	146,387	709,408
Summer	392,271	56,305	46,800	0	0	0	30,445	133,551
Peak		35,364	0	0	0	0	0	35,364

Total	Amount	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total
Base		771,147	771,147	771,147	771,147	771,147	771,147	4,626,882
Average		595,458	595,458	394,634	281,700	397,121	595,458	2,859,828
Summer		236,500	227,581	0	1,661	0	64,013	529,755
Peak		137,248	45,914	0	0	0	0	183,163
Total		1,740,353	1,640,100	1,165,781	1,054,508	1,168,268	1,430,618	8,199,628

SF + DUP Residential

FY 2022	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Tier 1	663,584	649,147	555,553	515,045	543,142	607,397	3,533,868	65.5%
Tier 2	210,109	191,593	100,335	67,263	92,249	146,764	808,313	15.0%
Tier 3	265,268	238,744	94,165	51,559	79,451	150,766	879,953	16.3%
Tier 4	55,285	53,396	16,485	11,425	10,829	24,654	172,074	3.2%
Total	1,194,246	1,132,880	766,539	645,292	725,671	929,581	5,394,209	

Mo. Amount	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
507,307	507,307	507,307	507,307	507,307	507,307	507,307	3,043,841	56%
899,035	391,728	391,728	259,232	137,985	218,364	391,728	1,790,765	33%
1,085,569	186,534	186,534	0	0	0	30,546	403,614	7%
	108,677	47,311	0	0	0	0	155,988	2.89%

Tier 1	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	507,307	507,307	507,307	507,307	507,307	507,307	3,043,841	86.1%
Average	156,277	141,840	48,246	7,738	35,835	100,090	490,027	13.9%
Summer Avg.	0	0	0	0	0	0	0	0.0%
Peak	0	0	0	0	0	0	0	0.0%
Total	663,584	649,147	555,553	515,045	543,142	607,397	3,533,868	

Tier 2	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	210,109	191,593	100,335	67,263	92,249	146,764	808,313	100.0%
Summer Avg.	0	0	0	0	0	0	0	0.0%
Peak	0	0	0	0	0	0	0	0.0%
	210,109	191,593	100,335	67,263	92,249	146,764	808,313	

Tier 3	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	25,342	58,295	94,165	51,559	79,451	144,874	453,686	51.6%
Summer Avg.	186,534	180,449	0	0	0	5,892	372,875	42.4%
Peak	53,392	0	0	0	0	0	53,392	6.1%
	265,268	238,744	94,165	51,559	79,451	150,766	879,953	

Tier 4	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	0	0	16,485	11,425	10,829	0	38,739	22.5%
Summer Avg.	0	6,085	0	0	0	24,654	30,739	17.9%
Peak	55,285	47,311	0	0	0	0	102,596	59.6%
	55,285	53,396	16,485	11,425	10,829	24,654	172,074	

MF Res

FY 2022	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Tier 1	159443	161205	153563	157907	147646	160104	939868	84.3%
Tier 2	27484	27213	22954	22737	19433	25648	145469	13.0%
Tier 3	2838	3159	4446	5170	3139	3547	22299	2.0%
Tier 4	1090	1231	1252	1721	954	1360	7608	0.7%
	190,855	192,808	182,215	187,535	171,172	190,659	1,115,244	

Mo. Amount	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
104,885	104,885	104,885	104,885	104,885	104,885	104,885		
185,874	80,989	80,989	77,330	80,989	66,287	80,989		
191,441	4,981	5,567	0	1,661	0	4,785		
	0	1,367	0	0	0	0		

Tier 1	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	104,885	104,885	104,885	104,885	104,885	104,885	629,309	67.0%
Average	54,558	56,320	48,678	53,022	42,761	55,219	310,559	33.0%
Summer Avg.	0	0	0	0	0	0	0	0.0%
Peak	0	0	0	0	0	0	0	0.0%
Total	159,443	161,205	153,563	157,907	147,646	160,104	939,868	

Tier 2	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	26,431	24,669	22,954	22,737	19,433	25,648	141,872	97.5%
Summer Avg.	1,053	2,544	0	0	0	0	3,597	2.5%
Peak	0	0	0	0	0	0	0	0.0%
Total	27,484	27,213	22,954	22,737	19,433	25,648	145,469	

Tier 3	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	0	0	4,446	5,170	3,139	122	12,877	57.7%
Summer Avg.	2,838	3,023	0	0	0	3,425	9,286	41.6%
Peak	0	136	0	0	0	0	136	0.6%
Total	2,838	3,159	4,446	5,170	3,139	3,547	22,299	

