

Western Municipal Water District

Riverside Service Area and Rainbow Service Area Water Cost of Service Study Report

Final Report Version 1 / Rates Adopted June 2, 2021



Page intentionally left blank to facilitate two-sided printing.

TABLE OF CONTENTS

1.	EXECUTIVE SUMMARY	1
1.1	BACKGROUND OF THE STUDY	1
1.1.1	Objectives of the Study	1
1.1.2	Proposed Rates.....	1
2.	INTRODUCTION	7
2.1	STUDY BACKGROUND.....	7
2.2	OBJECTIVES OF THE STUDY	7
2.3	PROCESS	7
2.4	LEGAL REQUIREMENTS	9
2.4.1	California Constitution - Article XIII D, Section 6 (Proposition 218).....	9
2.4.2	California Constitution - Article X, Section 2.....	9
2.4.3	Cost-Based Rate Setting Methodology	11
3.	KEY ASSUMPTIONS	13
3.1	BASELINE YEAR	13
3.2	AVAILABLE WATER SOURCES	13
3.3	MARCH EAST SERVICE AREA.....	14
4.	POTABLE COST OF SERVICE & RATES	15
4.1	PROPORTIONALITY.....	15
4.2	COST OF SERVICE PROCESS	16
4.3	STEP 1 – DETERMINE POTABLE REVENUE REQUIREMENTS	16
4.4	STEP 2 – FUNCTIONALIZE COSTS	17
4.5	STEP 3 – ALLOCATION OF FUNCTIONAL COSTS TO COST CAUSATION COMPONENTS	19
4.5.1	Extra Capacity Costs Allocation.....	20
4.5.2	Allocation of Operating Expenses.....	22
4.6	STEP 4 – DISTRIBUTE COST COMPONENTS TO CUSTOMER CLASSES AND TIERS.....	29
4.6.1	Fixed System Charge	29

Billing and Customer Service Costs Component	29
Meters & Service Costs Component	30
Extra Capacity Costs Component	31
RTS Component.....	32
4.6.2 Fixed System Charge for Private Fire	33
4.6.3 Variable Charges.....	33
Commodity Charge.....	33
Supply Component.....	33
Delivery Component.....	35
Efficiency Component.....	35
Revenue Offset Component	35
Pumping Charge.....	36
Water Reliability Charge (WRC).....	36
4.7 PROPOSED WATER RATES.....	36
4.7.1 Fixed Charges	36
4.7.2 Variable Charges.....	39
4.8 RIVERSIDE POTABLE CUSTOMER BILL IMPACT	40
5. NON-POTABLE COST OF SERVICE & RATES	42
5.1 COST OF SERVICE PROCESS	42
5.2 STEP 1 – DETERMINE NON-POTABLE REVENUE REQUIREMENTS ...	42
5.3 STEP 2 – FUNCTIONALIZE COSTS	44
5.4 STEP 3 – ALLOCATE FUNCTIONAL COSTS TO COST CAUSATION COMPONENTS	45
5.5 STEP 4 – DISTRIBUTE COST COMPONENTS TO CUSTOMER CLASS AND TIERS.....	45
Fixed Charges	46
Fixed System Charge	46
RTS Charge	46
Delivery Component.....	46
Efficiency Component.....	46
Revenue Offset Component	47
Pumping Charge.....	47

Water Reliability Charge (WRC).....	47
5.6 PROPOSED NON-POTABLE WATER RATES.....	47
5.6.1 Fixed Charges	47
5.6.2 Variable Rates	48
6. RAINBOW COST OF SERVICE & RATES.....	50
6.1 COST OF SERVICE PROCESS	50
6.2 STEP 1 – DETERMINE RAINBOW REVENUE REQUIREMENTS	50
6.3 STEP 2 – FUNCTIONALIZE COSTS	52
6.4 STEP 3 – ALLOCATE FUNCTIONAL COSTS TO COST CAUSATION COMPONENTS	53
6.5 STEP 4 – DISTRIBUTE COST COMPONENTS TO CUSTOMER CLASS AND TIERS.....	53
Fixed System Charge	53
RTS Charge	54
Delivery Component.....	54
6.6 PROPOSED RAINBOW WATER RATES	54
6.6.1 Fixed Charges	54
6.6.2 Variable Rates	55

LIST OF TABLES

Table 1-1: Current and Proposed Monthly Fixed System Charges (\$/Meter Size).....	2
Table 1-2: Current and Proposed Monthly Readiness-To-Serve Charge (\$/Meter Size).....	2
Table 1-3: Proposed Monthly Fixed System Charge for Private Fire (\$/Meter Size).....	3
Table 1-4: Tier Width Definitions.....	3
Table 1-5: Riverside and March East Projected Use (HCF).....	3
Table 1-6: Non-Potable Projected Use (HCF).....	4
Table 1-7: Rainbow Projected Use (HCF).....	4
Table 1-8: Current and Proposed Rates for the Commodity Charge (\$/HCF).....	4
Table 1-9: Current and Proposed Rates for the Pumping Charge (\$/HCF).....	5
Table 1-10: Current and Proposed Water Reliability Charge (\$/HCF).....	6
Table 3-1: Available Water Sources.....	14
Table 4-1: Riverside Potable Revenue Requirements.....	17
Table 4-2: Assets by Function.....	19
Table 4-3: Riverside Potable O&M by Function.....	19
Table 4-4: System-Wide Peaking Characteristics.....	21
Table 4-5: Allocation Factors.....	21
Table 4-6: Allocation to Cost Causation Components.....	22
Table 4-7: Capital Allocation (%).....	22
Table 4-8: Capital Allocation (\$).....	23
Table 4-9: FY 2022 O&M Allocation (%).....	23
Table 4-10: FY 2022 O&M Allocation (\$).....	23
Table 4-11: Other Available Revenues.....	24
Table 4-12: Adjusted Cost Components.....	24
Table 4-13: General Cost Reallocation.....	25
Table 4-14: Fire Flow Demand.....	26
Table 4-15: Fire Capacity Costs.....	27
Table 4-16: Reallocation of Public Fire Protection.....	27
Table 4-17: Reallocation of Private Fire.....	28
Table 4-18: Summary of Revenue Requirements by Cost Components.....	28
Table 4-19: Billing & Customer Service Costs Component – Units of Service.....	29
Table 4-20: Billing & Customer Service Costs Component – Unit Rate.....	30
Table 4-21: Meters and Service Costs Component – Units of Service.....	30
Table 4-22: Meters & Service Costs Component – Unit Rate.....	31
Table 4-23: Extra Capacity Costs Component – Units of Service.....	31
Table 4-24: Extra Capacity Costs Component – Unit Rate.....	32
Table 4-25: Units of Service for RTS.....	32
Table 4-26: RTS Component – Unit Rate.....	32
Table 4-27: Private Fire Extra Capacity Charges.....	33
Table 4-28: Allocation of Variable Cost Components Across Customer Classes.....	33
Table 4-29: Water Supply Sources – Quantity and Effective Rate.....	34
Table 4-30: Allocation of Water Supplies (HCF) for Unit Rate (\$/HCF).....	34

Table 4-31: Projected Water Supply Costs and Unit Rates	34
Table 4-32: Delivery Component - Unit Rate	35
Table 4-33: Efficiency Component – Unit Rates	35
Table 4-34: Derivation of Revenue Offset Unit Cost	36
Table 4-35: Pumping Charge – Unit Rates (\$/HCF)	36
Table 4-36: FY 2022 Rates for Fixed System Charge (\$/Meter Size)	37
Table 4-37: Final FY 2022 Fixed System Charge (\$/Meter Size)	37
Table 4-38: Current and Proposed Fixed System Charges (\$/Meter Size)	38
Table 4-39: Current and Proposed Readiness-To-Serve Charges (\$/Meter Size)	38
Table 4-40: FY 2022 Rates for Private Fire Fixed System Charges (\$/Meter Size)	38
Table 4-41: Proposed Monthly Fixed System Charge for Private Fire (\$/Meter Size)	39
Table 4-42: Proposed FY 2022 Commodity Charge Rates (\$/HCF)	39
Table 4-43: Proposed 4-Year Commodity Charge Rates (\$/HCF)	40
Table 4-44: Proposed Pumping Charge Rates (\$/HCF)	40
Table 5-1: Riverside Non-Potable Revenue Requirements	43
Table 5-2: Non-Potable Fixed System Charge Revenue Requirement FY 2022	44
Table 5-3: Total Non-Potable Fixed Revenue Requirement	44
Table 5-4: Non-Potable Functionalized Expenses	45
Table 5-5: Allocation of Functionalized Costs to Cost Components	45
Table 5-6: Final FY 2022 Fixed System Charge (\$/Meter Size)	46
Table 5-7: Delivery Component – FY 2022 Unit Rate	46
Table 5-8: Efficiency Component – FY 2022 Unit Rate	47
Table 5-9: Non-Potable Revenue Offset – FY 2022 Unit Rate	47
Table 5-10: Current & Proposed Rates for Non-Potable Fixed System Charge (\$/Meter Size)	48
Table 5-11: Current & Proposed Rates for Non-Potable Readiness-To-Serve Charge (\$/Meter Size)	48
Table 5-12: Proposed FY 2022 Variable Commodity Charge Rates (\$/HCF)	48
Table 5-13: Proposed Variable Commodity Charge Rates (\$/hcf)	49
Table 5-14: Proposed Pumping Charge Rates (\$/HCF)	49
Table 5-15: Proposed WRC Rates (\$/HCF)	49
Table 6-1: Rainbow Revenue Requirements	51
Table 6-2: FY 2022 Rainbow Fixed Revenue Requirement Derivation	52
Table 6-3: FY 2022 Rainbow Total Fixed Revenue Requirement	52
Table 6-4: Rainbow Functionalized Costs	52
Table 6-5: Allocation of Cost Components	53
Table 6-6: Delivery Component – FY 2022 Unit Rate	54
Table 6-7: Pumping Charge – FY 2022 Unit Rate (\$/HCF)	54
Table 6-8: Rainbow Current & Proposed Rates for Fixed System Charges (\$/Meter Size)	55
Table 6-9: Rainbow Current & Proposed Readiness-To-Serve Charges (\$/Meter Size)	55
Table 6-10: Proposed Commodity Charge Rates (\$/HCF)	55
Table 6-11: Proposed Pumping Charge Rates (\$/HCF)	55

LIST OF FIGURES

Figure 1: Rate Study Approach..... 8
Figure 2: Cost of Service Process 16
Figure 3: Residential Customer Bill Impact 41

LIST OF APPENDICES

Appendix A: Water Budget Definitions 56
Appendix B: Efficiency Rate Component..... 61
Appendix C: Pumping Charge Rates..... 67
Appendix D: Water Reliability Charge 71
Appendix E: March East Asset Replacement Surcharge 73
Appendix F: Phase-In of Fixed System Charge for 6” and Larger Meters 77

ABBREVIATIONS

Terms	Descriptions
AF	Acre foot / Acre feet
AWWA	American Water Works Association
COS	Cost of Service
CIP	Capital Improvement Plan
EMU	Equivalent Meter Unit
EMWD	Eastern Municipal Water District
ET	Evapotranspiration
ETAF	Evapotranspiration Adjustment Factor
FSC	Fixed System Charges
FY	Fiscal Year ending (July 1 - June 30)
GPCD	Gallons per capita per day
GPM	Gallons per minute
HCF	Hundred cubic feet = 100 cubic feet = 748 gallons
IWB	Indoor Water Budget
MFR	Multi-family Residential
MGD	Million gallons per day
MWD	Metropolitan Water District of Southern California
O&M	Operations and Maintenance
OWB	Outdoor Water Budget
PAYGO	Literally “pay as you go” to refer to capital funded through rate revenues
RTS	Readiness to Serve
SFR	Single Family Residential
TWB	Total Water Budget
WRC	Water Reliability Charge

1. EXECUTIVE SUMMARY

1.1 BACKGROUND OF THE STUDY

Western Municipal Water District (District) conducted a Water Cost of Service Study (Study) to review and update the water rates for the Riverside Potable, Riverside Non-Potable, March East, and Rainbow service areas. This Study provides the analysis used to determine the proposed water rates for these service areas for the four-year Study period, Fiscal Year (FY¹) 2022 through FY 2025.

1.1.1 Objectives of the Study

The major objectives of the Study include the following:

- » Perform cost-of-service (COS) analyses for the Riverside Potable/March East, Non-Potable, and Rainbow service areas for FY 2022 through FY 2025²
- » Examine the fixed and variable split for recovering the District's revenue requirements
- » Document the nexus between the costs incurred by the District and the proposed rates

1.1.2 Proposed Rates

The District's operating costs will be recovered through monthly fixed charges and variable charges. If adopted by the District's Board of Directors, the proposed rates would be effective and applied to all water usage and service charges billed on or after July 1 of each FY.

1.1.2.1 *Monthly Fixed System Charges*

There are two monthly fixed charges – a Fixed System Charge (FSC) and a Readiness-To-Serve (RTS) Charge. The Riverside Potable, Non-Potable, March East, and Rainbow customers will continue to pay the same monthly FSC and RTS charges (i.e., there are not separate rate tables for each service area). The current and proposed monthly FSC and RTS are shown in Table 1-1 and Table 1-2, respectively.

¹ In this Report, fiscal years begin on July 1 and end on June 30 and are abbreviated by using the year of the June 30 date. For example, the fiscal year beginning July 1, 2021 and ending June 30, 2022 is abbreviated FY 2022.

² The cost-of-service tables for the second through fourth years (FY 2023 – FY 2025) are available upon request from the District.

Table 1-1: Current and Proposed Monthly Fixed System Charges (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$30.43	\$26.29	\$27.19	\$28.13	\$29.09
3/4"	\$41.40	\$36.11	\$37.36	\$38.65	\$39.99
1"	\$62.99	\$55.87	\$57.81	\$59.81	\$61.89
1.5"	\$117.13	\$105.49	\$109.16	\$112.95	\$116.88
2"	\$139.31	\$125.82	\$130.19	\$134.71	\$139.39
3"	\$333.98	\$304.30	\$314.89	\$325.85	\$337.20
4"	\$647.69	\$597.76	\$618.61	\$640.20	\$662.55
6"	\$847.75	\$1,041.68	\$1,235.61	\$1,429.54	\$1,479.47
8"	\$986.44	\$1,232.84	\$1,479.24	\$1,725.64	\$1,972.04
10"	\$1,157.24	\$1,470.43	\$1,783.62	\$2,096.81	\$2,410.00
12"	\$1,429.61	\$1,810.84	\$2,192.07	\$2,573.30	\$2,954.53

Table 1-2: Current and Proposed Monthly Readiness-To-Serve Charge (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$1.47	\$1.33	\$1.42	\$1.44	\$1.52
3/4"	\$2.21	\$1.99	\$2.13	\$2.16	\$2.28
1"	\$3.69	\$3.32	\$3.55	\$3.60	\$3.79
1.5"	\$7.37	\$6.63	\$7.10	\$7.20	\$7.57
2"	\$8.85	\$7.96	\$8.52	\$8.64	\$9.09
3"	\$22.12	\$19.88	\$21.30	\$21.58	\$22.71
4"	\$44.24	\$39.76	\$42.60	\$43.16	\$45.42
6"	\$99.54	\$89.46	\$95.85	\$97.11	\$102.20
8"	\$132.72	\$119.28	\$127.80	\$129.48	\$136.26
10"	\$176.96	\$159.04	\$170.40	\$172.64	\$181.68
12"	\$248.85	\$223.65	\$239.63	\$242.78	\$255.49

1.1.2.2 Monthly Fixed System Charge for Private Fire

Table 1-3 shows the proposed Fixed System Charges for private fire accounts³.

³ The District previously charged private fire based on the by-pass meter size.

Table 1-3: Proposed Monthly Fixed System Charge for Private Fire (\$/Meter Size)

Meter Size	CURRENT		Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
	5/8" By-Pass	3/4" By-Pass				
3"	\$30.43	\$41.40	\$10.63	\$10.98	\$11.36	\$11.72
4"	\$30.43	\$41.40	\$14.93	\$15.41	\$15.96	\$16.46
6"	\$30.43	\$41.40	\$30.33	\$31.33	\$32.46	\$33.47
8"	\$30.43	\$41.40	\$56.89	\$58.77	\$60.91	\$62.80
10"	\$30.43	\$41.40	\$96.85	\$100.05	\$103.71	\$106.92
12"	\$30.43	\$41.40	\$152.23	\$157.27	\$163.02	\$168.08

1.1.2.3 Variable Charges

The District utilizes a water budget rate structure for its customers that is overviewed in Appendix A of this Study. Tier width definitions are provided in Table 1-4. Projected water use for Riverside/March East, Non-Potable, and Rainbow are provided in Table 1-5, Table 1-6, and Table 1-7, respectively. Operating needs of the District not recovered by fixed charges are recovered through three variable charges – a Commodity Charge, Pumping Charge, and Water Reliability Charge – as shown in the following tables. Table 1-8 shows the current and proposed Commodity Charge per one hundred cubic feet (hcf) of water⁴ for each service area. Although the Commodity Charge rates are shown together in Table 1-8, Riverside Potable, Riverside Non-Potable, and Rainbow were analyzed separately and were based on the operating needs of each distinct service area.

Table 1-4: Tier Width Definitions

Tier	Tier Definition	Single Family Residential	Multi-Family Residential	Commercial	Irrigation
Tier 1	Essential Use	100% IWB	100% IWB	35% TWB	N/A
Tier 2	Efficient Use	100% OWB	100% OWB	65% TWB	100% OWB
Tier 3	Inefficient Use	54% OWB	54% OWB	54% TWB	54% OWB
Tier 4	Unsustainable Use	Above Tier 3	Above Tier 3	Above Tier 3	Above Tier 3

Table 1-5: Riverside and March East Projected Use (HCF)

Class/Service	Tier Definition	FY 2022	FY 2023	FY 2024	FY 2025
Water Budget Rates					
Tier 1	Essential Use	2,752,640	2,780,166	2,807,968	2,836,048
Tier 2	Efficient Use	5,074,360	5,125,104	5,176,355	5,228,119
Tier 3	Inefficient Use	428,899	433,188	437,520	441,895
Tier 4	Unsustainable Use	325,101	328,352	331,636	334,952
Uniform Rates					
Agriculture	N/A	259,180	261,772	264,389	267,033
March East	N/A	212,200	214,323	216,466	218,631
Total		9,052,380	9,142,905	9,234,334	9,326,678

⁴ One hundred cubic feet (hcf) equals 748 gallons.

Table 1-6: Non-Potable Projected Use (HCF)

Customer Class	FY 2022	FY 2023	FY 2024	FY 2025
Landscape	864,000	864,000	864,000	864,000
Agriculture	759,300	759,300	759,300	759,300
Total	1,623,300	1,623,300	1,623,300	1,623,300

Table 1-7: Rainbow Projected Use (HCF)

Customer Class	FY 2022	FY 2023	FY 2024	FY 2025
All Classes	12,790	12,790	12,790	12,790

Table 1-8: Current and Proposed Rates for the Commodity Charge (\$/HCF)

Customer Class/Service Area	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
Riverside Potable					
Water Budget Rates					
Tier 1 - Essential Use	\$1.313	\$1.885	\$1.884	\$1.976	\$2.092
Tier 2 - Efficient Use	\$2.738	\$2.819	\$2.969	\$3.126	\$3.295
Tier 3 - Inefficient Use	\$4.178	\$3.969	\$4.108	\$4.273	\$4.433
Tier 4 - Wasteful/Unsustainable Use	\$4.778	\$4.549	\$4.688	\$4.853	\$5.013
Tier 5 - Unsustainable Use	\$8.218	N/A	N/A	N/A	N/A
Uniform Rates					
Agriculture	\$2.326	\$2.460	\$2.580	\$2.773	\$2.950
March East	\$3.306	\$3.395	\$3.489	\$3.636	\$3.782
Riverside Non-Potable					
Landscape	\$2.327	\$2.395	\$2.524	\$2.658	\$2.802
Agriculture	\$1.977	\$2.091	\$2.193	\$2.357	\$2.508
Rainbow					
All Customers	\$2.406	\$2.771	\$2.859	\$3.003	\$3.150

Table 1-9 shows the current and proposed Pumping Charge rates per hcf of water. The Pumping Charge is in addition to the Commodity Charge and intended to recover the energy cost of pumping water to customers in various Power Zones. A Power Zone is a regional area of parcels with similar pumping needs. The District hired an engineering firm to perform a Pumping Cost Analysis to determine the pumping cost to deliver water in the Riverside potable and non-potable systems. As a result, new Power Zones were established with new boundaries. See Appendix C for more information on Pumping Charge rates.

Table 1-9: Current and Proposed Rates for the Pumping Charge (\$/HCF)

Power Zone	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
Riverside Potable					
Power Zone 1	\$0.127				
Power Zone 2	\$0.189				
Power Zone 3	\$0.172				
Power Zone 4	\$0.424				
Power Zone 5	\$0.736				
Power Zone 6	\$0.815				
Power Zone 9	\$0.127				
Power Zone 101		\$0.000	\$0.000	\$0.000	\$0.000
Power Zone 102		\$0.140	\$0.147	\$0.154	\$0.162
Power Zone 103		\$0.181	\$0.190	\$0.200	\$0.210
Power Zone 104		\$0.229	\$0.240	\$0.252	\$0.265
Power Zone 105		\$0.686	\$0.720	\$0.756	\$0.794
Riverside Non-Potable					
Power Zone 1	\$0.112				
Power Zone 2	\$0.112				
Power Zone 3	\$0.153				
Power Zone 4	\$0.378				
Power Zone 5	\$0.657				
Power Zone 6	\$0.727				
Power Zone 201		\$0.155	\$0.214	\$0.296	\$0.409
Power Zone 202		\$0.163	\$0.238	\$0.347	\$0.506
Power Zone 203		\$0.197	\$0.254	\$0.327	\$0.421
Power Zone 204		\$0.290	\$0.305	\$0.320	\$0.336
Power Zone 205		\$0.604	\$0.634	\$0.666	\$0.699
Power Zone 206		\$0.713	\$0.749	\$0.786	\$0.825
Power Zone 207		\$0.242	\$0.254	\$0.267	\$0.280
Rainbow					
Power Zone 10/106	\$0.350	\$0.363	\$0.381	\$0.400	\$0.420

The final variable charge is the Water Reliability Charge (WRC). The WRC was developed by the District to provide a funding source for District-paid capital projects that would 1) increase water system reliability; 2) increase water system capacity; 3) improve the long-term sustainability of the water supply; and/or 4) enhance and improve water supply management. See Appendix D for more information. The current and proposed rates for the WRC are shown in Table 1-10.

Table 1-10: Current and Proposed Water Reliability Charge (\$/HCF)

Customer Class/Service Area	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
Riverside Potable & Non-Potable					
Agriculture	\$0.28	\$0.35	\$0.42	\$0.42	\$0.42
Other Customers	\$0.42	\$0.42	\$0.42	\$0.42	\$0.42
Rainbow					
All Customers	N/A	N/A	N/A	N/A	N/A

The calculations and forecasts in this Study are based on the reasonable projection of existing service costs, water demands, and system operations with information available at the time of this Study. Significant changes in the District's operations, changes occurring in California law, or further regulatory actions by the Governor or the State Water Resources Control Board concerning water use may require the District to modify or update the cost of service analysis in the future.

2. INTRODUCTION

2.1 STUDY BACKGROUND

The District, formed in 1954, provides water supply, wastewater disposal, and water resource management to the public in a safe, reliable, environmentally sensitive, and financially responsible manner. The District supplies water on both a wholesale and a retail basis to a region stretching 527-square miles in western Riverside County. This regional area includes the cities of Corona, Norco, Riverside, and Murrieta and the water agencies serving Box Springs, Eagle Valley, Lake Elsinore, Temescal Valley, and Temecula.

As a Metropolitan Water District of Southern California (MWD) member agency, the District receives most of its water from the Sacramento-San Joaquin Bay-Delta and the Colorado River. Most of the Delta water the District receives originates as snowpack in the Sierra Nevadas and travels 444 miles southerly to its final destination in Southern California homes and businesses. Colorado River water travels westward through a 200-plus mile journey via an aqueduct constructed by MWD in the 1930s.

2.2 OBJECTIVES OF THE STUDY

The major objectives of the Study include the following:

- » Perform cost-of-service (COS) analyses for the Riverside Potable/March East, Non-Potable, and Rainbow service areas for FY 2022 through FY 2025
- » Examine the fixed and variable split for recovering the District's revenue requirements to enhance revenue assurance.
- » Document the nexus between the costs incurred by the District and the proposed rates.

2.3 PROCESS

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

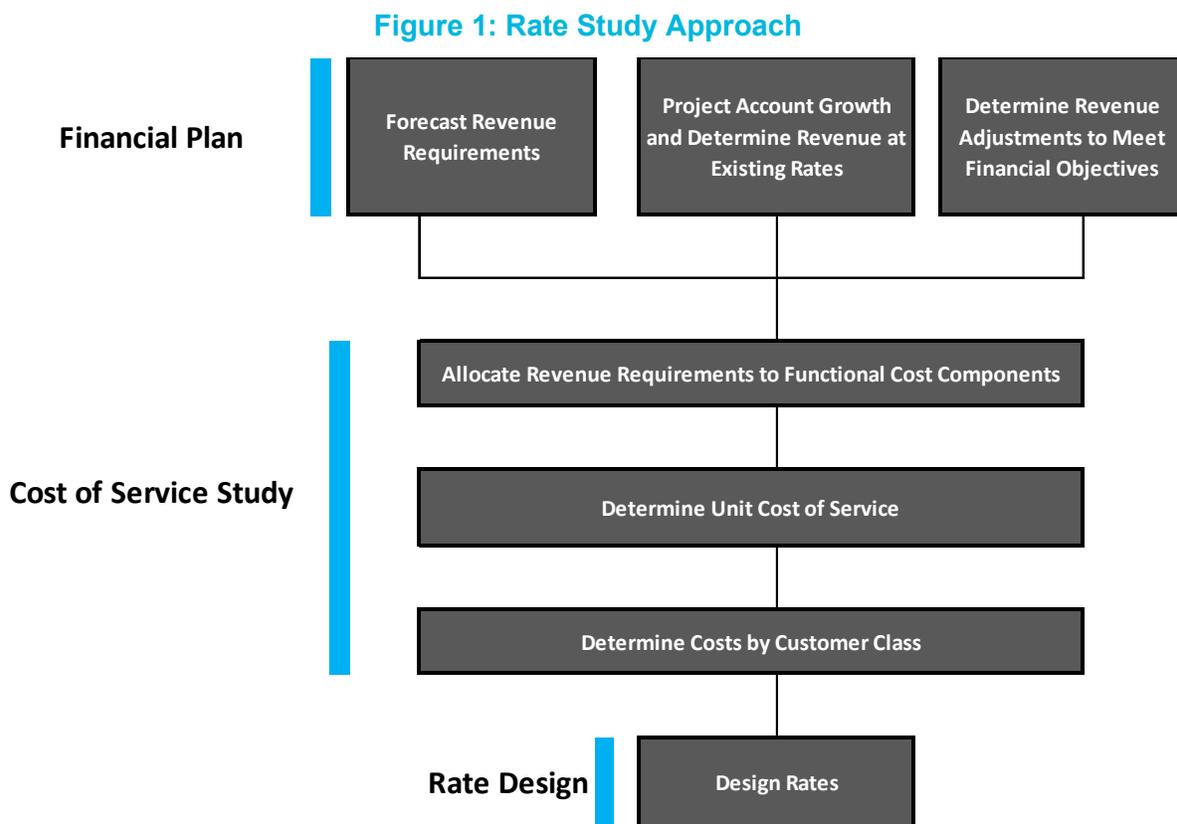
According to the M1 Manual, the first step in rate-making is to determine the adequate and appropriate level of funding for a given utility. This is referred to as determining the "revenue requirement." This analysis considers the short-term and long-term service objectives of the utility over a given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

After determining a utility's revenue requirement, the next step is determining the cost of service. Utilizing a public agency's approved budget, financial reports, operating data, water source costs and available volume, and capital improvement plans, a rate study generally categorizes (functionalizes) system costs (e.g., treatment, storage, pumping, etc.), including operating & maintenance (O&M) and asset costs, among operating functions to determine the cost of service.

After the asset values and O&M costs are appropriately categorized by function, the functionalized costs are allocated to cost causation components and distributed to the various customer classes (e.g., single-family residential, multi-family residential, commercial, etc.). The allocation to customers' classes is determined by examining each customer class characteristic and contribution to the cost causation components, such as supply costs, base costs, peaking costs, and efficiency costs (or conservation costs).

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

Figure 1 provides a graphic representation of the rate study process described above.



2.4 LEGAL REQUIREMENTS

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

Proposition 218 was enacted in 1996. In part, it added Article XIII D, section 6 (for ease of reference, referred to throughout this Study as Proposition 218), requiring that rates for property-related charges be reasonable and proportional to the cost of providing service. The principal requirements of Proposition 218 as they relate to water service charges imposed by a local agency are as follows:

1. Revenues derived from the charge shall not exceed the costs required to provide the property-related service.
2. Revenues derived from the charge shall not be used for any purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of the property.
5. No charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance, or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.
6. A public agency must hold a public hearing to consider the adoption of the proposed new or increase in an existing charge; written notice of the public hearing and the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing; if the public agency receives written protests against the proposed charge from a majority of the property owners the new charge or increase charge may not be imposed.

As stated in AWWA's *M1 Manual*, "water charges should be recovered from classes of customers in proportion to the cost of serving those customers." This cost of service analysis follows industry-standard rate-setting methodologies set forth by the *AWWA M1 Manual* to ensure the study meets Proposition 218 requirements and develops rates that do not exceed the proportionate cost of providing water services.

2.4.2 California Constitution - Article X, Section 2

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

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

Article X, section 2 of the State Constitution institutes the need to preserve the State's water supplies and to discourage the wasteful or unreasonable use of water by encouraging conservation. As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In connection with meeting the objectives of Article X, section 2, Water Code Sections 370 and 375 et seq. authorize a water purveyor to utilize its water rate design to incentivize the efficient use of water. Although incentives to conserve water may be provided by implementing a higher rate as consumption increases, Proposition 218 requires that the higher rate correspond to the actual cost of serving the parcel at that level of water consumption.

Government Code Section 370 et seq. (Allocation-Based Conservation Water Pricing)

In 2000, the California Legislature adopted a body of law entitled "Allocation-Based Conservation Water Pricing" (Water Code Section 370 et seq.) authorizing public agencies to adopt a form of tiered water rate structure that is designed to harmonize the provisions of Article X, section 2 with those of Proposition 218.

Water Code Section 370 provides in part as follows:

"The Legislature hereby finds and declares all of the following:

(a) The use of allocation-based conservation water pricing by public entities that sell and distribute water is one effective means by which waste or unreasonable use of water can be prevented and water can be saved in the interest of the people and for the public welfare, within the contemplation of Section 2 of Article X of the California Constitution.

(b) It is in the best interest of the people of California to encourage public entities to voluntarily use allocation-based conservation water pricing, tailored to local needs and conditions, as a means of increasing efficient uses of water and further discouraging wasteful or unreasonable use of water under both normal and dry-year hydrologic conditions."

Water Code Section 372 provides as follows:

"(a) A public entity may employ allocation-based conservation water pricing that meets all of the following criteria.

(1) Billing is based on metered water use.

(2) A basic use allocation is established for each customer account that provides a reasonable amount of water for the customer's needs and property characteristics. Factors used to determine the basic use allocation may include, but are not limited to the number of occupants, the type or classification of use, the size of lot or irrigated area, and the local climate data for the billing period. Nothing in this chapter prohibits a customer of the public entity from challenging whether the basic use allocation established for that customer's account is reasonable under the circumstances. Nothing in this chapter is intended to permit public entities to limit the use of property through the establishment of a basic use allocation."

(3) A basic charge is imposed for all water used within the customer's basic use allocation, except that at the option of the public entity, a lower rate may be applied to any portion of the basic use allocation that the public entity has determined to represent superior or more than reasonable conservation efforts.

(4) A conservation charge shall be imposed on all increments of water use in excess of the basic use allocation. The increments may be fixed or may be determined on a percentage or any other basis, without limitation on the number of increments, or any requirement that the increments or conservation charges be sized, or ascend uniformly, or in a specified relationship. The volumetric prices for the lowest through the highest priced increments shall be established in an ascending

relationship that is economically structured to encourage conservation and reduce the inefficient use of water, consistent with Section 2 of Article X of the California Constitution.

(b)(1) Except as specified in subdivision (a), the design of an allocation-based conservation pricing rate structure shall be determined in the discretion of the public entity.

(2) The public entity may impose meter charges or other fixed charges to recover fixed costs of water service in addition to the allocation-based conservation pricing rate structure.

(c) A public entity may use one or more allocation-based conservation water pricing structures for any class of municipal or other service that the public entity provides."

The District sets a water budget for each customer that defines how much water is considered efficient for indoor and outdoor water usage, if applicable, based upon several factors particular to each customer. Customers with usage above this efficient usage budget pay a higher rate for their "inefficient" or "wasteful" usage. As demonstrated in this Study, the rate at each level of consumption corresponds to the actual cost of serving the parcel. This Study conforms to the principles set forth in the enabling statutes for Allocation-Based Conservation Water rates (also referred to as Water Budget Rate Structures).

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

2.4.3 Cost-Based Rate Setting Methodology

As stated in the AWWA M1 Manual, "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." To develop utility rates that comply with Proposition 218 and industry standards while meeting other emerging goals and objectives of the District, four major steps are discussed below and previously addressed in Section 2.3.

1. Calculate Revenue Requirement

The rate-making process starts by determining the revenue requirement, that is, revenues required to sufficiently fund the utility's O&M, debt service, capital expenses, and reserves.

2. Cost of Service Analysis (COS)

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

- Functionalize costs. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection.
- Allocate functionalized costs to cost causation components. Cost causation components include, but are not limited to, base⁵, maximum day, maximum hour⁶, conservation, public fire protection, meter service, and customer service and billing costs.
- Distribute the cost causation components. Distribute cost components, using unit costs, to customer classes in proportion to their demands on the water system. This is described in the M1 Manual published by AWWA.

⁵ Base costs are those associated with meeting average day demands and unrelated to meeting peaking demands.

⁶ Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands).⁷ Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating & maintaining facilities large enough to meet peak demands. These peak demand costs need to be allocated to those whose higher water usage requires a utility to make additional capital investments, acquire or purchase higher cost sources of water supply, or develop water conservation and efficiency programs to meet their higher demand. In other words, not all customer classes or customers within a customer class share the same responsibility for peaking related costs.

3. Rate Design and Calculations

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

4. Rate Adoption

Rate adoption is the last step of the rate-making process to comply with Proposition 218. This report's rate study results demonstrate that the proposed water service charges reflect the proportional cost of providing water, and serve as a public education tool about the proposed changes, the rationale and justifications behind the changes, and their anticipated financial impacts.

⁷ System capacity is the system's ability to supply water to all delivery points at the time when demanded. Coincident peaking factors are calculated for each customer class at the time of greatest system demand. The time of greatest demand is known as peak demand. Both the operating costs and capital asset related costs incurred to accommodate the peak flows are generally allocated to each customer class based upon the class's relative demands during the peak month, day, and hour event.

3. KEY ASSUMPTIONS

The Study period is for Fiscal Years (FY) 2022 through FY 2025. Assumptions and inputs incorporated into the Study include, but are not limited to, the selection of the baseline year, available water supply and related cost increases, and the revenue requirements for the Study period. Please note that due to numerical rounding for report display, the numbers and percentages presented within this Study may not precisely reflect the actual totals.

3.1 BASELINE YEAR

Like many agencies in California, the District is dealing with challenges related to water supply availability during periods of drought. These conditions have led to a reduction in water usage due to conservation and restrictions, as well as increased costs associated with conservation programs, monitoring, and customer outreach. It is crucial for rate setting to select a baseline year that reflects the District's customers' typical consumption patterns and the respective cost allocations within the budget that represent the average expenditures or the expected expenditures moving forward. The revenue requirement is based on the FY 2022 adopted budget and the FY 2023-2025 projected budgets.

Water demand is influenced by a variety of different factors, including, but not limited to, the broader economy, changes in weather and climate, population changes, and water conserving devices. Actual water historical usage was obtained as well as historical Evapotranspiration (ETo). An analysis was conducted using Microsoft Excel and R Statistical Program to analyze the relationship between climate extremes in the data set and time series analysis using R's timeseries package and forecast package. This historical information was used to forecast demand for FY 2022. ETo was looked at to see if high or low values occurred because of extreme weather. Tiers 1 and 2 estimates for FY 2022 were determined from maximum monthly averages. For Tiers 3-4, the District took a more conservative approach and took the average demand over the 2017-2020. A 1% increase in demand was applied to each tier in the remaining years of the Study period.

3.2 AVAILABLE WATER SOURCES

Table 3-1 lists the available water sources and the expected acre-feet (AF) of demand from each source. The Study assumes different demands from each source during the Study period based on customer growth, supply limitations, and water loss percent changes. Unit costs for each source are also provided in Table 3-1. Unit costs are projected based on the following:

- Meeks & Daley is a District-owned supply and the unit cost is based primarily on the rates in Exhibit D of the wheeling agreement with the City of Riverside.
- Elsinore Valley Municipal Water District's (Elsinore) potable unit cost is based on the City of Riverside's wheeling rate plus a negotiated lease rate with Elsinore for the commodity which is escalated annually by a 3.25% consumer price index (CPI) assumption from the agreement with Elsinore, less an offset to the commodity rate funded by the proceeds from the sale of capacity in the Mills Gravity Line to Elsinore. The non-potable unit cost is based on a 3.25 CPI annual growth assumption over the current rate.
- The City of Riverside's potable unit cost is based on the rates in Exhibit D of the wheeling agreement with the City. The non-potable unit cost is based on the current rate plus a historically based 3% annual increase to the Operations & Maintenance component in the commodity rate.

- MWD’s Tier 1 treated and untreated rates are based on the 10-year financial forecast provided by MWD.
- Recycled water is owned by the District. The unit cost is based on the rate charged by the District’s Western Water Recycling Facility (WWRF) wastewater treatment plant for recycled water delivered to the District’s non-potable system. The WWRF recycled water rate has been set to equal the rate of an equivalent source of non-potable water, MWD’s Tier 1 untreated rate.