Tier 4	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	0	0	1,252	60	954	0	2,266	29.8%
Summer Avg.	1,090	0	0	1,661	0	1,360	4,111	54.0%
Peak	0	1,231	0	0	0	0	1,231	16.2%
Total	1,090	1,231	1,252	1,721	954	1,360	7,608	

Inst, Com, Irr, SF Irr

FY 2022	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Tier 1	371,954	331,036	229,207	207,866	229,712	316,293	1,686,068	83.6%
Tier 2	32,523	26,486	17,537	20,842	31,685	26,315	155,388	7.7%
Tier 3	23,158	25,244	16,492	31,871	53,770	23,803	174,338	8.6%
Tier 4	0	0	0	0	0	0	0	0.0%
Total	427,635	382,766	263,236	260,579	315,167	366,411	2,015,794	

Mo. Amount	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
189,579	189,579	189,579	189,579	189,579	189,579	189,579	1,137,471	56.4%
335,966	146,387	146,387	73,657	71,000	125,588	146,387	709,408	35.2%
392,271	56,305	46,800	0	0	0	30,445	133,551	6.6%
	35,364	0	0	0	0	0	35,364	1.8%
							2,015,794	

Tier 1	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	189,579	189,579	189,579	189,579	189,579	189,579	1,137,471	67.5%
Average	146,387	141,457	39,628	18,287	40,133	126,714	512,609	30.4%
Summer Avg.	35,988	0	0	0	0	0	35,988	2.1%
Peak	0	0	0	0	0	0	0	0.0%
Total	371,954	331,036	229,207	207,866	229,712	316,293	1,686,068	

Tier 2	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	0	4,930	17,537	20,842	31,685	19,673	94,666	60.9%
Summer Avg.	20,317	21,556	0	0	0	6,642	48,515	31.2%
Peak	12,206	0	0	0	0	0	12,206	7.9%
	32,523	26,486	17,537	20,842	31,685	26,315	155,388	

Tier 3	Jul/Aug	Sep/Oct	Nov/Dec	Jan/Feb	Mar/Apr	May/Jun	Total	% Total
Base	0	0	0	0	0	0	0	0.0%
Average	0	0	16,492	31,871	53,770	0	102,133	58.6%
Summer Avg.	0	25,244	0	0	0	23,803	49,047	28.1%
Peak	23,158	0	0	0	0	0	23,158	13.3%
Total	23,158	25,244	16,492	31,871	53,770	23,803	174,338	

Allocation Factors

FY 2023/24 Potable and Raw Water Allocation

Potable + Raw Water	Potable Water	Raw Water	Total
Amount (AF)	21,463	330	21,793
Percent of Total	98.49%	1.51%	100.00%

All Water	Potable Water	Raw Water	Recycled Water	Total
Amount (AF)	21,463	330	600	22,393
Percent of Total	95.85%	1.47%	2.68%	100.00%

Direct Operating Cost Percentage

Engineering	Operations	Total	Watershed	Watershed %	Other %
\$13,223,507	\$31,244,488	\$44,467,995	\$7,409,015	16.7%	83.3%

Watershed Cost Allocation

Watershed Budget	Total	Watershed Fee	Volumetric Rates	Watershed Fee	Volumetric Rates
WATERSHED ADMINISTRATION	\$977,441	100%		\$977,441	\$0
WATERSHED PROTECTION	\$1,946,544	100%		\$1,946,544	\$0
FISHERIES	\$699,234		100%	\$0	\$699,234
VEG & WILDLIFE MANAGEMENT	\$1,323,405		100%	\$0	\$1,323,405
WATERSHED MAINTENANCE	\$2,462,391	100%		\$2,462,391	\$0
Total Amount	\$7,409,015			\$5,386,376	\$2,022,639

Single Family & Duplex Meter Equivalent Ratios

Maximum Bi-Monthly Period Demand Ratio	Three Year Average			
	FY 19/20	FY 20/21	FY 21/22	Average
<i>Meter Size</i>	#	#	#	#
5/8"	1	1	1	1
3/4"	1.3	1.4	1.4	1.4
1"	1.7	1.7	1.7	1.7
1.5"	3.6	3.7	3.7	3.7
2"	7.1	6	6	6.4

All Other Customers Meter Equivalent Ratios

Meter Size	Maximum Safe Flow	Meter Equivalent Ratios
<i>Meter Size</i>	<i>GPM</i>	<i>MEU</i>
5/8"	20	1
3/4"	30	1.5
1"	50	2.5
1.5"	100	5
2"	160	8
3"	400	20
4"	800	40
6"	1,400	70
8"	2,700	135
10"	4,000	200

Fire Service Size	Number of Services	Maximum Safe Fire Meter Flow	Equivalent Fire Unit Ratios (EFU)	Fire Capacity EFUs	Fire Capacity %	Annual Fire Services	Annual EFUs
<i>Service Size"</i>	<i>#</i>	<i>GPM</i>	<i>EFU</i>	<i>EFU</i>	<i>%</i>	<i>#</i>	<i>#</i>

Public Hydrants

6	7,463	1,600	10.00	74,630	87.4%		895,560
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Private Fireline Services

2	63	160	1.00	63		756	756
3	0	350	2.19	0		0	0
4	629	700	4.38	2,755		7,548	33,060
6	518	1,600	10.00	5,180		6,216	62,160
8	154	2,800	17.50	2,695		1,848	32,340
10	<u>4</u>	4,400	27.50	<u>110</u>		<u>48</u>	<u>1,320</u>
Total Private Firelines	<u>1368</u>			<u>10,803</u>	12.65%	<u>16,416</u>	<u>129,636</u>
Total Fire Protection	8,831			85,433		16,416	1,025,196

Fire Service Percentage of Expense Categories* 10.00%

Private Fire Service Expenses Allocation Percentage **1.265%**

*BWA worked with District staff and identified that fire service contributed to 10% of costs in several allocation categories.

Drought Surcharge Derivation

Drought Stage		FY 2024	FY 2025	FY 2026	FY 2027
Total Projected Potable Water Supply					
Volume (AF)		21,892	22,330	22,777	23,232
	Stage				
Drought Stage	Reduction	Reduced Water Use			
1 - Voluntary	10%	2,189	2,233	2,278	2,323
2 - Voluntary	20%	4,378	4,466	4,555	4,646
3 - Mandatory	30%	6,568	6,699	6,833	6,970
4 - Mandatory	40%	8,757	8,932	9,111	9,293
5 - Mandatory	50%	10,946	11,165	11,388	11,616
Projected Imported Water Cost (\$/AF)		\$1,686.94	\$1,825.73	\$1,976.08	\$2,138.98
Volumetric Cost Reduction					
1 - Voluntary		\$688,127	\$736,984	\$789,310	\$845,351
2 - Voluntary		1,376,255	1,473,969	1,578,621	1,690,703
3 - Mandatory		2,064,382	2,210,953	2,367,931	2,536,054
4 - Mandatory		2,752,509	2,947,938	3,157,241	3,381,405
5 - Mandatory		3,440,637	3,684,922	3,946,551	4,226,757
Volumetric Revenue Requirements					
No Reduction		\$85,508,706	\$104,139,509	\$118,800,151	\$128,478,316
1 - Voluntary		84,820,579	103,402,525	118,010,840	127,632,964
2 - Voluntary		84,132,452	102,665,540	117,221,530	126,787,613
3 - Mandatory		83,444,324	101,928,556	116,432,220	125,942,262
4 - Mandatory		82,756,197	101,191,571	115,642,909	125,096,910
5 - Mandatory		82,068,070	100,454,587	114,853,599	124,251,559
Total Volumetric Demand (AF)					
No Reduction		22,222	22,660	23,107	23,562
1 - Voluntary		20,000	20,394	20,796	21,206
2 - Voluntary		17,778	18,128	18,486	18,850
3 - Mandatory		15,556	15,862	16,175	16,494
4 - Mandatory		13,333	13,596	13,864	14,137
5 - Mandatory		11,111	11,330	11,553	11,781
Average Volumetric Rate (\$/AF)					
No Reduction		\$3,847.86	\$4,595.69	\$5,141.33	\$5,452.68
1 - Voluntary		4,240.99	5,070.18	5,674.64	6,018.67
2 - Voluntary		4,732.41	5,663.30	6,341.27	6,726.16
3 - Mandatory		5,364.23	6,425.88	7,198.36	7,635.78
4 - Mandatory		6,206.66	7,442.65	8,341.16	8,848.62
5 - Mandatory		7,386.06	8,866.14	9,941.07	10,546.59
Drought Surcharges Applied to All					
Volumetric Rates		FY 2024	FY 2025	FY 2026	FY 2027
1 - Voluntary					
2 - Voluntary		22.0%	23.0%	23.0%	23.0%
3 - Mandatory		39.0%	39.0%	40.0%	40.0%
4 - Mandatory		61.0%	61.0%	62.0%	62.0%
5 - Mandatory		91.0%	92.0%	93.0%	93.0%