Table 3-1: Available Water Sources

Water Source	Demand from Each Water Source (AF)				Unit Cost (\$/AF)			
	FY 2022	FY 2023	FY 2024	FY 2025	FY 2022	FY 2023	FY 2024	FY 2025
Riverside Potable								
Meeks & Daley (M&D)	227	227	227	227	\$618.54	\$643.27	\$669.03	\$695.83
Elsinore Valley MWD	4,680	4,680	4,680	4,680	\$671.49	\$628.00	\$653.00	\$679.00
City of Riverside	2,301	2,301	2,301	2,301	\$843.54	\$875.27	\$907.03	\$941.83
Sub-total Local Sources	7,208	7,208	7,208	7,208				
MWD Tier 1 Treated	14,327	14,542	14,760	14,980	\$1,118.82	\$1,163.14	\$1,217.66	\$1,269.34
Total Potable Sources	21,535	21,750	21,968	22,188				
Non-Potable								
Elsinore Valley MWD	840	840	840	840	\$152.44	\$157.40	\$162.51	\$167.80
City of Riverside	1,291	1,291	864	864	\$193.82	\$197.38	\$201.06	\$204.84
Recycled Water	775	775	775	775	\$785.58	\$819.67	\$867.60	\$904.09
MWD Tier 1 Untreated	1,715	1,715	1,661	1,661	\$785.58	\$819.67	\$867.60	\$904.09
Total Non-Potable Sources	4,620	4,621	4,140	4,140				
Rainbow								
MWD Tier 1 Treated	32	32	32	32	\$1,118.82	\$1,163.14	\$1,217.66	\$1,269.34

3.3 MARCH EAST SERVICE AREA

March East customers are serviced by an interconnected water system with Riverside Potable customers. Therefore, for the purposes of this analysis, the Riverside Potable and March East service areas are combined, and March East customers are a distinct customer class within the Riverside Potable Service Area.

4. POTABLE COST OF SERVICE & RATES

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

4.1 PROPORTIONALITY

When calculating rates, a critical component of ensuring compliance with Proposition 218 is demonstrating proportionality. For costs that are recovered through the District's proposed Fixed System Charge, the Study spreads the costs either over all accounts or by meter size, depending on the type of cost. As such, customer classes and usage are not considered for calculating each customer's Fixed System Charge. Conversely, costs that were determined as variable are allocated among customer classes based on their demand on the system and water supplies. As stated in the M1 Manual, the AWWA Rates and Charges Subcommittee agree with Proposition 218 that "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." The District's revenue requirements are, by definition, the cost of providing service. This cost is then used as the basis to develop unit costs for the water components and to allocate costs to the various customer classes in proportion to the water services rendered.

Individual customer demands vary depending on the nature of the use at the location where service is provided. For example, water service demand for a family residing in a typical single-family home is different than the water service demand for an irrigation customer. The concept of proportionality requires that cost allocations consider both the average quantity of water consumed (Base) and the peak rate at which it is consumed (Peaking). The use of peaking is consistent with the cost of providing service because a water system is designed to meet peak demands, and the additional costs associated with designing, constructing, and maintaining facilities required to meet these peak demands need to be allocated to those customers whose usage requires the District to make capital investments in facilities to meet peak demand.

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

Generally speaking, customers place the following demands on the water system and water supplies:

- » The system capacity⁸ (for treatment, storage, and distribution) that must be constructed, operated, and maintained to provide reliable service to all customers at all times;
- » The level of water efficiency as a collective group; and
- » The number of customers requiring customer services such as bill processing, customer service support, and other administrative services.

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

⁸ System capacity is the system's ability to supply water to all delivery points at the time when demanded. The time of greatest demand is known as peak demand.

characteristics of that group alone. For the purposes of this Study, budget-based rates were developed for Single-Family Residential, Multi-Family Residential, Commercial, Schools, and Irrigation customers. Based on policy decisions, each customer class will pay the same tiered rates (i.e., SFR and Commercial will pay the same Tier 1 rate; however, the Tier 1 width will be based on each customers' budget allotments).

4.2 COST OF SERVICE PROCESS

A cost-of-service analysis distributes a utility's revenue requirements (costs) to each customer class. Figure 2 provides a general overview of a cost-of-service analysis. Each step shown below will be described in greater detail in the subsections below.

Figure 2: Cost of Service Process



4.3 STEP 1 – DETERMINE POTABLE REVENUE REQUIREMENTS

Table 4-1 summarizes Revenue Requirements for each year of the Study period. The first year, Fiscal Year 2021-22 ("FY 2022"), was based on the Board-adopted operating budget with subsequent fiscal year amounts escalated by 4.5% per year (which has been the historical expense growth experience of the District). Exceptions to this last sentence are described as follows:

- » Replacement Reserve funding (line 5) was adjusted for all four years to reflect a 5% annual growth rate, which is a percentage currently used in the District's biennial operating budget.
- » MWD Readiness-to-Serve Charge (line 10) is based on MWD's ten-year financial forecast of rates and charges to member agencies.
- » Purchased Water costs (line 14) were adjusted for all four years to reflect the calculated purchased water cost based on the projected water usage and projected cost per AF as opposed to the original budgeted cost.
- » Purchased Power costs (line 18) were adjusted for FY 2022 to incorporate recent and near-term energy rate increases from Southern California Edison (SCE) and applied to estimated FY 2021 costs. Subsequent years were increased by 5% annually to reflect anticipated increases in energy rates from SCE.
- » Water Use Efficiency costs (line 19) were adjusted to reflect the anticipated costs of the conservation measures for the first year of the Study period as opposed to the adopted budget, and then first year costs were escalated by 1% for each remaining year to reflect projected growth in customer water demand.

The revenue requirement determination is based upon the premise that the District must generate annual revenues to meet O&M expenses, any debt service needs, reserve funding to achieve target levels, and capital investment needs. The G&A Allocation (line 6) is an allocation of costs from the District’s General Fund, and includes costs for billing and customer service, engineering, governance, technology, customer education, human resources and other administrative and indirect costs associated with providing water service.

Table 4-1: Riverside Potable Revenue Requirements

Line No.	Description	FY 2022	FY 2023	FY 2024	FY 2025
1	O&M Expenditures				
2	Water Pumping	\$2,041,730	\$2,133,608	\$2,229,621	\$2,329,954
3	Transmission & Distribution	\$9,427,664	\$9,851,909	\$10,295,245	\$10,758,531
4	Customer Accounts	\$1,125,983	\$1,176,652	\$1,229,601	\$1,284,933
5	Replacement Reserve	\$2,149,000	\$2,256,450	\$2,369,273	\$2,487,737
6	G&A Allocation	\$5,685,749	\$5,941,608	\$6,208,981	\$6,488,386
7	Gravity Line Allocation	\$52,713	\$55,085	\$57,564	\$60,154
8	Other Operating Expenses	\$61,391	\$64,154	\$67,041	\$70,058
9	Prop Tax Collection	\$17,690	\$18,486	\$19,318	\$20,187
10	MWD Readiness-to-Serve Charge	\$649,153	\$702,775	\$719,499	\$765,461
11	Total O&M Expenditures	\$21,211,073	\$22,200,727	\$23,196,143	\$24,265,401
12					
13	Other Expenditures				
14	Purchased Water	\$21,253,224	\$22,016,157	\$23,269,561	\$24,516,522
15	Source of Supply	\$45,071	\$47,099	\$49,218	\$51,433
16	MWD Capacity Charge	\$352,660	\$368,530	\$385,114	\$402,444
17	Treatment	\$223,472	\$233,529	\$244,038	\$255,020
18	Purchased Power	\$1,844,010	\$1,936,211	\$2,033,021	\$2,134,672
19	Water Use Efficiency	\$433,614	\$437,950	\$442,330	\$446,753
20	Total Other Expenditures	\$24,152,051	\$25,039,476	\$26,423,282	\$27,806,844
21					
22	Debt Service	\$999,367	\$999,281	\$999,102	\$998,840
23					
24	Total Expenses	\$46,362,491	\$48,239,484	\$50,618,527	\$53,071,085
25					
26	Other Revenue Adjustments				
27	Property Tax & Misc. Revenue	(\$8,411,839)	(\$8,447,156)	(\$8,628,963)	(\$8,684,626)
28	Net Revenue Requirement	\$37,950,652	\$39,792,328	\$41,989,564	\$44,386,459

4.4 STEP 2 – FUNCTIONALIZE COSTS

After determining a utility's revenue requirements, the next step in a cost-of-service analysis is to outline the cost to deliver each unit of water to serve each customer. This process takes each item in the District's budget (e.g., O&M costs and system assets) and organizes the items collectively based on the function served. The District's revenue requirements were functionalized by the District as described below:

1. **Purchased Water** – direct costs of purchasing and/or wheeling water from various suppliers
2. **Source of Supply** – operating costs primarily associated with ensuring water quality

3. **MWD Capacity Charge** – A cost outside of the District’s control incurred as a condition of purchasing water through MWD
4. **Water Pumping** – Costs associated with pumping water from other sources or from treatment facilities to the transmission and distribution systems
5. **Treatment** – Costs associated with treating water to potable water standards
6. **Transmission** – Assets associated with transporting water from the point of treatment through major trunk locations within the distribution system
7. **Transmission and Distribution** – Costs associated with transporting water from the point of treatment through major trunk locations and eventually to smaller local service distribution mains to specific locations within a service area
8. **Fire Protection** – Costs or assets associated with installing and maintaining fire-related facilities such as fire hydrants to provide and maintain adequate public fire protection
9. **Customer Accounts** – Costs associated with administering customer accounts such as processing complaints, responding to customer inquiries, performing meter reading, and billing
10. **Meters/Meter Service** – Costs or assets associated with providing customer water meters and associated testing and replacements (maintenance)
11. **Storage** – Costs or assets associated with water reservoirs or storage
12. **Replacement Reserve** – Costs associated with replacing infrastructure
13. **General** – Costs that are general and administrative in nature or other costs that do not serve a specific function
14. **Gravity Line Allocation** – Costs associated with the maintenance of the District’s major distribution line
15. **Purchased Power** – Energy costs associated with pumping treated water to higher elevations
16. **Water Use Efficiency** – Costs associated with programs and services offered to District customers that promote water use efficiency
17. **MWD Readiness-to-Service (RTS) Charge** – A cost outside of the District’s control incurred as a condition of purchasing water through MWD. This cost will be passed through to customers via a fixed charge based on meter size.

Table 4-2 shows the functionalized fixed asset listing at replacement cost less depreciation (RCLD)⁹ used for each year of the Study period. The RCLD asset valuation method takes into consideration the cost to replace assets at today’s costs yet realizes the assets being depreciated still have remaining value. Using the RCLD method results in a dollar amount reflecting the current market value of the asset. The functionalized assets will be used to allocate capital costs within the O&M Budget (specifically replacement costs). Table 4-3 summarizes the functionalized costs for each year of the Study period.

⁹ A detailed listing of assets is on file with the District. Using the Asset Type and Sub Type descriptions, each asset was placed into one of the functions described above.

Table 4-2: Assets by Function

Asset Function	Total RCLD	% of Assets
General	\$5,502,666	3.42%
Meters & Service	\$13,755,647	8.54%
Water Pumping	\$24,888,205	15.46%
Transmission & Distribution	\$82,763,739	51.41%
Transmission	\$11,283,237	7.01%
Fire Protection	\$2,371,205	1.47%
Storage	\$20,394,997	12.67%
Treatment	\$20,295	0.01%
Total Assets	\$160,979,990	100.00%

Table 4-3: Riverside Potable O&M by Function

Line No.	Functions	FY 2022	FY 2023	FY 2024	FY 2025
1	Customer Accounts	\$1,125,983	\$1,176,652	\$1,229,601	\$1,284,933
2	General	\$5,764,830	\$6,024,248	\$6,295,340	\$6,578,631
3	Gravity Line Allocation	\$52,713	\$55,085	\$57,564	\$60,154
4	MWD Capacity Charge	\$352,660	\$368,530	\$385,114	\$402,444
5	Purchased Power	\$1,844,010	\$1,936,211	\$2,033,021	\$2,134,672
6	Purchased Water	\$21,253,224	\$22,016,157	\$23,269,561	\$24,516,522
7	Replacement Reserve & Debt Svc	\$3,148,367	\$3,255,731	\$3,368,375	\$3,486,577
8	RTS	\$649,153	\$702,775	\$719,499	\$765,461
9	Source of Supply	\$45,071	\$47,099	\$49,218	\$51,433
10	Transmission & Distribution	\$9,427,664	\$9,851,909	\$10,295,245	\$10,758,531
11	Treatment	\$223,472	\$233,529	\$244,038	\$255,020
12	Water Efficiency	\$433,614	\$437,950	\$442,330	\$446,753
13	Water Pumping	\$2,041,730	\$2,133,608	\$2,229,621	\$2,329,954
14	Total Expenses	\$46,362,491	\$48,239,484	\$50,618,527	\$53,071,085

4.5 STEP 3 – ALLOCATION OF FUNCTIONAL COSTS TO COST CAUSATION COMPONENTS

The functionalization of costs and assets allows us to better allocate the costs based on how the costs are incurred. This is commonly referred to as **cost causation**, and this analysis determines the amount of costs recovered from the various rate components (cost causation components). The District's costs of service are assigned to the following cost causation components:

1. **Water Supply Costs** represents direct water supply costs to produce local water before distributing to customers and the direct costs of purchasing water from MWD
2. **Delivery Costs** are the base costs incurred to provide water under average daily demand conditions
3. **Extra Capacity Costs** or peaking costs represent those costs incurred to meet customer peak demands for water in excess of average day usage and are further functionalized as maximum day costs and maximum hour costs.

4. **Efficiency Costs** include costs of managing the District's water supply through water conservation efforts and efficiency programs.
5. **Elevation Costs** include energy costs incurred to pump treated water to higher elevations.
6. **Billing and Customer Service Costs** include customer-related costs such as meter reading, billing, collecting, customer accounting, and customer call center. These costs are incurred at the same level regardless of the type of land use, customer class, or the total amount of water delivered.
7. **Meters and Service Costs** include maintenance and capital costs associated with servicing meters. These costs are assigned based on meter cost ratios.
8. **Readiness-to-Serve (RTS) Costs** include costs outside of the District's control incurred as a condition of purchasing water through MWD. These costs will be passed through to customers via a fixed charge based on meter size.
9. **Fire Protection Costs** are separated into public fire protection costs (associated with fire hydrants) and private fire protection costs (associated with fire suppression systems in a commercial building).
10. **General Costs** are either general or administrative in nature. These costs will be distributed to Delivery, Peaking, Billing and Customer Service, and Meters.

4.5.1 Extra Capacity Costs Allocation

Extra capacity or peaking costs are further divided/functionalized into the maximum day (Max Day) and maximum hour (Max Hour) demand. The Max Day demand is the maximum amount of water used in a single day in a year. The Max Hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as distribution and storage facilities, and the O&M costs associated with those facilities are designed to meet the peaking (i.e., Max Day and Max Hour) demands of customers. Therefore, extra capacity¹⁰ costs include the O&M and capital costs associated with meeting peak customer demand. This method is consistent with the AWWA M1 Manual and is widely used in the water industry.

After functionalizing costs, the next step is to allocate the functionalized costs to cost causation components. To do so, we must identify system-wide peaking factors. The system-wide peaking factors are used to derive the cost component allocation bases (i.e., percentages). Functionalized costs are then allocated to the cost causation components using these allocation bases. To understand the interpretation of the percentages, we must first establish the base use as the average daily demand of all customers during the year.

The base demand is assigned a value of 1.0, which signifies no peaking demands. Table 4-4 shows the Max Day and Max Hour values based on the District's Master Plan engineering document for the Riverside Service Area. The Max Day peaking factor of 1.49 means that when the maximum amount of water is delivered, the system delivers 1.49 times the amount of water it does during an average day. Similarly, the Max Hour peaking factor of 2.22 means that during the hour when the maximum amount of water is delivered on a Max Day, the system delivers 2.22 times the amount of water it does on an average day.

¹⁰ The terms extra capacity, peaking, and capacity costs are used interchangeably.

Table 4-4: System-Wide Peaking Characteristics

System Peaking Factors	System-wide Ratio
Base	1.00
Max Day Demand	1.49
Max Hour Demand	2.22

Max Day Demand

Next, the relative proportion of costs assigned to Base, Max Day, and Max Hour are used to allocate costs to the cost causation components. Cost causation components designed to meet Max Day peaks, such as reservoirs and transmission facilities, are allocated to both Base and Max Day factors.

The Max Day factor of the District's system is 1.49, which means that Max Day demand is expected to be 149% of the average day capacity. Applying the formula to the system peaking factors found in Table 4-4 yields the following:

$$\text{Base} = \frac{\text{Base}}{\text{Max Day}} = \frac{1}{1.49} \approx 67\%$$

$$\text{Max Day} = \frac{\text{Max Day} - \text{Base}}{\text{Max Day}} = \frac{1.49 - 1}{1.49} \approx 33\%$$

Max Hour Demand

Facilities designed for Max Hour peaks, such as distribution system facilities, are allocated similarly. The Max Hour factor is 2.22, so Max Hour facilities are designed to provide 222% of the average day capacity. The allocation of Max Hour facilities is shown below:

$$\text{Base} = \frac{\text{Base}}{\text{Max Hour}} = \frac{1}{2.22} \approx 45\%$$

$$\text{Max Day} = \frac{\text{Max Day} - \text{Base}}{\text{Max Hour}} = \frac{1.49 - 1}{2.22} \approx 22\%$$

$$\text{Max Hour} = \frac{\text{Max Hour} - \text{Max Day}}{\text{Max Hour}} = \frac{2.22 - 1.49}{2.22} \approx 33\%$$

The base results of the allocation are presented in Table 4-5 below. These percentages are used as the foundation for allocating operating and capital improvement expenses to cost components, explained in detail in the following sub-sections.

Table 4-5: Allocation Factors

System Peaking Factors	Base	Max Day	Max Hour
Base	100%	0%	0%
Max Day Demand	67%	33%	0%
Max Hour Demand	45%	22%	33%
Average Demand	56%	27%	16%

4.5.2 Allocation of Operating Expenses

Once the system peaking factors have been determined, the next step is to allocate the functionalized costs to cost causation components. Table 4-6 provides a matrix of the District's functions in the left-most column, which are allocated to the cost causation components on the right. The following cost-of-service analysis documents the FY 2022 analysis. The results of the FY 2023 - FY 2025 analyses are summarized within this Study, while detailed tables for individual years are available upon request from the District.

Table 4-6: Allocation to Cost Causation Components

Functions	Allocation Basis	Meters & Service										Total	
		Water Supply	Delivery	Max Day	Max Hour	Efficiency	Elevation	Billing & CS	RTS	Public Fire	General		
Customer Accounts	Billing & CS	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
General	General	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
Gravity Line Allocation	Max Hour	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
MWD Capacity Charge	Max Hour	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Purchased Power	Elevation	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
Purchased Water	Water Supply	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Replacement Reserve & Debt Svc	Asset Allocation	0%	43%	21%	22%	0%	0%	0%	9%	0%	1.5%	3%	100%
RTS	RTS	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	100%
Source of Supply	Max Hour	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Transmission & Distribution	Max Hour	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Treatment	Max Hour	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Water Efficiency	Efficiency	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
Water Pumping	Max Hour	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%

Table 4-7 summarizes the percentage allocations for each capital asset, and Table 4-8 summarizes the dollar allocations of capital assets to cost causation components. The RCLD asset value of each functionalized asset (derived from Table 4-2) is spread to the cost causation components based on the percentages shown in Table 4-6 and again in Table 4-7. Using Storage as an example, Storage facilities are designed to accommodate Base Delivery demand and Max Day demand, therefore the Max Day percentages from Table 4-5 were used to allocate the RCLD asset value to cost causation components. To determine the dollar amount allocated to each component the RCLD asset value is multiplied by the percentages shown. Using Transmission as an example, the amount allocated to the delivery component is $\$11,283,237 \times \sim 67\% = \$7,572,642$ and the amount allocated to Max Day is $\$11,283,237 \times \sim 33\% = \$3,710,595$. The Asset Allocation percentages are calculated by dividing the allocated asset costs for a given cost causation component by the total RCLD asset value of $\$160,979,990$. Please note there may be differences due to rounding.

Table 4-7: Capital Allocation (%)

Function	Allocation Basis	Meters & Service					Total
		Delivery	Max Day	Max Hour	Public Fire	General	
General	General	0%	0%	0%	0%	100%	100%
Meters & Service	Meters & Service	0%	0%	0%	100%	0%	100%
Water Pumping	Elevation	45%	22%	33%	0%	0%	100%
Transmission & Distribution	Max Hour	45%	22%	33%	0%	0%	100%
Transmission	Max Day	67%	33%	0%	0%	0%	100%
Fire Protection	Public Fire	0%	0%	0%	100%	0%	100%
Storage	Max Day	67%	33%	0%	0%	0%	100%
Treatment	Max Day	67%	33%	0%	0%	0%	100%

Table 4-8: Capital Allocation (\$)

Function	Total RCLD	Delivery	Max Day	Max Hour	Meters &			Total
					Service	Public Fire	General	
General	\$5,502,666	\$0	\$0	\$0	\$0	\$0	\$5,502,666	\$5,502,666
Meters & Service	\$13,755,647	\$0	\$0	\$0	\$13,755,647	\$0	\$0	\$13,755,647
Water Pumping	\$24,888,205	\$11,210,903	\$5,493,343	\$8,183,959	\$0	\$0	\$0	\$24,888,205
Transmission & Distribution	\$82,763,739	\$37,280,964	\$18,267,672	\$27,215,103	\$0	\$0	\$0	\$82,763,739
Transmission	\$11,283,237	\$7,572,642	\$3,710,595	\$0	\$0	\$0	\$0	\$11,283,237
Fire Protection	\$2,371,205	\$0	\$0	\$0	\$0	\$2,371,205	\$0	\$2,371,205
Storage	\$20,394,997	\$13,687,917	\$6,707,079	\$0	\$0	\$0	\$0	\$20,394,997
Treatment	\$20,295	\$13,621	\$6,674	\$0	\$0	\$0	\$0	\$20,295
Total	\$160,979,990	\$69,766,047	\$34,185,363	\$35,399,063	\$13,755,647	\$2,371,205	\$5,502,666	\$160,979,990
Asset Allocation %	100.00%	43.34%	21.24%	21.99%	8.54%	1.47%	3.42%	100.00%

Next, the O&M functionalized costs from Table 4-3 are allocated to cost components using the percentages from Table 4-9. Functionalizing O&M follows the principles of rate-setting theory. The end goal is to allocate O&M expenses to cost causation components. Table 4-10 summarizes the FY 2022 O&M allocation to cost components and determines the O&M Allocation (%) in the last row. Note, the Replacement Reserve was allocated based on the Asset Allocation (%) or the last row in Table 4-8.

Table 4-9: FY 2022 O&M Allocation (%)

Functions	FY 2022 Budget	Water Supply	Delivery	Max Day	Max Hour	Efficiency	Elevation	Billing & CS	Meters &				Total
									Service	RTS	Public Fire	General	
Customer Accounts	\$1,125,983	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	100%
General	\$5,764,830	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
Gravity Line Allocation	\$52,713	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
MWD Capacity Charge	\$352,660	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Purchased Power	\$1,844,010	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
Purchased Water	\$21,253,224	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Replacement Reserve & Debt Svc	\$3,148,367	0%	43%	21%	22%	0%	0%	0%	9%	0%	1%	3%	100%
RTS	\$649,153	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
Source of Supply	\$45,071	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Transmission & Distribution	\$9,427,664	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Treatment	\$223,472	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Water Efficiency	\$433,614	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	100%
Water Pumping	\$2,041,730	0%	45%	22%	33%	0%	0%	0%	0%	0%	0%	0%	100%
Total	\$46,362,491	\$21,253,224	\$6,834,409	\$3,348,861	\$4,685,388	\$433,614	\$1,844,010	\$1,125,983	\$269,026	\$649,153	\$46,375	\$5,872,448	\$46,362,491
O&M Allocation %	100.00%	45.84%	14.74%	7.22%	10.11%	0.94%	3.98%	2.43%	0.58%	1.40%	0.10%	12.67%	100%

Table 4-10: FY 2022 O&M Allocation (\$)

Functions	FY 2022 Budget	Water Supply	Delivery	Max Day	Max Hour	Efficiency	Elevation	Billing & CS	Meters &				Total
									Service	RTS	Public Fire	General	
Customer Accounts	\$1,125,983	\$0	\$0	\$0	\$0	\$0	\$0	\$1,125,983	\$0	\$0	\$0	\$0	\$1,125,983
General	\$5,764,830	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,764,830	\$5,764,830
Gravity Line Allocation	\$52,713	\$0	\$23,745	\$11,635	\$17,334	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$52,713
MWD Capacity Charge	\$352,660	\$0	\$158,856	\$77,839	\$115,965	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$352,660
Purchased Power	\$1,844,010	\$0	\$0	\$0	\$0	\$0	\$1,844,010	\$0	\$0	\$0	\$0	\$0	\$1,844,010
Purchased Water	\$21,253,224	\$21,253,224	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$21,253,224
Replacement Reserve & Debt Svc	\$3,148,367	\$0	\$1,364,450	\$668,580	\$692,317	\$0	\$0	\$0	\$269,026	\$0	\$46,375	\$107,618	\$3,148,367
RTS	\$649,153	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$649,153	\$0	\$0	\$0	\$649,153
Source of Supply	\$45,071	\$0	\$20,302	\$9,948	\$14,821	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$45,071
Transmission & Distribution	\$9,427,664	\$0	\$4,246,695	\$2,080,881	\$3,100,088	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,427,664
Treatment	\$223,472	\$0	\$100,663	\$49,325	\$73,484	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$223,472
Water Efficiency	\$433,614	\$0	\$0	\$0	\$0	\$433,614	\$0	\$0	\$0	\$0	\$0	\$0	\$433,614
Water Pumping	\$2,041,730	\$0	\$919,698	\$450,652	\$671,380	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,041,730
Total	\$46,362,491	\$21,253,224	\$6,834,409	\$3,348,861	\$4,685,388	\$433,614	\$1,844,010	\$1,125,983	\$269,026	\$649,153	\$46,375	\$5,872,448	\$46,362,491
O&M Allocation %	100.00%	45.84%	14.74%	7.22%	10.11%	0.94%	3.98%	2.43%	0.58%	1.40%	0.10%	12.67%	100%

However, the Total O&M costs shown in Table 4-10 do not represent the revenue requirements to be recovered from rates. The District has available unrestricted revenues, as shown in Table 4-11. These revenues can be used to lower the total revenue requirements, or they can be used specifically at the discretion of the District. The ad valorem property tax revenue that the District receives from properties in the Riverside

Service Area will be used to offset specific rate components. All property tax revenue is placed in a Revenue Offset component (Table 4-11). Other revenues will be used to lower specific cost components (i.e., General, Billing & CS, Meters & Service), as shown in Table 4-12.

Table 4-11: Other Available Revenues

Revenue Source	FY 2022 Revenue (\$)	Applicable Cost Component
Interest Income	\$43,000	General
Delinquent Penalties	\$430,500	General
Fixed System Charge - Wholesale	\$7,772	General
New Service Set Up	\$30,700	Billing & CS
Meter Repair	\$25,000	Meters & Service
Sub-Total	\$536,972	
Potable Property Tax	\$7,874,867	Revenue Offset
Total	\$8,411,839	

Table 4-12: Adjusted Cost Components

Cost Component	Gross Revenue Requirement	Less Offset	Net Revenue Requirement
	A		C = A + B
General	\$5,872,448	(\$481,272)	\$5,391,176
Billing & CS	\$1,125,983	(\$30,700)	\$1,095,283
Meters & Service	\$269,026	(\$25,000)	\$244,026
Total		(\$536,972)	

Next, the remaining costs allocated to the General Cost component of \$5,391,176 from Table 4-2 are reallocated based on the proportionate share of Delivery, Max Day, Max Hour, Billing & Customer Service, and Meters & Service revenue requirements (Table 4-13). This was done because the percentage of total costs is a proxy of how much unassigned cost should be allocated since it reasonably reflects the amount of general service needed for that cost component. As an example, the following equation shows the calculation of the Allocation of General Costs (%) for the Delivery Component:

Delivery General Cost Allocation

$$= \frac{\text{Delivery Subtotal Revenue Requirement}}{(\text{Delivery} + \text{Max Day} + \text{Max Hour} + \text{Billing \& CS} + \text{Meters \& Services Revenue Requirements})}$$

$$= \frac{\$6,834,409}{(\$16,263,667)} \approx 42.2\%$$

Therefore, approximately 42% (or \$2,273,296) of the \$5,391,176 of General Costs is allocated to the Delivery Costs cost causation component (Delivery, Max Day, Max Hour, Billing & Customer Service, and Meters & Service). The reallocation of General Costs is shown in Table 4-13. The FY 2022 Revenue Requirements in Column A are from Table 4-1.

Table 4-13: General Cost Reallocation

Line No.	Cost Component	FY 2022 Revenue Requirements A	Applicable Cost B	Allocation % C = B ÷ B13	General Reallocation D = A11 x C	Net Revenue Requirements E = A + D
1	Water Supply	\$21,253,224	N/A			\$21,253,224
2	Delivery	\$6,834,409	\$6,834,409	42.2%	\$2,273,296	\$9,107,705
3	Max Day	\$3,348,861	\$3,348,861	20.7%	\$1,113,915	\$4,462,776
4	Max Hour	\$4,685,388	\$4,685,388	28.9%	\$1,558,478	\$6,243,865
5	Efficiency	\$433,614	N/A			\$433,614
6	Elevation	\$1,844,010	N/A			\$1,844,010
7	Billing & CS	\$1,095,283	\$1,095,283	6.8%	\$364,319	\$1,459,602
8	Meters & Service	\$244,026	\$244,026	1.5%	\$81,169	\$325,195
9	RTS	\$649,153	N/A			\$649,153
10	Public Fire	\$46,375	N/A			\$46,375
11	General	\$5,391,176	N/A		(\$5,391,176)	\$0
12	Revenue Offset	(\$7,874,867)	N/A			(\$7,874,867)
13	Total	\$37,950,652	\$16,207,967	100.0%	\$0	\$37,950,652

In an analogous manner to general costs, fire capacity costs (both public and private) are first calculated and then reallocated to the other cost causation components. Water systems provide two types of fire protection: public fire protection for delivering water to property in sufficient quantities and pressures in the event of a fire, which is generally visible as hydrants on the street, and private fire protection, which provides fire flow to buildings and other structure sprinkler systems for fire suppression within private improvements. These costs include not only the delivery point, whether it be public fire hydrants and private suppression systems, but the entire share of capacity for storage, distribution, and pumping necessary to deliver sufficient water to property in the event of a fire. The potential flow of public hydrants and private fire lines must be analyzed to determine the share of total fire costs responsible for each.

Each fire connection size has a fire flow demand factor similar to a hydraulic capacity factor of a water meter. The diameter of the connection is raised to the 2.63 power to determine the fire flow demand factor¹¹. This is shown in Table 4-14, column B. The count of connections of a specific size (column C) is multiplied by the fire flow demand factor (column B) to derive the total equivalent fire demand (column D). The District's analysis estimates that 84 percent of fire capacity (column E, line 6), and therefore costs, relate to public fire and will be included and recovered on the monthly fixed charges.

¹¹ Hazen-Williams equation via AWWA M1 Manual

Table 4-14: Fire Flow Demand

Line No.	Description	Connection Size (inches) A	Fire Demand Factor B = A ^{2.63}	# of Connections C	Fire Demand Units D = B x C	% of Total E = D / D16
1	Public Hydrants					
2	2-inch	2.00	6	3	19	
3	4-inch	4.00	38	71	2,721	
4	6-inch	6.00	111	3,511	390,809	
5	8-inch	8.00	237	88	20,874	
6	Total Public			3,673	414,423	84%
7						
8	Private Fire					
9	3-inch	3.00	17.98	1	18	
10	4-inch	4.00	38.32	46	1,763	
11	6-inch	6.00	111.31	53	5,899	
12	8-inch	8.00	237.21	67	15,893	
13	10-inch	10.00	426.58	118	50,336	
14	12-inch	12.00	689.04	8	5,512	
15	Total Private			293	79,422	16%
16	Total				493,845	

The percentage of public versus private fire capacity is used to allocate maximum day and maximum hour capacity costs, as shown in Table 4-15. The maximum day and maximum hour fire capacities are calculated based on a 2,500 gallons per minute (gpm) fire lasting 2 hours which is a typical demand/duration for a multi-family residential building in the District’s service area, and is about mid-way between the demand/duration of a residential home and a commercial building. These calculations are as follows:

$$\text{Fire Capacity Max Day Demand} = \frac{2,500 \text{ gpm} \times 2 \text{ hours} \times 60 \text{ minutes}}{748 \text{ gallons per hcf}} = 401 \text{ hcf}$$

$$\text{Fire Capacity Max Hour Demand} = \frac{(2,500 \text{ gpm} \times 24 \text{ hours} \times 60 \text{ minutes}) - 401 \text{ hcf}}{748 \text{ gallons per hcf}} = 4,412 \text{ hcf}$$

Table 4-15 derives the maximum day and maximum hour capacity costs for public and private fire. Column B is derived from Table 4-14. The unit cost of service for maximum day and maximum hour costs (line 1) are as shown in Table 4-13 (column A), prior to the reallocation of general costs. Line 1 is divided by extra capacity demand (line 2) to arrive at the unit cost of service for maximum day and maximum hour. The unit cost of service (line 3) is multiplied by the respective fire capacity demands from the prior fire capacity equations (line 5) to arrive at the total fire capacity costs (line 6). Each cost in line 6 is multiplied by the respective fire flow demand percentages for public and private fire, as derived in Table 4-14.

Table 4-15: Fire Capacity Costs

Line No.	Fire Capacity Costs	Units A	% Fire Capacity B	Max Day C	Max Hour D	Total E = C + D
1	Allocated Costs			\$3,348,861	\$4,685,388	
2	Extra Capacity Demand	hcf / day		\$12,153	\$18,105	
3	Unit Cost of Service	per hcf		\$275.57	\$258.79	
4						
5	Fire Capacity Demand	hcf		401	4,412	
6	Fire Capacity Costs			\$110,523	\$1,141,734	\$1,252,257
7	Public Fire Protection		84%	\$92,748	\$958,116	\$1,050,864
8	Private Fire Protection		16%	\$17,775	\$183,618	\$201,393

Table 4-16 shows the reallocation of public fire protection costs. Column B subtracts the maximum day and maximum hour capacity costs derived in Table 4-15 (columns C & D, line 7). Together with the Public Fire cost component, the total reallocation of public fire is \$1,097,239 as follows:

$$\text{Total Public Fire Reallocation} = \text{Max Day} + \text{Max Hour} + \text{Public Fire Costs}$$

$$\text{Total Public Fire Reallocation} = \$92,748 + \$958,116 + \$46,375 = \$1,097,239$$

The total public fire reallocation is accounted for by the Revenue Offset component, resulting in \$6,777,628 of Net Revenue Offset, as shown in Table 4-16.

Table 4-16: Reallocation of Public Fire Protection

Line No.	Cost Components	FY 2022	Less Public Fire	Subtotal
		Requirements A	Capacity Costs B	
1	Water Supply	\$21,253,224		\$21,253,224
2	Delivery	\$9,107,705		\$9,107,705
3	Max Day	\$4,462,776	(\$92,748)	\$4,370,028
4	Max Hour	\$6,243,865	(\$958,116)	\$5,285,749
5	Efficiency	\$433,614		\$433,614
6	Elevation	\$1,844,010		\$1,844,010
7	Billing & CS	\$1,459,602		\$1,459,602
8	Meters & Service	\$325,195		\$325,195
9	RTS	\$649,153		\$649,153
10	Public Fire	\$46,375	(\$46,375)	\$0
11	Revenue Offset	(\$7,874,867)	\$1,097,239	(\$6,777,628)
12	Total	\$37,950,652	\$0	\$37,950,652

Table 4-17 shows how private fire costs are reallocated to the Private Fire cost component. The respective maximum day and maximum hour capacity costs for private fire (Table 4-15, columns C & D, line 8) are subtracted from the total maximum day and maximum hour capacity costs (Table 4-17, column B, lines 3&4) and reallocated to the Private Fire cost component.

Table 4-17: Reallocation of Private Fire

Line No.	Cost Components	FY 2022	Less Private	Subtotal
		Requirements	Fire Capacity	
		A	B	C = A + B
1	Water Supply	\$21,253,224		\$21,253,224
2	Delivery	\$9,107,705		\$9,107,705
3	Max Day	\$4,370,028	(\$17,775)	\$4,352,253
4	Max Hour	\$5,285,749	(\$183,618)	\$5,102,131
5	Efficiency	\$433,614		\$433,614
6	Elevation	\$1,844,010		\$1,844,010
7	Billing & CS	\$1,459,602		\$1,459,602
8	Meters & Service	\$325,195		\$325,195
9	RTS	\$649,153		\$649,153
10	Revenue Offset	(\$6,777,628)		(\$6,777,628)
11	Private Fire		\$201,393	\$201,393
12	Total	\$37,950,652	\$0	\$37,950,652

Table 4-18 summarizes the resulting FY 2022 Revenue Requirements by cost causation component and indicates how each cost causation component is proposed to be collected from customers.

Table 4-18: Summary of Revenue Requirements by Cost Components

Cost Components	FY 2022 Revenue		
	Requirements	Variable	Fixed
Water Supply	\$21,253,224	✓	
Delivery	\$9,107,705	✓	
Extra Capacity (Max Hour + Max Day)	\$9,454,384		✓
Efficiency	\$433,614	✓	
Elevation	\$1,844,010	✓	
Billing & CS	\$1,459,602		✓
Meters & Service	\$325,195		✓
RTS	\$649,153		✓
Revenue Offset	(\$6,777,628)	✓	
Private Fire	\$201,393		✓
Total	\$37,950,652	\$25,860,925	\$12,089,727
Variable / Fixed Split (%)		68%	32%

4.6 STEP 4 – DISTRIBUTE COST COMPONENTS TO CUSTOMER CLASSES AND TIERS

In order to allocate costs to different customer classes, unit costs of service need to be developed for each cost causation component. The unit costs of service are developed by dividing the total annual costs allocated to each cost causation component by the total annual service units of the respective cost causation component. The following subsections derive the annual units of service and the unit costs for each cost causation component from Table 4-18.