APPENDIX B – Water Supply Costs

Water Supplies and Variable Cost

			FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	
Escalation Factors								
Sonoma Water			6.0%	8.5%	8.5%	8.5%	8.5%	
Chem & Electricity			5.0%	5.0%	5.0%	5.0%	5.0%	
Recycled Water			6.0%	6.0%	6.0%	6.0%	6.0%	
Water Supply Growth			5.00%	2.00%	2.00%	2.00%	2.00%	
Potable Water Supply Projections (Acre Feet)								
			Escalation	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
				<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
Potable Water Supply Projections								
Potable Water Supply (acre-feet)	WS Compound Growth		21,463	21,892	22,330	22,777	23,232	
Potable Water Supply (CCF)			9,349,333	9,536,320	9,727,046	9,921,587	10,120,019	
Total Potable Water Sold (CCF)			8,567,156	8,738,499	8,913,269	9,091,534	9,273,365	
Water Loss			0.916	0.92	0.92	0.92	0.92	
MMWD Potable Water Production % MMWD Supply								
San Geronimo Treatment Plant Prod (acre-feet)	76.0%		12,284	12,458	12,707	12,962	13,221	
Bon Tempe Treatment Plant Prod (acre-feet)	24.0%		<u>3,879</u>	<u>3,934</u>	<u>4,013</u>	<u>4,093</u>	<u>4,175</u>	
Total Local Production			16,163	16,392	16,720	17,055	17,396	
Purchased Potable Water								
Sonoma Water Imported (acre-feet)			5,300	5,500	5,610	5,722	5,837	
			24.7%	25.123%	25%	25%	25%	
Non-Potable Water Supply Projections (Acre Feet)								
Recycled Water Supply								
Las Gallinas Imported (acre-feet)			600	600	600	600	600	
Recycled Water Sales (CCF)			239,494	239,494	239,494	239,494	239,494	
Recycled Water Loss			0.92	0.92	0.92	0.92	0.92	
Raw Water Sales								
Raw Water Sales (AF)			330	330	330	330	330	
Raw Water Sales (CCF)			143,748	143,748	143,748	143,748	143,748	
Water Supply Cost Projections								
			Escalation	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
				<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>	<i>Projected</i>
MMWD Water								
San Geronimo	\$/AF	Chem & Electricity	<u>\$304</u>	<u>\$350</u>	<u>\$368</u>	<u>\$386</u>	<u>\$405</u>	
	\$/ year		\$3,739,686	\$4,362,344	\$4,672,070	\$5,003,787	\$5,359,056	
Bon Tempe	\$/AF	Chem & Electricity	<u>\$162</u>	<u>\$201</u>	<u>\$211</u>	<u>\$221</u>	<u>\$233</u>	
			\$629,327	\$790,158	\$846,260	\$906,344	\$970,694	
Imported Potable Water								
Sonoma Water Purchase	\$/AF	Sonoma Water	<u>\$1,434</u>	<u>\$1,556</u>	<u>\$1,688</u>	<u>\$1,831</u>	<u>\$1,987</u>	
Total Sonoma Water Purchase	\$/ year		\$7,598,374	\$8,555,339	\$9,468,194	\$10,478,450	\$11,596,501	
Ingacio	\$/AF	Chem & Electricity	<u>\$125</u>	<u>\$131</u>	<u>\$138</u>	<u>\$145</u>	<u>\$152</u>	
Total Ingacio	\$/ year		\$663,355	\$722,807	\$774,126	\$829,089	\$887,954	
Recycled Water								
Recycled Water Purchase	\$/AF	Recycled Water	<u>\$260</u>	<u>\$276</u>	<u>\$292</u>	<u>\$310</u>	<u>\$328</u>	
Total Recycled Water Purchase	\$/ year		\$156,000	\$165,360	\$175,282	\$185,798	\$196,946	
Projected Water Supply Cost Summary								
MMWD Water			\$4,369,013	\$5,152,502	\$5,518,330	\$5,910,131	\$6,329,751	
Recycled Water			\$156,000	\$165,360	\$175,282	\$185,798	\$196,946	
Imported Water			\$8,261,729	\$9,278,146	\$10,242,320	\$11,307,539	\$12,484,455	
Water Purchase Costs			\$12,786,742	\$14,596,008	\$15,935,932	\$17,403,469	\$19,011,152	