4.6.1 Fixed System Charge

There are two monthly fixed charges – the Fixed System Charge and the RTS Charge. Three components comprise the monthly Fixed System Charge: Billing & Customer Service, Meters & Services, and Peaking/Capacity. The monthly fixed system charge recognizes that even when a customer does not use any water, the District incurs fixed costs in connection with the maintenance of the meters, the ability or readiness to serve each connection, maintaining the infrastructure, and billing services provided to each connection.

Billing and Customer Service Costs Component

These costs are incurred at the same level regardless of the type of land use, customer class, or the total amount of water that the District delivers. Therefore, the Billing and Customer Service Costs cost causation component is based on the number of accounts and does not fluctuate with increases in meter size. The actual bills were determined by multiplying the number of accounts for each meter size by 12, which is reflective of the number of bills generated per account in a year. The Billing and Customer Service units of service are shown in Table 4-19. This number includes Private Fire accounts.

Table 4-19: Billing & Customer Service Costs Component – Units of Service

Meter Size	Number of Accounts A	# of Billing Periods B	Units of Service (# of Bills) C = A x B
5/8"	15	12	180
3/4"	16,251	12	195,012
1"	4,413	12	52,956
1.5"	320	12	3,840
2"	326	12	3,912
3"	33	12	396
4"	21	12	252
6"	6	12	72
8"	2	12	24
10"	1	12	12
12"	0	12	0
Total			256,656

Note: The total number of bills in Table 4-19 includes private fire accounts.

The Billing and Customer Service Costs revenue requirement (Table 4-18) is divided by the units of service (i.e., number of bills) to determine the unit cost of service shown in Table 4-20.

Table 4-20: Billing & Customer Service Costs Component – Unit Rate

Billing and Customer Service Component	
Billing & CS Revenue Requirements	\$1,459,602
÷ # of Bills	256,656
Monthly Unit Rate	\$5.687

Meters & Service Costs Component

The Meters and Service Costs cost causation component includes costs related to the maintenance and capital costs of the meters serving the District's customers. Maintenance and replacement costs tend to increase as the meter size increases due to more expensive materials and higher amounts of labor. The District used the meter replacement cost for a ¾" meter as a proxy to determine the equivalent meter units (EMU's). The EMUs are developed in Table 4-21 and are based on the meter costs provided by the manufacturer's regional supplier. This number includes Private Fire accounts.

Table 4-21: Meters and Service Costs Component – Units of Service

Line No.	Meter Size	Meter Replacement Cost	Meter Cost Ratio	# of Bills	Units of Service (EMUs)
		A	B = A ÷ A2		C
1	5/8"	\$ 296.31	0.94	180	169
2	3/4"	\$ 316.30	1.00	195,012	195,012
3	1"	\$ 382.89	1.21	52,956	64,105
4	1.5"	\$ 610.40	1.93	3,840	7,410
5	2"	\$ 832.37	2.63	3,912	10,295
6	3"	\$ 1,609.25	5.09	396	2,015
7	4"	\$ 1,809.01	5.72	252	1,441
8	6"	\$ 3,206.28	10.14	72	730
9	8"	\$ 4,656.83	14.72	24	353
10	10"	\$ 7,177.24	22.69	12	272
11	12"	\$ 9,813.73	31.03	0	0
12	Total			256,656	281,802

Note: The total number of bills in Table 4-21 includes private fire accounts.

The total Meters and Service Costs revenue requirement in Table 4-18 is divided by the units of service (Meter Cost EMU's) to determine the unit cost of service shown in Table 4-22.

Table 4-22: Meters & Service Costs Component – Unit Rate

Meter & Service Component	
Meters & Service Revenue Requirements	\$325,195
÷ Meter Cost EMUs	281,802
Monthly Unit Rate	\$1.154

Extra Capacity Costs Component

Extra Capacity Costs (or peaking costs) represent those costs incurred to meet customer peak demands for water in excess of baseline usage. Total Extra Capacity Costs are apportioned between Max Day and Max Hour demands based on the type of expense. Different facilities are designed to meet different peaking characteristics. Therefore, Extra Capacity Costs include capital improvements and power-related costs, and have been apportioned amongst Base, Max Day, and Max Hour. Costs allocated to Base are part of the delivery costs and will be discussed later. The Extra Capacity Costs revenue requirement of \$9,454,384, was determined by adding the Max Day revenue requirement of \$4,352,253 and the Max Hour revenue requirement of \$5,102,131 (Table 4-18).

The Extra Capacity Costs cost causation component was allocated based on meter size. In order to create parity across the various meter sizes, each meter size is assigned a factor relative to a 3/4" meter, which is given a value of 1. Larger meters can demand more capacity, or said differently, exert more peaking characteristics compared to smaller meters. The potential capacity demand (peaking) is proportional to the potential flow through each meter size. For this Study, the safe maximum operating capacity by meter type, as identified in the AWWA M1 Manual, 6th Edition, Table B-1, was used as a basis for calculating the equivalent meter ratio. As shown in Table 4-23, each meter's safe maximum operating capacity was divided by the base meters safe operating capacity (30 gpm) to determine the equivalent meter ratio. The ratios represent the potential flow through each meter size compared to the flow through a 3/4" meter. Multiplying the number of meters by the AWWA Ratio results in the Capacity EMU's.

Table 4-23: Extra Capacity Costs Component – Units of Service

Line No.	Meter Size	Meter Type	AWWA	AWWA Ratio	# of Bills w/o Private Fire	Units of Service (EMUs)
			Standards (gpm) A			
1	5/8"	C713-15 Fluidic-Oscillator Type	20	0.67	180	120
2	3/4"	C701-12 Turbine Type, Class I, Vertical Shaft Type	30	1.00	191,496	191,496
3	1"	C701-12 Turbine Type, Class I, Vertical Shaft Type	50	1.67	52,956	88,260
4	1.5"	C701-12 Turbine Type, Class I, Vertical Shaft Type	100	3.33	3,840	12,800
5	2"	C704-15 Propeller Type	120	4.00	3,912	15,648
6	3"	C704-15 Propeller Type	300	10.00	396	3,960
7	4"	C704-15 Propeller Type	600	20.00	252	5,040
8	6"	C704-15 Propeller Type	1,350	45.00	72	3,240
9	8"	C704-15 Propeller Type	1,800	60.00	24	1,440
10	10"	C704-15 Propeller Type	2,400	80.00	12	960
11	12"	C704-15 Propeller Type	3,375	112.50	0	0
12	Total				253,140	322,964

Note: The total number of bills in Table 4-23 excludes private fire accounts.

The total Extra Capacity Costs revenue requirement in Table 4-18 is divided by the units of service (Capacity EMU's) to determine the unit cost of service shown in Table 4-24.

Table 4-24: Extra Capacity Costs Component – Unit Rate

Peaking/Capacity Component	
Extra Capacity Revenue Requirement	\$9,454,384
÷ Capacity EMUs	322,964
Monthly Unit Rate	\$29.274

RTS Component

The RTS Costs are outside of the District’s control and are a condition of purchasing water from MWD. These charges are paid to MWD to help fund capital improvements necessary to meet standby service needs and emergency storage. Since larger meters have the potential to demand more capacity these costs were allocated using AWWA Capacity ratios (i.e. Capacity EMU’s). The total RTS revenue requirement from Table 4-18 is divided by the units of service (EMU’s) in Table 4-25 to arrive at unit cost of service in Table 4-26.

Table 4-25: Units of Service for RTS

Line No.	Meter Size	AWWA 3/4"	# of Bills w/ Private Fire	Units of Service (EMUs)
		Ratio A	B	C = A x B
1	5/8"	0.67	180	120
2	3/4"	1.00	195,012	195,012
3	1"	1.67	52,956	88,260
4	1.5"	3.33	3,840	12,800
5	2"	4.00	3,912	15,648
6	3"	10.00	396	3,960
7	4"	20.00	252	5,040
8	6"	45.00	72	3,240
9	8"	60.00	24	1,440
10	10"	80.00	12	960
11	12"	112.50	0	0
12	Total		256,656	326,480

Note: The total number of bills in Table 4-25 includes private fire accounts.

Table 4-26: RTS Component – Unit Rate

RTS Component	
RTS Revenue Requirement	\$649,153
÷ Capacity EMUs (w/Private Fire)	326,480
Monthly Unit Rate	\$1.988

4.6.2 Fixed System Charge for Private Fire

Private Fire charges are comprised of Billing & Customer Service, Meters & Service, and Fire Extra Capacity Costs. Billing & Customer Service and Meters & Service have been derived above in Table 4-20 and Table 4-21, respectively. Table 4-27 derives the unit rate for Fire Extra Capacity Charges. Lines 1 and 2 are the Revenue Requirement and Fire Demand Units derived separately in Table 4-15. The Revenue Requirement (line 1) is divided by Annual Fire Demand (line 3) to arrive at the monthly unit cost. This is assessed based on the fire demand ratio.

Table 4-27: Private Fire Extra Capacity Charges

Line No.	Private Fire Service Charges	Peaking
1	Revenue Requirements	\$201,393
2	Fire Demand Units	79,422
3	Annual Fire Demand Units ([2] x 12)	953,064
4	Monthly Unit Cost of Service ([1] / [3])	\$0.211

4.6.3 Variable Charges

The variable Commodity Charge rates are comprised of Water Supply, Delivery, Revenue Offset, and Efficiency Costs rate components. Proposition 218 does not specify the type of rate structure that should be used to develop rates as long as the rates reflect the proportionate cost of serving customers. In addition to the Commodity Charge rates, a separate Pumping Charge for the different power zones was determined as well as a Water Reliability Charge.

Table 4-28: Allocation of Variable Cost Components Across Customer Classes

Tier/Customer Class	Local Water				Revenue Offset
	Supply	MWD Tier 1	Delivery	Efficiency	
Tier 1 - Essential Use	✓		✓		✓
Tier 2 - Efficient Use	✓	✓	✓		✓
Tier 3 - Inefficient Use		✓	✓	✓	
Tier 4 - Unsustainable Use		✓	✓	✓	
Agriculture	✓	✓	✓	✓	✓
March East	✓	✓	✓	✓	

Commodity Charge

Supply Component

The District meets the demands of customers through both local and imported water. Table 4-29 shows the availability of each water supply and associated effective unit rates. The effective unit rate takes into consideration the 3.5% water loss factor historically experienced by the District as shown below.

Table 4-29: Water Supply Sources – Quantity and Effective Rate

Water Source	Available for Purchase (AF)	Available Supply (AF) After 3.5% Water Loss	Unit Cost (\$/AF)	Available Supply (hcf)	Effective Cost (\$/AF)	Effective Unit Cost (\$/hcf)
	A	B = A x (1-0.035)	C	D = B * 435.6	E = (A*B) ÷ C	F = E ÷ 435.6
Meeks & Daley (M&D)	227	219	\$618.54	95,420	\$640.97	\$1.47
Elsinore Valley MWD	4,680	4,516	\$671.49	1,967,257	\$695.84	\$1.60
MWD Tier 1	2,301	2,220	\$843.54	967,235	\$874.13	\$2.01

Next, the available water for sale (Table 4-29, column B) is allocated to customer classes and tiers, starting with the least expensive (Meeks & Daley) and moving to the next marginal supply (MWD Tier 1 imported water) until either the projected sales (demand) is met or until the supplies are fully utilized. Table 4-30 shows the allocation of the water supplies and the resulting water supply Unit Rate. The Unit Rate represents the weighted average rate or blended rate and is calculated for each tier and customer class.

Table 4-30: Allocation of Water Supplies (HCF) for Unit Rate (\$/HCF)

Line No.	Tier/Customer Class	Projected Sales (HCF)	Meeks & Daley	Elsinore	City of Riverside	MWD Tier 1	Unit Rate (\$/HCF)
1	Tier 1 - Essential Use	2,752,640	90,452	1,864,817	797,372		\$1.712
2	Tier 2 - Efficient Use	5,074,360			119,497	4,954,863	\$2.646
3	Tier 3 - Inefficient Use	428,899				428,899	\$2.662
4	Tier 4 - Unsustainable Use	325,101				325,101	\$2.662
5	Agriculture	259,180	2,732	56,325	27,693	172,430	\$2.348
6	March East	212,200	2,237	46,115	22,673	141,175	\$2.348
7	Total	9,052,380	95,420	1,967,257	967,235	6,022,468	
8	Total Available Supply	9,052,380	95,420	1,967,257	967,235	6,022,468	

The water supply revenue requirement from Table 4-18 is equal to the projected cost of purchasing water as shown in Table 4-31¹².

Table 4-31: Projected Water Supply Costs and Unit Rates

Tier/Customer Class	Projected Sales (HCF)	Unit Rate (\$/HCF)	Revenue Requirements
	A	B	C = A x B
Tier 1 - Essential Use	2,752,640	\$1.712	\$4,712,520
Tier 2 - Efficient Use	5,074,360	\$2.646	\$13,426,757
Tier 3 - Inefficient Use	428,899	\$2.662	\$1,141,729
Tier 4 - Unsustainable Use	325,101	\$2.662	\$865,419
Agriculture	259,180	\$2.348	\$608,555
March East	212,200	\$2.348	\$498,246
Total	9,052,380		\$21,253,224

¹² Any differences are due to rounding.

Delivery Component

Delivery costs include operating and capital costs of the water system associated with delivering water to all customers at a constant average rate of use. Therefore, delivery costs from Table 4-18 are spread over all units of water (9,052,380 hcf), irrespective of customer class or tiers. Table 4-32 summarizes the calculation of the uniform rate.

Table 4-32: Delivery Component - Unit Rate

Delivery Component	
Delivery Revenue Requirement	\$9,107,705
÷ Projected Sales	9,052,380
Monthly Unit Rate	\$1.007

Efficiency Component

Costs for the efficiency programs were evaluated to determine the allocation of the Efficiency Component Costs¹³. The costs from Table 4-18 for efficiency programs will be recovered by those targeted by the programs (inefficient users). Tier 1 and Tier 2 water use is deemed to be efficient. Water billed in these tiers do not pay an efficiency component. Appendix B provides additional information regarding the basis for the calculation of the efficiency component.

Table 4-33: Efficiency Component – Unit Rates

Tier/Customer Class	Projected Sales (HCF)	Unit Tier Rate (\$/HCF)
Tier 1 - Essential Use	2,752,640	N/A
Tier 2 - Efficient Use	5,074,360	N/A
Tier 3 - Inefficient Use	428,899	\$0.300
Tier 4 - Unsustainable Use	325,101	\$0.880
Agriculture	259,180	\$0.040
March East	212,200	\$0.040

Revenue Offset Component

Revenue Offsets (Table 4-18) encourage conservation by rewarding customers who stay within efficient tiers or water use. Revenues from property taxes (Table 4-11) less public fire capacity costs (Table 4-16) are applied to the Tier 1 and Tier 2 unit rates. Offsets are also applied to Agriculture unit rates to account for property tax payments on agricultural plots. Table 4-34 illustrates how the Revenue Offset unit cost is derived for the respective tiers or customer class. The projected sales, thus water demand (column A), are multiplied by allocation factors (column B) to arrive at a total equivalent sales amount (column C)¹⁴. Determining equivalent sales is an intermediate step calculating the share of Revenue Offset received by each tier or class. The percentage of equivalent sales (column D) is multiplied by the total Revenue Offset of \$6,777,628 to find the respective share of Revenue Offset for each tier or class (column E). The Revenue Offset Share is divided by the projected sales to arrive at the unit rates (column F).

¹³ See Appendix B for additional information provided by the District regarding the Efficiency Component.

¹⁴ Allocation factors in column B are based on WMWD Board policy.

Table 4-34: Derivation of Revenue Offset Unit Cost

Line No.	Tier/Customer Class	Projected Sales (HCF) A	Allocation Factor B	Equivalent Sales (HCF) C = A x B	% Equivalent Sales D = C ÷ C4	Revenue Offset Share E = C x E4	Unit Rate (\$/HCF) F = E ÷ A
1	Tier 1	2,752,640	1.00	2,752,640	33.9%	(\$2,298,352)	(\$0.83)
2	Tier 2	5,074,360	1.00	5,074,360	62.5%	(\$4,236,902)	(\$0.83)
3	Agriculture	259,180	1.12	290,282	3.6%	(\$242,374)	(\$0.94)
4	Total	8,086,180		8,117,282	100%	(\$6,777,628)	

Pumping Charge

A Power Zone is a collection of pressure zones (a geographic area served by a single water storage tank). The further away a Power Zone is from its water source, and the higher the overall elevation, the greater the energy costs to pump water to the storage tank. The Pumping Charge revenue requirements from Table 4-18 were allocated in a manner similar to the existing rates. Table 4-35 summarizes the calculation of the pumping charge unit rates. Appendix C provides additional information regarding the basis for the calculation of the Pumping Charge rates.

Table 4-35: Pumping Charge – Unit Rates (\$/HCF)

Line No.	Power Zone	Unit Rate (\$/HCF)
1	Power Zone 102	\$0.140
2	Power Zone 103	\$0.181
3	Power Zone 104	\$0.229
4	Power Zone 105	\$0.686

Water Reliability Charge (WRC)

Non-Agriculture and March East customers are currently charged \$0.42 per hcf and Agriculture customers are currently charged \$0.28 per hcf. While the FY 2022 proposed Non-Agriculture/March East rate will remain the same, the FY 2022 proposed Agricultural WRC increases to \$0.35 per hcf. Additional information on the WRC can be found in Appendix D.

4.7 PROPOSED WATER RATES

4.7.1 Fixed Charges

Table 4-36 summarizes the monthly Fixed System Charge rates by meter size based on the unit rates developed in Section 4.6.1. As shown in the table above, the unit rate for Billing and Customer Service Costs cost causation component does not vary based on meter size. In contrast, the unit rates for the Meters and Service, and Extra Capacity Costs increase as the meter's size increases. The Meters and Service rate is determined by multiplying the unit rate (Table 4-22) by the appropriate Meter Cost Ratio (Table 4-36, column A). The Extra Capacity amount is determined by multiplying the unit rate (Table 4-24) by the appropriate AWWA Capacity Ratio (Table 4-36, column B).

Table 4-36: FY 2022 Rates for Fixed System Charge (\$/Meter Size)

Meter Size	Meter Cost 3/4" Ratio A	AWWA 3/4" Ratio B	Billing & CS C	Meters & Service D = \$1.15 x A	Extra Capacity E = \$29.27 x B	Total Fixed System Charge F = C + D + E
5/8"	0.94	0.67	\$5.69	\$1.08	\$19.52	\$26.29
3/4"	1.00	1.00	\$5.69	\$1.15	\$29.27	\$36.11
1"	1.21	1.67	\$5.69	\$1.40	\$48.79	\$55.87
1.5"	1.93	3.33	\$5.69	\$2.23	\$97.58	\$105.49
2"	2.63	4.00	\$5.69	\$3.04	\$117.10	\$125.82
3"	5.09	10.00	\$5.69	\$5.87	\$292.74	\$304.30
4"	5.72	20.00	\$5.69	\$6.60	\$585.48	\$597.76
6"	10.14	45.00	\$5.69	\$11.70	\$1,317.32	\$1,334.71
8"	14.72	60.00	\$5.69	\$16.99	\$1,756.43	\$1,779.10
10"	22.69	80.00	\$5.69	\$26.19	\$2,341.90	\$2,373.78
12"	31.03	112.50	\$5.69	\$35.81	\$3,293.30	\$3,334.80

The final step in determining the proposed monthly rates for the two fixed charges is applying the property tax revenue to offset the FSC for 6" and larger meters. This analysis is summarized in Table 4-37. Approximately \$45,049 of property tax revenue is used to offset the potable FSC. Additional information on the property tax revenue offset can be found in Appendix F. Private fire proposed charges are presented in Table 4-41.

Table 4-37: Final FY 2022 Fixed System Charge (\$/Meter Size)

Meter Size	Preliminary FY 2022 FSC A	Property Tax Revenue Offset B	Final FY 2022 FSC C = A + B
5/8"	\$26.29	\$0.00	\$26.29
3/4"	\$36.11	\$0.00	\$36.11
1"	\$55.87	\$0.00	\$55.87
1.5"	\$105.49	\$0.00	\$105.49
2"	\$125.82	\$0.00	\$125.82
3"	\$304.30	\$0.00	\$304.30
4"	\$597.76	\$0.00	\$597.76
6"	\$1,334.71	(\$293.03)	\$1,041.68
8"	\$1,779.10	(\$546.26)	\$1,232.84
10"	\$2,373.78	(\$903.35)	\$1,470.43
12"	\$3,334.80	(\$1,523.96)	\$1,810.84

Table 4-38: Current and Proposed Fixed System Charges (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$30.43	\$26.29	\$27.19	\$28.13	\$29.09
3/4"	\$41.40	\$36.11	\$37.36	\$38.65	\$39.99
1"	\$62.99	\$55.87	\$57.81	\$59.81	\$61.89
1.5"	\$117.13	\$105.49	\$109.16	\$112.95	\$116.88
2"	\$139.31	\$125.82	\$130.19	\$134.71	\$139.39
3"	\$333.98	\$304.30	\$314.89	\$325.85	\$337.20
4"	\$647.69	\$597.76	\$618.61	\$640.20	\$662.55
6"	\$847.75	\$1,041.68	\$1,235.61	\$1,429.54	\$1,479.47
8"	\$986.44	\$1,232.84	\$1,479.24	\$1,725.64	\$1,972.04
10"	\$1,157.24	\$1,470.43	\$1,783.62	\$2,096.81	\$2,410.00
12"	\$1,429.61	\$1,810.84	\$2,192.07	\$2,573.30	\$2,954.53

Table 4-39 shows the current and proposed RTS charges. These are based on the 3/4" AWWA Capacity Ratio.

Table 4-39: Current and Proposed Readiness-To-Serve Charges (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$1.47	\$1.33	\$1.42	\$1.44	\$1.52
3/4"	\$2.21	\$1.99	\$2.13	\$2.16	\$2.28
1"	\$3.69	\$3.32	\$3.55	\$3.60	\$3.79
1.5"	\$7.37	\$6.63	\$7.10	\$7.20	\$7.57
2"	\$8.85	\$7.96	\$8.52	\$8.64	\$9.09
3"	\$22.12	\$19.88	\$21.30	\$21.58	\$22.71
4"	\$44.24	\$39.76	\$42.60	\$43.16	\$45.42
6"	\$99.54	\$89.46	\$95.85	\$97.11	\$102.20
8"	\$132.72	\$119.28	\$127.80	\$129.48	\$136.26
10"	\$176.96	\$159.04	\$170.40	\$172.64	\$181.68
12"	\$248.85	\$223.65	\$239.63	\$242.78	\$255.49

Table 4-40: FY 2022 Rates for Private Fire Fixed System Charges (\$/Meter Size)

Meter Size	No of Meters	Fire Demand Ratio	Billing & CS	Meter Service	Peaking	Monthly FSC
	A	B	C	D	E = \$0.211 x B	F = C + D + E
3"	1	17.98	\$5.69	\$1.15	\$3.79	\$10.63
4"	46	38.32	\$5.69	\$1.15	\$8.09	\$14.93
6"	53	111.31	\$5.69	\$1.15	\$23.49	\$30.33
8"	67	237.21	\$5.69	\$1.15	\$50.05	\$56.89
10"	118	426.58	\$5.69	\$1.15	\$90.01	\$96.85
12"	8	689.04	\$5.69	\$1.15	\$145.39	\$152.23

Table 4-41: Proposed Monthly Fixed System Charge for Private Fire (\$/Meter Size)

Meter Size	CURRENT		Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
	5/8" By-Pass	3/4" By-Pass				
3"	\$30.43	\$41.40	\$10.63	\$10.98	\$11.36	\$11.72
4"	\$30.43	\$41.40	\$14.93	\$15.41	\$15.96	\$16.46
6"	\$30.43	\$41.40	\$30.33	\$31.33	\$32.46	\$33.47
8"	\$30.43	\$41.40	\$56.89	\$58.77	\$60.91	\$62.80
10"	\$30.43	\$41.40	\$96.85	\$100.05	\$103.71	\$106.92
12"	\$30.43	\$41.40	\$152.23	\$157.27	\$163.02	\$168.08

4.7.2 Variable Charges

The unit rates of the cost causation components allocated to the variable Commodity Charge rates are added together to produce rates for each customer class and tier. Table 4-42 shows each unit rate by cost causation component and the final proposed FY 2022 variable Commodity Charge rates. Table 4-43 shows the proposed variable Commodity Charge rates for four years, and Table 4-44 shows the proposed Pumping Charge rates for four years.

Table 4-42: Proposed FY 2022 Commodity Charge Rates (\$/HCF)

Customer Class/Service Area	Water Supply	Delivery	Efficiency	Revenue Offset	Proposed Commodity Rate
	A	B	C	D	E = A + B + C + D
Water Budget Rates					
Tier 1 - Essential Use	\$1.712	\$1.007	\$0.000	(\$0.834)	\$1.885
Tier 2 - Efficient Use	\$2.646	\$1.007	\$0.000	(\$0.834)	\$2.819
Tier 3 - Inefficient Use	\$2.662	\$1.007	\$0.300	\$0.000	\$3.969
Tier 4 - Unsustainable Use	\$2.662	\$1.007	\$0.880	\$0.000	\$4.549
Uniform Rates					
Agriculture	\$2.348	\$1.007	\$0.040	(\$0.935)	\$2.460
March East	\$2.348	\$1.007	\$0.040	\$0.000	\$3.395

Table 4-43: Proposed 4-Year Commodity Charge Rates (\$/HCF)

Customer Class/Service Area	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
Riverside Potable					
Water Budget Rates					
Tier 1 - Essential Use	\$1.313	\$1.885	\$1.884	\$1.976	\$2.092
Tier 2 - Efficient Use	\$2.738	\$2.819	\$2.969	\$3.126	\$3.295
Tier 3 - Inefficient Use	\$4.178	\$3.969	\$4.108	\$4.273	\$4.433
Tier 4 - Wasteful/Unsustainable Use	\$4.778	\$4.549	\$4.688	\$4.853	\$5.013
Tier 5 - Unsustainable Use	\$8.218	N/A	N/A	N/A	N/A
Uniform Rates					
Agriculture	\$2.326	\$2.460	\$2.580	\$2.773	\$2.950
March East	\$3.306	\$3.395	\$3.489	\$3.636	\$3.782

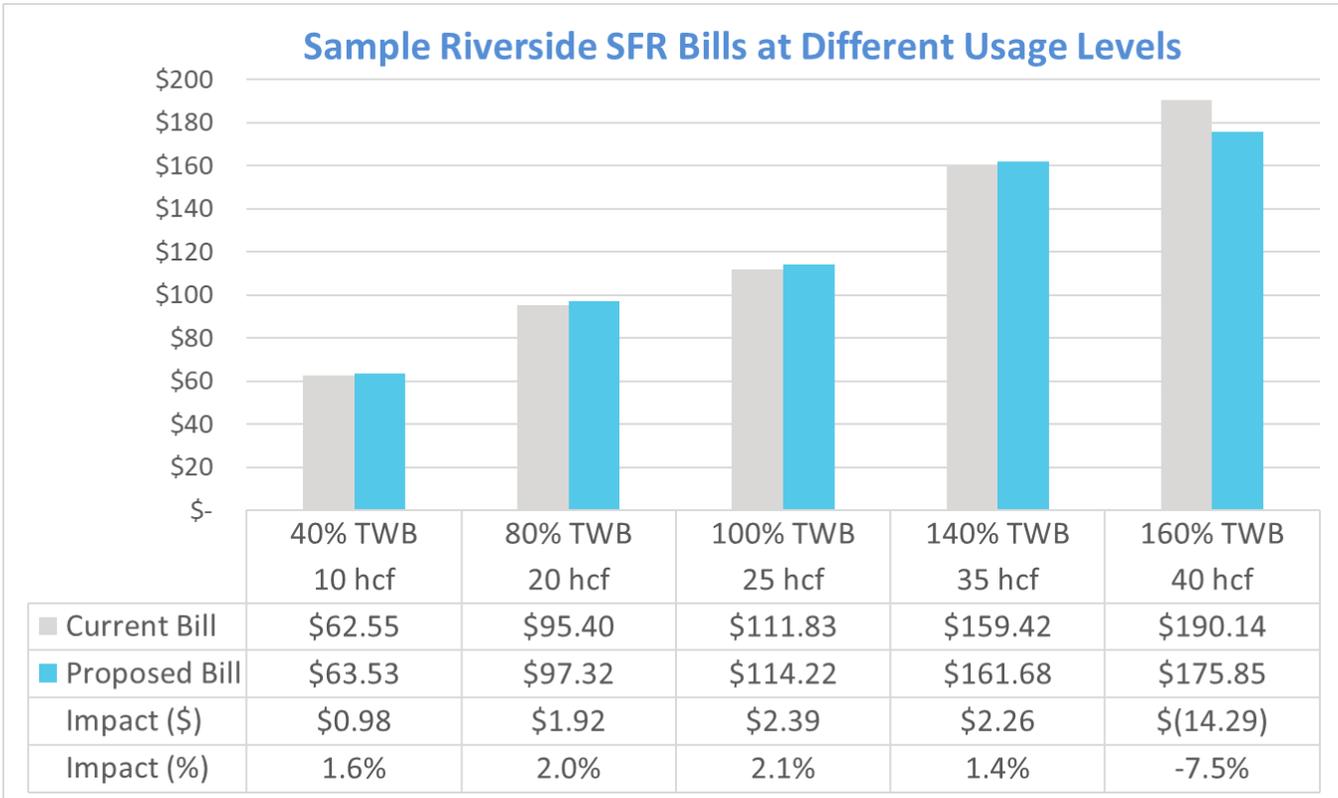
Table 4-44: Proposed Pumping Charge Rates (\$/HCF)

Power Zone	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
Riverside Potable					
Power Zone 1	\$0.127				
Power Zone 2	\$0.189				
Power Zone 3	\$0.172				
Power Zone 4	\$0.424				
Power Zone 5	\$0.736				
Power Zone 6	\$0.815				
Power Zone 9	\$0.127				
Power Zone 101		\$0.000	\$0.000	\$0.000	\$0.000
Power Zone 102		\$0.140	\$0.147	\$0.154	\$0.162
Power Zone 103		\$0.181	\$0.190	\$0.200	\$0.210
Power Zone 104		\$0.229	\$0.240	\$0.252	\$0.265
Power Zone 105		\$0.686	\$0.720	\$0.756	\$0.794

4.8 RIVERSIDE POTABLE CUSTOMER BILL IMPACT

Figure 3 compares the bill totals at different usage levels for a median Residential customer with a ¾" meter in Power Zone 102, with a household size of 4 persons, landscape area of 4,961 square feet, and a 30-day billing cycle for the current and proposed (FY 2022) rates.

Figure 3: Residential Customer Bill Impact



5. NON-POTABLE COST OF SERVICE & RATES

5.1 COST OF SERVICE PROCESS

A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class. As discussed in Section 4.2 and summarized below there are four main steps in the cost of service analysis. Each step shown below will be described in greater detail in the following subsections.

- » Step 1 – Determine Revenue Requirements
- » Step 2 – Functionalize O&M Costs
- » Step 3 – Allocate Functionalized Costs to Cost Causation Components
- » Step 4 – Distribute Cost Causation Components to customer Classes

5.2 STEP 1 – DETERMINE NON-POTABLE REVENUE REQUIREMENTS

Non-potable rates are calculated for each year of the Study period. The District will periodically review the cost of service analysis to ensure the rates are consistent with the costs of providing service. The revenue requirements determination is based on the premise that the utility must generate annual revenues to meet O&M expenses, any debt service needs, reserve levels, and capital investments needs. Revenues from sources other than non-potable rates and charges (e.g. revenues from property taxes) will be used as revenue offsets in a manner similar to Potable rates.

Table 5-1 summarizes Riverside Non-Potable Revenue Requirements for each year of the Study Period. The first year, Fiscal Year 2021-22 ("FY 2022"), was based on the Board-adopted operating budget with subsequent fiscal year amounts escalated by 4.5% per year (which has been the historical expense growth experience of the District). Exceptions to this last sentence are described as follows:

- » Purchased Water costs (line 14) were adjusted for all four years to reflect the calculated purchased water cost based on the projected water usage and projected cost per AF as opposed to the original budgeted cost.
- » Purchased Power costs (line 15) were adjusted for FY 2022 to incorporate recent and near-term energy rate increases from Southern California Edison (SCE) and applied to estimated FY 2021 costs. Subsequent years were increased by 5% annually to reflect anticipated increases in energy rates from SCE.
- » Water Use Efficiency costs (line 16) were adjusted to reflect the anticipated costs of the conservation measures for the first year of the Study period as opposed to the adopted budget and then held flat for the remaining years since no customer growth is anticipated in the rate model.
- » MWD Readiness-to-Serve Charge (line 17) is based on MWD's ten-year financial forecast of rates and charges to member agencies.

The revenue requirement determination is based upon the premise that the District must generate annual revenues to meet O&M expenses, any debt service needs, reserve funding to achieve target levels, and capital investment needs.

Table 5-1: Riverside Non-Potable Revenue Requirements

Line No.	Description	FY 2022	FY 2023	FY 2024	FY 2025
1	O&M Expenditures				
2	Source of Supply	\$2,578	\$2,694	\$2,815	\$2,942
3	MWD Capacity Charge	\$52,670	\$55,040	\$57,517	\$60,105
4	Water Pumping	\$1,067,176	\$1,115,199	\$1,165,383	\$1,217,825
5	Treatment, Transmission & Distribution	\$589,545	\$616,075	\$643,798	\$672,769
6	Customer Accounts	\$150,528	\$157,302	\$164,381	\$171,778
7	Replacement Reserve	\$630,000	\$658,350	\$687,976	\$718,935
8	G&A Allocation	\$257,052	\$268,619	\$280,707	\$293,339
9	Other Operating Expenses	\$4,640	\$4,849	\$5,067	\$5,295
10	Prop Tax Collection	\$5,210	\$5,444	\$5,689	\$5,945
11	Total O&M Expenses	\$2,759,399	\$2,883,572	\$3,013,333	\$3,148,933
12					
13	Other Expenditures				
14	Purchased Water	\$2,333,945	\$2,427,575	\$2,423,981	\$2,520,590
15	Purchased Power	\$820,100	\$861,411	\$904,542	\$949,535
16	Water Use Efficiency	\$64,932	\$64,932	\$64,932	\$64,932
17	RTS Charge	\$39,557	\$42,415	\$42,927	\$45,277
18	Total Other Expenses	\$3,258,534	\$3,396,333	\$3,436,382	\$3,580,334
19					
20	Debt Service	\$198,948	\$199,611	\$199,898	\$200,950
21					
22	Base Rate Requirements	\$6,216,881	\$6,479,516	\$6,649,613	\$6,930,217
23					
24	Property Tax Revenue	(\$1,095,743)	(\$1,105,634)	(\$969,352)	(\$940,997)

Given the small number of accounts for Non-Potable and Rainbow service areas (165 and 40, respectively, compared with 21,095 Potable accounts), and all have similar costs, the District will maintain the same Fixed System Charges (FSC) and RTS charges across all service areas. The projected revenue from both the FSC and RTS charges must be specifically allocated to determine the remaining amount of revenue requirements to be recovered from the uniform variable commodity rates.

Table 5-2 derives the Non-Potable Fixed System Revenue Requirements for the FSC (column D) and RTS (column E). The total Fixed System Revenue Requirement is the sum of the FSC and RTS, as shown in Table 5-3.

Table 5-2: Non-Potable Fixed System Charge Revenue Requirement FY 2022

Meter Size	# of Meters A	Riverside Proposed Fixed Charge B	Proposed RTS Charge C	Fixed Revenue Requirement D = A x B x 12	RTS Revenue Requirement E = A x C x 12
5/8"	0	\$26.29	\$1.33	\$0	\$0
3/4"	2	\$36.11	\$1.99	\$867	\$48
1"	15	\$55.87	\$3.32	\$10,057	\$598
1.5"	15	\$105.49	\$6.63	\$18,989	\$1,193
2"	97	\$125.82	\$7.96	\$146,452	\$9,265
3"	15	\$304.30	\$19.88	\$54,774	\$3,578
4"	10	\$597.76	\$39.76	\$71,732	\$4,771
6"	3	\$1,334.71	\$89.46	\$48,050	\$3,221
8"	3	\$1,779.10	\$119.28	\$64,048	\$4,294
10"	1	\$2,373.78	\$159.04	\$28,485	\$1,908
12"	4	\$3,334.80	\$223.65	\$160,070	\$10,735
Total	165			\$603,523	\$39,612

Table 5-3: Total Non-Potable Fixed Revenue Requirement

Total Fixed Revenue Requirement	
Fixed Revenue Requirement	\$603,523
RTS Revenue Requirement	\$39,612
Total	\$643,135

5.3 STEP 2 – FUNCTIONALIZE COSTS

Similar to the potable water cost of service analysis, the non-potable service area’s revenue requirements (costs) need to be distributed to both customer classes (landscape and agriculture). After determining the utility’s revenue requirement, the total cost of non-potable service is analyzed by system functions to proportionately distribute costs in relation to how that cost is generally incurred. The non-potable costs were categorized into the following functions:

- » **Fixed Revenue Requirements** are the costs that will be recovered over the Fixed System Charge and RTS Charge as presented in Table 5-2 and Table 5-3.
- » **Variable Revenue Requirements** are the operational costs of the utility that are not covered by the other components.
- » **Purchased Power** are the energy costs associated with pumping water to higher elevations.
- » **Water Use Efficiency** are the costs associated with programs and services offered to District customers that promote water use efficiency.

Table 5-4 summarizes the functionalized O&M costs prior to any revenue offsets.

Table 5-4: Non-Potable Functionalized Expenses

Functionalized Expenses	(\$)
Fixed Revenue Requirement	\$643,135
Variable Revenue Requirement	\$4,688,714
Purchased Power	\$820,100
Water Use Efficiency	\$64,932
Total	\$6,216,881

5.4 STEP 3 – ALLOCATE FUNCTIONAL COSTS TO COST CAUSATION COMPONENTS

The functionalization of costs allows us to better allocate the costs based on how the costs are incurred. This is commonly referred to as cost causation. Essentially, cost causation means that the District incurs a cost of providing service as a result of the demands or burdens the customer places on the system and non-potable resources. The District’s costs were allocated to the following cost causation components:

1. **Base/Delivery Costs** are those operating and capital costs of the non-potable system associated with serving customers at a constant, or average, rate of use.
2. **Fixed Charges** represent the costs that will be recovered over the Fixed System Charge at the same rate as the potable water Fixed System Charge. These also include RTS costs incurred as a condition of purchasing water through MWD. These costs will be passed through to customers via a fixed RTS charge based on the meter size.
3. **Efficiency Costs** includes managing costs of the District’s water supply through water conservation efforts and efficiency programs.
4. **Elevation Costs** includes energy costs incurred to pump water to higher elevations.

Table 5-5 summarizes the functionalized costs allocated to each of the cost causation components.

Table 5-5: Allocation of Functionalized Costs to Cost Components

Functionalized Costs	FY 2022 Budget	Base/Delivery	Fixed Charges	Efficiency	Elevation
Fixed Revenue Requirement	\$643,135		\$643,135		
Variable Revenue Requirement	\$4,688,714	\$4,688,714			
Purchased Power	\$820,100				\$820,100
Water Use Efficiency	\$64,932			\$64,932	
Revenue Offset	(\$1,095,743)	(\$1,095,743)			
Total	\$5,121,138	\$3,592,971	\$643,135	\$64,932	\$820,100

5.5 STEP 4 – DISTRIBUTE COST COMPONENTS TO CUSTOMER CLASS AND TIERS

Since the non-potable water rate structure will consist of fixed rates for the Fixed System Charge and RTS Charge, and uniform Commodity Charge rates, pumping rates, and the WRC rate, the distribution of cost components is greatly simplified. The unit costs of service are developed by dividing the total annual costs allocated to each parameter by the total annual service units of the respective component.

Fixed Charges

Fixed System Charge

These costs represent the revenue that will be recovered over the monthly Fixed System Charge. Table 5-6 shows how a portion of the Non-Potable property tax revenue was used to offset meter sizes of 6" or larger. This offset is further explained in Appendix F.

Table 5-6: Final FY 2022 Fixed System Charge (\$/Meter Size)

Meter Size	Preliminary FY	Property Tax	Final FY 2022
	2022 FSC	Revenue Offset	FSC
	A	B	C = A + B
5/8"	\$26.29	\$0.00	\$26.29
3/4"	\$36.11	\$0.00	\$36.11
1"	\$55.87	\$0.00	\$55.87
1.5"	\$105.49	\$0.00	\$105.49
2"	\$125.82	\$0.00	\$125.82
3"	\$304.30	\$0.00	\$304.30
4"	\$597.76	\$0.00	\$597.76
6"	\$1,334.71	(\$293.03)	\$1,041.68
8"	\$1,779.10	(\$546.26)	\$1,232.84
10"	\$2,373.78	(\$903.35)	\$1,470.43
12"	\$3,334.80	(\$1,523.96)	\$1,810.84

RTS Charge

These costs represent the revenue that will be recovered over the fixed monthly RTS charge. Since these rates will be the same as the potable RTS charges, no further analysis is needed.

Commodity Charge

Delivery Component

Delivery costs include operating and capital costs of the non-potable system associated with delivering water to all customers at a constant, or average, rate of use. Therefore, delivery costs are spread over all units of water (1,623,300 hcf for each year of the Study period), irrespective of customer class. Table 5-7 summarizes the calculation of the uniform delivery component.

Table 5-7: Delivery Component – FY 2022 Unit Rate

Base/Delivery Cost Component	
Variable Revenue Requirement	\$4,688,714
÷ Projected Use	1,623,300
Monthly Unit Rate	\$2.888

Efficiency Component

Anticipated costs for efficiency programs as well as the allocation factors for recovering these costs is explained in Appendix B. Table 5-8 summarizes the calculation of the unit rate for the efficiency component.

Table 5-8: Efficiency Component – FY 2022 Unit Rate

Water Efficiency Cost Component	
Water Efficiency Costs	\$64,932
÷ Projected Use	1,623,300
Monthly Unit Rate	\$0.040

Revenue Offset Component

The District’s property tax revenue will be used to offset a portion of the Landscape and Agriculture uniform commodity rates. Table 5-9 shows how the unit rate for each customer class is derived. The allocation factors in column B are based on District policies.

Table 5-9: Non-Potable Revenue Offset – FY 2022 Unit Rate

Line No.	Customer Class	Projected Use	Allocation	Property Tax	Property Tax
		(HCF)	Factor	Allocation	Allocation
		A	B	C	D
1	Landscape	864,000	0.42	\$460,253	(\$0.53)
2	Agriculture	759,300	0.58	\$635,490	(\$0.84)
3	Total	1,623,300		\$1,095,743	

Pumping Charge

The derivation of Pumping Charge rates is discussed in Appendix C.

Water Reliability Charge (WRC)

Landscape customers are currently charged \$0.42 per hcf and Agriculture customers are currently charged \$0.28 per hcf. While the FY 2022 proposed Landscape rate will remain the same, the FY 2022 proposed Agricultural WRC increases to \$0.35 per hcf. Additional information on the WRC can be found in Appendix D.

5.6 PROPOSED NON-POTABLE WATER RATES

5.6.1 Fixed Charges

Table 5-10 summarizes the proposed monthly FSC for the Study period by meter size based on the potable FSC. Table 5-11 does the same for the RTS charge by meter size.

Table 5-10: Current & Proposed Rates for Non-Potable Fixed System Charge (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$30.43	\$26.29	\$27.19	\$28.13	\$29.09
3/4"	\$41.40	\$36.11	\$37.36	\$38.65	\$39.99
1"	\$62.99	\$55.87	\$57.81	\$59.81	\$61.89
1.5"	\$117.13	\$105.49	\$109.16	\$112.95	\$116.88
2"	\$139.31	\$125.82	\$130.19	\$134.71	\$139.39
3"	\$333.98	\$304.30	\$314.89	\$325.85	\$337.20
4"	\$647.69	\$597.76	\$618.61	\$640.20	\$662.55
6"	\$847.75	\$1,041.68	\$1,235.61	\$1,429.54	\$1,479.47
8"	\$986.44	\$1,232.84	\$1,479.24	\$1,725.64	\$1,972.04
10"	\$1,157.24	\$1,470.43	\$1,783.62	\$2,096.81	\$2,410.00
12"	\$1,429.61	\$1,810.84	\$2,192.07	\$2,573.30	\$2,954.53

Table 5-11: Current & Proposed Rates for Non-Potable Readiness-To-Serve Charge (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$1.47	\$1.33	\$1.42	\$1.44	\$1.52
3/4"	\$2.21	\$1.99	\$2.13	\$2.16	\$2.28
1"	\$3.69	\$3.32	\$3.55	\$3.60	\$3.79
1.5"	\$7.37	\$6.63	\$7.10	\$7.20	\$7.57
2"	\$8.85	\$7.96	\$8.52	\$8.64	\$9.09
3"	\$22.12	\$19.88	\$21.30	\$21.58	\$22.71
4"	\$44.24	\$39.76	\$42.60	\$43.16	\$45.42
6"	\$99.54	\$89.46	\$95.85	\$97.11	\$102.20
8"	\$132.72	\$119.28	\$127.80	\$129.48	\$136.26
10"	\$176.96	\$159.04	\$170.40	\$172.64	\$181.68
12"	\$248.85	\$223.65	\$239.63	\$242.78	\$255.49

5.6.2 Variable Rates

The components of the variable Commodity Charge rates are added together to produce rates for each customer class. Table 5-12 shows the unit rate for each cost causation component and the final proposed FY 2022 variable Commodity Charge rates. Table 5-13 shows the proposed variable Commodity Charge rates for the Study period, Table 5-14 shows the proposed Pumping Charge rates, and Table 5-15 shows the proposed Water Reliability Charge rates for the Study period.

Table 5-12: Proposed FY 2022 Variable Commodity Charge Rates (\$/HCF)

Customer Class	Base / Delivery A	Efficiency B	Revenue Offset C	Total Commodity Rate D = A + B + C
Landscape	\$2.888	\$0.040	(\$0.533)	\$2.395
Agriculture	\$2.888	\$0.040	(\$0.837)	\$2.091

Table 5-13: Proposed Variable Commodity Charge Rates (\$/hcf)

Customer Class	Current	FY 2022	FY 2023	FY 2024	FY 2025
Landscape	\$2.327	\$2.395	\$2.524	\$2.658	\$2.802
Agriculture	\$1.977	\$2.091	\$2.193	\$2.357	\$2.508

Table 5-14: Proposed Pumping Charge Rates (\$/HCF)

Power Zone	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
Riverside Non-Potable					
Power Zone 1	\$0.112				
Power Zone 2	\$0.112				
Power Zone 3	\$0.153				
Power Zone 4	\$0.378				
Power Zone 5	\$0.657				
Power Zone 6	\$0.727				
Power Zone 201		\$0.155	\$0.214	\$0.296	\$0.409
Power Zone 202		\$0.163	\$0.238	\$0.347	\$0.506
Power Zone 203		\$0.197	\$0.254	\$0.327	\$0.421
Power Zone 204		\$0.290	\$0.305	\$0.320	\$0.336
Power Zone 205		\$0.604	\$0.634	\$0.666	\$0.699
Power Zone 206		\$0.713	\$0.749	\$0.786	\$0.825
Power Zone 207		\$0.242	\$0.254	\$0.267	\$0.280

Table 5-15: Proposed WRC Rates (\$/HCF)

Customer Class	Current	FY 2022	FY 2023	FY 2024	FY 2025
Landscape	\$0.42	\$0.42	\$0.42	\$0.42	\$0.42
Agriculture	\$0.28	\$0.35	\$0.42	\$0.42	\$0.42

6. RAINBOW COST OF SERVICE & RATES

6.1 COST OF SERVICE PROCESS

A cost of service analysis distributes a utility's revenue requirements (costs) to each customer class. There are four main steps in the cost of service analysis. Each step shown below will be described in greater detail in the following subsections.

- » Step 1 – Determine Revenue Requirements
- » Step 2 – Functionalize O&M Costs
- » Step 3 – Allocate Functionalized Costs to Cost Components
- » Step 4 – Distribute Cost Components to customer Classes

6.2 STEP 1 – DETERMINE RAINBOW REVENUE REQUIREMENTS

Rainbow rates are calculated for each year of the Study period. The District will periodically review the cost of service analysis to ensure the rates are consistent with the costs of providing service. The revenue requirements determination is based on the premise that the utility must generate annual revenues to meet O&M expenses, debt service needs, reserve levels, and capital investments needs. Revenues from sources other than Rainbow rates and charges (e.g., revenues from ad valorem property tax revenue) will be used as revenue offsets in a manner similar to Potable and Non-Potable rates.

Table 6-1 summarizes Rainbow revenue requirements for each year of the Study period. The first year, Fiscal Year 2021-22 ("FY 2022"), was based on the Board-adopted operating budget with subsequent fiscal year amounts escalated by 4.5% per year (which has been the historical expense growth experience of the District). Exceptions to this last sentence are described as follows:

- » Purchased Water costs (line 13) were adjusted for all four years to reflect the calculated purchased water cost based on the projected water usage and projected cost per AF as opposed to the original budgeted cost.
- » Purchased Power costs (line 14) were adjusted for FY 2022 to incorporate recent and near-term energy rate increases from Southern California Edison (SCE) and applied to estimated FY 2021 costs. Subsequent years were increased by 5% annually to reflect anticipated increases in energy rates from SCE.
- » MWD Readiness-to-Serve Charge (line 15) is based on MWD's ten-year financial forecast of rates and charges to member agencies.

The revenue requirement determination is based upon the premise that the District must generate annual revenues to meet O&M expenses, any debt service needs, reserve funding to achieve target levels, and capital investment needs.

Table 6-1: Rainbow Revenue Requirements

Line No.	Description	FY 2022	FY 2023	FY 2024	FY 2025
1	O&M Expenditures				
2	Source of Supply	\$81,976	\$85,665	\$89,520	\$93,548
3	Water Pumping	\$23,046	\$24,083	\$25,167	\$26,300
4	Transmission & Distribution	\$28,798	\$30,094	\$31,448	\$32,863
5	Customer Accounts	\$200	\$209	\$218	\$228
6	Replacement Reserve	\$13,000	\$13,585	\$14,196	\$14,835
7	G&A Allocation	\$10,720	\$11,202	\$11,706	\$12,233
8	Other Operating Expenses	\$961	\$1,004	\$1,049	\$1,096
9	Prop Tax Collection	\$290	\$303	\$317	\$331
10	Total O&M Expenses	\$158,991	\$166,145	\$173,621	\$181,434
11					
12	Other Expenditures				
13	Purchased Water	\$35,824	\$37,243	\$38,989	\$40,644
14	Purchased Power	\$4,643	\$4,875	\$5,119	\$5,375
15	RTS Charge	\$1,344	\$1,440	\$1,458	\$1,536
16	Total Other Expenses	\$41,811	\$43,558	\$45,566	\$47,555
17					
18	Base Rate Requirements	\$200,802	\$209,703	\$219,187	\$228,989
19					
20	Non-Operating Revenues				
21	Property Tax	(\$136,208)	(\$142,860)	(\$149,399)	(\$156,142)
22	Interest Income	(\$100)	(\$100)	(\$100)	(\$100)
23	Other - New Service Set Up & Meter Repair	(\$40)	(\$40)	(\$40)	(\$40)
24	Total Other Non-Operating Revenues	(\$136,348)	(\$143,000)	(\$149,539)	(\$156,282)

Given the small number of accounts for Non-Potable and Rainbow service areas, and since all have similar costs, the District will maintain the same Fixed System Charge (FSC) and RTS charges across all service areas. This will enhance customer understanding, assist with administrative ease, and lower long-term costs. The projected revenue from both the FSC and RTS charges must be specifically allocated to determine the remaining amount of revenue requirements to be recovered from the uniform variable commodity rate.

Table 6-2 derives the Rainbow Fixed System Revenue Requirements for the FSC (column D) and RTS (column E). The total Fixed System Revenue Requirement is the sum of the FSC and RTS, as shown in Table 6-3.

Table 6-2: FY 2022 Rainbow Fixed Revenue Requirement Derivation

Meter Size	# of Meters A	Proposed Fixed Charge B	Proposed RTS Charge C	Fixed Revenue Requirement D = A x B x 12	RTS Revenue Requirement E = A x C x 12
5/8"	0.00	\$26.29	\$1.33	\$0	\$0
3/4"	24.00	\$36.11	\$1.99	\$10,401	\$573
1"	13.00	\$55.87	\$3.32	\$8,716	\$518
1.5"	2.00	\$105.49	\$6.63	\$2,532	\$159
2"	1.00	\$125.82	\$7.96	\$1,510	\$96
Total				\$23,159	\$1,346

Table 6-3: FY 2022 Rainbow Total Fixed Revenue Requirement

Total Fixed Revenue Requirement	
Fixed Revenue Requirement	\$23,159
RTS Revenue Requirement	\$1,346
Total	\$24,505

6.3 STEP 2 – FUNCTIONALIZE COSTS

Similar to the potable water cost of service analysis, the Rainbow service area’s revenue requirements (costs) need to be distributed to customers. After determining the utility’s revenue requirement, the total cost of service is analyzed by system functions to proportionately distribute costs in relation to how that cost is generally incurred. Rainbow costs were categorized into the following functions:

- » **Fixed Revenue Requirements** - Costs that will be recovered over the Fixed System charge and RTS charge as presented in Table 6-2 and Table 6-3.
- » **Variable Revenue Requirements** are the operational costs of the utility that are not covered by the other components.
- » **Purchased Power** – Energy costs associated with pumping water into the system from the single water source (MWD).

Table 6-4 summarizes the functionalized O&M costs prior to any revenue offsets.

Table 6-4: Rainbow Functionalized Costs

Functionalized Expenses	(\$)
Fixed Revenue Requirement	\$24,505
Variable Revenue Requirement	\$171,654
Purchased Power	\$4,643
Total	\$200,802

6.4 STEP 3 – ALLOCATE FUNCTIONAL COSTS TO COST CAUSATION COMPONENTS

The functionalization of costs allows us to better allocate the costs based on how the costs are incurred. This is commonly referred to as cost causation. Essentially, cost causation means that the District incurs a cost of providing service as a result of the demands or burdens the customer places on the system and Rainbow resources. The District’s costs were allocated to the following cost causation components:

1. **Base/Delivery Costs** are those operating and capital costs of the Rainbow system associated with serving customers at a constant, or average, rate of use.
2. **Fixed Charges** represent the costs that will be recovered over the Fixed System Charge at the same rate as the potable water Fixed System Charge. These also include RTS costs incurred as a condition of purchasing water through MWD. These costs will be passed through to customers via a fixed RTS charge based on the meter size.
3. **Elevation Costs** includes energy costs incurred to pump water to higher elevations.

Table 6-5 summarizes the functionalized costs allocated to each of the cost causation component. The District has \$136,208 of ad valorem property taxes that can be used at the discretion of the District, such as offsetting the total revenue requirements. Ad valorem property tax revenue will be used to lower the Base/Delivery Costs revenue requirements.

Table 6-5: Allocation of Cost Components

Functionalized Costs	FY 2022 Budget A	Base / Delivery B	Fixed Charges C	Elevation D
Fixed Revenue Requirement	\$24,505		\$24,505	
Variable Revenue Requirement	\$171,654	\$171,654		
Purchased Power	\$4,643			\$4,643
Revenue Offset	(\$136,208)	(\$136,208)		
Total	\$64,594	\$35,446	\$24,505	\$4,643

6.5 STEP 4 – DISTRIBUTE COST COMPONENTS TO CUSTOMER CLASS AND TIERS

Since the Rainbow rate structure will consist of a Fixed System Charge and RTS Charge, and a uniform Commodity Charge and Pumping Charge, the distribution of cost components is greatly simplified. The unit costs of service are developed by dividing the total annual costs allocated to each cost causation component by the total annual service units of the respective component.

Fixed Charges

Fixed System Charge

These costs represent the revenue that will be recovered over the monthly Fixed System charge. Since these rates will be the same as potable and non-potable Fixed System charges, no further analysis is needed.

RTS Charge

These costs represent the revenue that will be recovered over the fixed monthly RTS Charge. Since these rates will be the same as the potable RTS charges, no further analysis is needed.

Commodity Charge

Delivery Component

Delivery costs include operating and capital costs of the Rainbow system associated with delivering water to all customers at a constant, or average, rate of use. Therefore, delivery costs are spread over all units of water in the Rainbow service area (12,790 hcf for each year of the Study period). Table 6-6 summarizes the calculation of the uniform rate, which divides the Delivery Cost Component (Table 6-5, bottom row) by projected sales.

Table 6-6: Delivery Component – FY 2022 Unit Rate

Delivery Component	
Variable Revenue Requirement	\$35,446
÷ Projected Sales	12,790
Monthly Unit Rate	\$2.771

Pumping Charge

All Rainbow customers fall within the same power zone (Power Zone 106) therefore, the Elevation revenue requirements were allocated equally over every unit. Table 6-7 summarizes the calculation of the uniform Pumping Charge rate. The Pumping Charge rate is further discussed in Appendix C.

Table 6-7: Pumping Charge – FY 2022 Unit Rate (\$/HCF)

Elevation Component	
Pumping Revenue Requirement	\$4,643
÷ Projected Sales	12,790
Monthly Unit Rate	\$0.363

6.6 PROPOSED RAINBOW WATER RATES

6.6.1 Fixed Charges

Table 6-8 summarizes the proposed monthly FSC for the Study period by meter size based on the potable and non-potable FSC. Table 6-9 does the same for the RTS charge by meter size.

Table 6-8: Rainbow Current & Proposed Rates for Fixed System Charges (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$30.43	\$26.29	\$27.19	\$28.13	\$29.09
3/4"	\$41.40	\$36.11	\$37.36	\$38.65	\$39.99
1"	\$62.99	\$55.87	\$57.81	\$59.81	\$61.89
1.5"	\$117.13	\$105.49	\$109.16	\$112.95	\$116.88
2"	\$139.31	\$125.82	\$130.19	\$134.71	\$139.39
3"	\$333.98	\$304.30	\$314.89	\$325.85	\$337.20
4"	\$647.69	\$597.76	\$618.61	\$640.20	\$662.55
6"	\$847.75	\$1,041.68	\$1,235.61	\$1,429.54	\$1,479.47
8"	\$986.44	\$1,232.84	\$1,479.24	\$1,725.64	\$1,972.04
10"	\$1,157.24	\$1,470.43	\$1,783.62	\$2,096.81	\$2,410.00
12"	\$1,429.61	\$1,810.84	\$2,192.07	\$2,573.30	\$2,954.53

Table 6-9: Rainbow Current & Proposed Readiness-To-Serve Charges (\$/Meter Size)

Meter Size	Current	Proposed FY 2022	Proposed FY 2023	Proposed FY 2024	Proposed FY 2025
5/8"	\$1.47	\$1.33	\$1.42	\$1.44	\$1.52
3/4"	\$2.21	\$1.99	\$2.13	\$2.16	\$2.28
1"	\$3.69	\$3.32	\$3.55	\$3.60	\$3.79
1.5"	\$7.37	\$6.63	\$7.10	\$7.20	\$7.57
2"	\$8.85	\$7.96	\$8.52	\$8.64	\$9.09
3"	\$22.12	\$19.88	\$21.30	\$21.58	\$22.71
4"	\$44.24	\$39.76	\$42.60	\$43.16	\$45.42
6"	\$99.54	\$89.46	\$95.85	\$97.11	\$102.20
8"	\$132.72	\$119.28	\$127.80	\$129.48	\$136.26
10"	\$176.96	\$159.04	\$170.40	\$172.64	\$181.68
12"	\$248.85	\$223.65	\$239.63	\$242.78	\$255.49

6.6.2 Variable Rates

Table 6-10 shows the proposed variable Commodity Charge rates, Table 6-11 shows the proposed Pumping Charge rates for the Study period. All Rainbow customers are in Pumping Zone 6.

Table 6-10: Proposed Commodity Charge Rates (\$/HCF)

Customer Class	Current	FY 2022	FY 2023	FY 2024	FY 2025
All Classes	\$2.406	\$2.771	\$2.859	\$3.003	\$3.150

Table 6-11: Proposed Pumping Charge Rates (\$/HCF)

Customer Class	Current	FY 2022	FY 2023	FY 2024	FY 2025
All Classes - Power Zone 106	\$0.350	\$0.363	\$0.381	\$0.400	\$0.420

Appendix A: Water Budget Definitions

A. WATER BUDGET DEFINITIONS

The basic definitions used to calculate water budget allotments have been provided below in order to ease understanding. However, since the District has already implemented budget-based rates, a detailed discussion has not been provided within this Study. For more information, please see Ordinance 392, Article V, Section A and Resolution 2974 on file with the District.

Single Family Residential Customer Rate Structure (also applies to Multi-Family Residential Customers)

The indoor water budget (IWB) for residential customers is determined by a customer’s household size and a proposed change to the standard consumption per person from the currently adopted 60 gallons per capita per day to 55 gallons. The 55 gallons per capita per day is California’s new standard used to calculate a water agency’s indoor use target. This new standard is described in Senate Bill 606 and Assembly Bill 1668 passed in 2018 in response to the Governor’s mandate to “Make Water Conservation a Way of Life in California.” The State requires all retail water agencies to meet water efficiency budgets based on indoor and outdoor efficiency standards. These standards are expected to be lowered further in the future.

Indoor Water Budget Calculation (Tier 1 Width)

$$IWB = \frac{(GPCD \times Household\ Size \times \# \text{ of Dwelling Units} \times Days\ of\ Service \times DF_{Indoor})}{748} + V_{Indoor}$$

Where:

- » GPCD – Gallons per capita per day. The standard consumption per person per day will be set at 55 gallons. This amount includes all indoor water use, such as showers and washing clothes and dishes.
- » Household Size – Number of residents per dwelling unit. The default and minimum value for household size is set at 3 persons per household for Single Family residential units. The default and minimum value for Multi-Family residential units is set at 2 persons per bedroom.
- » Dwelling Units – The number of dwelling units served by the meter. By way of example, a single-family residence is one dwelling unit.
- » Days of Service – The number of days of service varies with each billing period for each customer. The actual number of days of service is applied to calculate the indoor water budget for each billing period.
- » DF_{indoor} – Indoor drought factor. This part of the budget equation will be used in extreme water shortage conditions only if needed because of local supply conditions or if required by regional and/or State agencies. A lower percentage of the typical or usual indoor water budget could be allocated during extreme water shortages, supply shortage or emergency conditions. Changing the drought factor will be subject to the approval of the District’s Board of Directors. The indoor drought factor is set at 100 percent, representing a 100 percent water budget allotment, in times where no water shortage exists in the District’s service area.
- » V_{indoor} – Indoor variance. A water allotment can be adjusted to fit the unique circumstances of a customer as described in the District’s variance program.
- » 748 is the conversion unit from gallons to a billing unit of one hundred cubic feet (hcf).

For illustrative purposes, the following indoor water budget calculations for two different customers are provided.

Customer #1: Household Size = 4 persons, 1 Dwelling Unit, Days of Service in January bill = 30 days

$$IWB = \frac{55 \text{ gallons per person per day} \times 1 \text{ unit} \times 4 \text{ persons} \times 30 \text{ days} \times 100\%}{748 \text{ gallons per hcf}} = 8.82 \text{ hcf}$$

Customer #2: Household Size = 6 persons, 1 Dwelling Unit, Days of Service in January bill = 28 days

$$IWB = \frac{55 \text{ gallons per person per day} \times 1 \text{ unit} \times 6 \text{ persons} \times 28 \text{ days} \times 100\%}{748 \text{ gallons per hcf}} = 12.35 \text{ hcf}$$

The outdoor water budget (OWB) is calculated using three components: irrigated area, local weather data, and an efficiency adjustment factor as shown below.

Outdoor Water Budget Calculation (Tier 2 Width)

$$OWB = \left(\frac{(\text{Irrigated Area} \times ET_0 \times ETAF)}{1200} + V_{\text{Outdoor}} \right) \times DF_{\text{Outdoor}}$$

Where:

- » Irrigated Area, also referred to as Landscape Area (in square feet, sq. ft.), is the measured irrigated landscape area served by a specific water meter.
- » ET_0 is measured in inches of water during the billing period based on daily weather data acquired from HydroPoint Data Systems, Incorporated (HPDS). The District's service area has more than 450 individual weather microzones. The District updates the actual daily ET for each microzone through a secure link to HPDS FTP site. This allows weather changes to be accurately updated for every account in the District on a daily basis.
- » ETAF is a State-legislated efficiency standard in the form of a coefficient that adjusts the outdoor water budget value based on the crop types. Annual Average ETAF for Existing Landscape Service = 80%, Annual Average ETAF for New Landscape = 70%.
- » V_{Outdoor} – Outdoor variance. A water budget may be adjusted to fit the circumstances of any customer. If the District chooses to allow a variance program, customers need to contact the District and/or fill-out an adjustment form and return to the District with the necessary documentation.
- » DF_{Outdoor} – Outdoor drought factor. This part of the budget equation will be used in extreme water shortage conditions only if needed because of local supply conditions or if required by regional and State agencies. A lower percentage of the typical or usual outdoor water budget could be allocated during extreme drought, supply shortage or emergency conditions. Changing the drought factor will be subject to the approval of the District's Board of Directors. The outdoor drought factor is set at 100 percent, representing a 100 percent water budget allotment, in times where no water shortage exists in the District's service area.
- » 1,200 is the factor used to convert to billing units in hundred cubic feet (hcf).

For illustrative purposes, the following outdoor water budget calculations for two different customers are shown.

Customer #1 – Single Family: Landscape Area = 8,000 sq ft, ET₀ for 30-day January bill = 2.28 inches, ETAF = 0.80, no variance:

$$OWB = \frac{8,000 \text{ sq ft} \times 2.28 \text{ inches} \times .80}{1,200} \times 100\% = 12.16 \text{ hcf}$$

Customer #2 – Single Family: Landscape Area = 4,000 sq ft, ET₀ for 28-day January bill = 2.05 inches, ETAF for January = 0.80, Variance = 1 hcf per billing cycle for approved special needs:

$$OWB = \frac{4,000 \text{ sq ft} \times 2.05 \text{ inches} \times .80}{1,200} \times 100\% + 1 \text{ hcf} = 6.47 \text{ hcf}$$

In 2011, the District’s structure of 5 tiers was adopted with the width of Tiers 3 and 4 each set at 25-percent of the sum of the Tier 1 (indoor budget) plus Tier 2 (outdoor budget), collectively referred to as the Total Water Budget (TWB). Tier 5 is applicable to all water exceeding tier 4. The commodity rate per hcf for each tier escalates based on the rising cost of water supply and an efficiency component that funds water use efficiency programs including customer support and rebate programs. Note that the efficiency component is applicable to tiers 3-5 only.

Since 2011, customer awareness of efficient water use has resulted in significant reductions in residential per capita water use. Therefore, the need for and use of a large variety of water saving programs by customers has changed. The District’s future water efficiency programs will be more refined and focused, thus eliminating the need for the five-tier structure and instead utilize a proposed four-tier structure.

The indoor and outdoor budgets have been described above; Tier 4 will comprise any water in excess of Tier 3. The District is proposing to widen the third tier to 54-percent of the Outdoor Water Budget (OWB) for residential customers calculated for Tier 2. The width of Tier 3 is calculated by dividing the OWB by 65-percent (0.65) and then deducting the OWB from the result. Dividing the OWB by 65-percent effectively provides a 35-percent adjustment or allowance for inefficiencies in landscape irrigation. For simplicity in communication, the calculation to be used in the customer billing system to determine the Tier 3 width will be 54-percent times the OWB, which produces virtually the same Tier 3 width result described in the previous sentence.

Commercial Customer Rate Structure

If adopted, the commercial customer rate structure would also consist of four tiers where the total water budget (TWB) is determined based on the average water deliveries during the same billing period of the prior three years for each account. For commercial customers, the percentage of the TWB applied to Tier 1 is proposed to change from 43% to 35% in the Riverside Service Area. This percentage is equivalent to the percentage of local water sources in the rate model (Meeks & Daley, Elsinore Valley MWD, and City of Riverside totaling 7,208 AF) to the total projected water demand. 7,208 AF of local water from Table 3-1 x 435.6 to convert to hcf = 3,139,805 hcf of local groundwater; 3,139,805 hcf divided by total projected demand of 9,052,380 hcf from FY 2022’s amount in Table 1-5 = 35%. The remaining 65% of the TWB would be the width of Tier 2. Tier 3 would be 54% of the TWB, with any water deliveries in excess of Tier 3 billed at the Tier 4 rate.

Irrigation Customer Budgets

If adopted, the irrigation customer rate structure would consist of three tiers (Tiers 2-4) where the TWB is based on the same factors as the residential outdoor water budget described above. According to Article X of the California Constitution, water is a scarce resource and should be reserved for beneficial use to the fullest extent possible. In a limited water resource situation, water should be reserved to meet essential uses first before other beneficial uses. With Tier 1 essentially set at 0%, irrigation customers only receive groundwater after all essential use has been met, and the entire TWB (100%) is captured in Tier 2. Like residential customers, irrigation customers would have a Tier 3 width equal to 54% of their Tier 2 budget. Note that irrigation customers are sometimes referred to as landscape customers.

School Customer Budget

Schools with a dedicated water meter serving indoor usage has a Tier 1 indoor water budget (IWB) calculated as follows:

$$IWB_{Schools} = \frac{(Average\ Daily\ Attendance \times GPSD^{15} \times Days\ of\ Service)}{748}$$

If the school has a mixed-use meter (a single meter serving both indoor and outdoor water demand), then the Tier 2 outdoor water budget would be calculated based on the same factors as the residential outdoor budget described above. In this case, Tier 3 would be 54% of the Tier 2 budget, with any water deliveries in excess of Tier 3 billed at the Tier 4 rate.

¹⁵ GPSD = Gallons per student per day = 3 based on historical average usage of school customers in the District

Appendix B: Efficiency Rate Component

B. EFFICIENCY RATE COMPONENT

The following information pertains to water use efficiency programs that are supported by the efficiency rate component(s) of the District’s water rate structure. The District strives to match program offerings with customer needs and available funding. The District, as required by California law, accounts for revenue generated by the efficiency rate component(s) of the rate structure separately and utilizes it only for customer support programs – programs intended to raise awareness of water resources and increase the efficient use of water.

The District’s mix of customers include residences, schools, agricultural, and commercial users (example listing only). Each customer type uses water in different manners and as such efficient use by one type of customer may not be an appropriate measure of efficiency for another. The District’s 2019 Water Use Efficiency Master Plan provides opportunities and support mechanisms for the different water use sectors.

The District’s water use efficiency effort is supported both by staff employed by the District and subject matter experts (consultants) contracted through request for proposal and professional service processes. Subject matter experts may include, but are not limited to, irrigation and horticultural specialists; landscape architects and designers; plumbing contractors; and industrial process engineers.

All customers are eligible to participate in programs designed to increase efficiency and reduce water waste. The following tables define the allocation of general program support costs by service area and water rate tier. Tiers are only applicable in the Murrieta and Riverside potable water service areas.

Table 1: General Program Support Costs

General program support items associated with all service areas:	Water Budget Customers Only	Other Customers Only	Shared by All Customers	Total Budget
Brochures - Printing & Duplicating	\$ 5,000			\$ 5,000
Online Store Website O&M	\$ 6,000			\$ 6,000
Public workshops				\$ -
Conservation device support (online store)	\$ 15,000			\$ 15,000
Postage for mailing information	\$ 1,000			\$ 1,000
Labor			\$ 205,763	\$ 205,763
Overtime	\$ 3,000			\$ 3,000
Total	\$ 30,000	\$ -	\$ 205,763	\$ 235,763

Table 2: Allocation of Program Support Costs

The hcf in the table below for the Riverside Service Area is from Table 1-5 and Table 1-6 for FY 2022 in the body of the Study report (9,052,380 hcf + 1,623,300 hcf = 10,675,680 hcf; from Table below, 8,581,000 hcf + 2,094,680 hcf = 10,675,680 hcf).

Allocation of Program Support Costs (Allocated on Percent of Total Projected Water Sales By Service Area)	Projected Sales (HCF)	Projected Sales (AF)	Water Budget Customers Only	Shared by All Customers	Total By Area
Riverside Water Budget Customers	8,581,000	19,699.27	\$ 26,609	\$ 150,023	\$ 176,632
Murrieta Water Budget Customers	1,093,510	2,510.35	\$ 3,391	\$ 19,118	\$ 22,509
Non-Water Budget Customers	2,094,680	4,808.72		\$ 36,622	\$ 36,622
Total	11,769,190	27,018.34	\$ 30,000	\$ 205,763	\$ 235,763

Table 3: Allocation of Program Support Costs by Over Budget Tier (Tiers 3-4)

The hcf in the table below for the Riverside Service Area is from the Table 1-5, Tiers 3 and 4 in the body of the Study report.

Allocation of Program Support Costs by Tier	Tier	Riverside Water Budget Customers	Murrieta Water Budget Customers	Non-Water Budget Customers	
Over budget Use	Tier 3 HCF	428,899	49,947	Not applicable	
	Tier 4 HCF	325,101	45,563		
	Total HCF	754,000	95,510		
Over budget percent	Tier 3	56.9%	52.3%	Not applicable	
	Tier 4	43.1%	47.7%		
	Total	100.0%	100.0%		
					Total
Program Support Costs	Tier 3	\$ 100,474	\$ 11,771		
	Tier 4	\$ 76,158	\$ 10,738		
	Total	\$ 176,632	\$ 22,509	\$ 36,622	\$ 235,763

Murrieta and Riverside Retail Water Service Areas – Water Budget Rates

The customers within the Murrieta and Riverside potable water service areas receive a water allocation or budget for every billing period. Water use above a billing period's water budget results in the customer paying progressively higher water rates. The District includes a progressively higher efficiency rate component in each of the two over-budget rate tiers (3 and 4). The efficiency rate component funds the District's water conservation/efficiency programs.

The foundation of the District's water use efficiency portfolio is an evaluation program that is designed to support the customer and direct them to participate in the other program offerings that are best suited to their needs. The intent of the evaluation is to identify cost-effective solutions to lower water use to within the customer's water budget. A customer that is continually in Tier 4 and frequently using more than their water budget will require more programmatic support than the customer that occasionally has consumption in Tier 3. The District's evaluation consultants use a different "toolbox" for the single-family residential customer than for the large irrigation customer or the industrial water user. Most importantly, customers that find themselves in Tier 4 will also have water use in the lower Tiers as well and will usually require the support of more than one program offered by the District.

Tier 3 – Inefficient Water Use

Programs supported by funding from the Tier 3 efficiency rate component include efficiency reviews that are usually limited to water bill analysis and a focused on-site evaluation of outdoor water use and high-level review for system leaks. This simple site visit usually includes a review of irrigation scheduling and an introductory customer education about water budgets and irrigation timer programming based on the seasonal needs of the landscape plant material. Customers that find themselves slightly over budget usually realize long-term benefits from on-site assistance. The evaluator will also leave behind information about public workshops for water-wise landscaping and efficient irrigation systems.

If the property has older fixtures or appliances, the evaluator provides information about rebates for replacing non-conserving devices with more efficient models. The District participates in Southern California's regional rebate program administered by the Metropolitan Water District of Southern California (MWD). The District adds additional funding to targeted conservation devices within its retail water service areas.

Program funding to reduce residential and commercial water use in Tier 3 through on-going customer programs is outlined in the table below.

Table 4: Water Use Efficiency Programs Associated with Tier 3 Water Use

Water use Efficiency Programs			Quantity		Tier 3 Program Cost	
			Riverside	Murrieta	Riverside	Murrieta
• Tier 3						
Basic efficiency evaluation	\$ 200	each	75	15	\$ 15,000	\$ 3,000
Conservation device support (online store)	\$ 20	each	400	75	\$ 8,000	\$ 1,500
Rebate support (various devices)	\$ 50	each	120	15	\$ 6,000	\$ 750
Subtotal					\$ 29,000	\$ 5,250
Program support costs from Table 3 above					\$ 100,474	\$ 11,771
Tier 3 Total Costs					\$ 129,474	\$ 17,021
HCF in Tier 3 from Table 3 above					428,899	49,947
Total Costs per HCF					\$ 0.30	\$ 0.34

Tier 4 – Unsustainable Water Use

Programs supported by funding from the Tier 4 efficiency rate component include more detailed efficiency reviews that include water bill analysis, station-by-station review of programming and water application efficiency. The evaluator will provide monthly programming recommendations and discuss irrigation system upgrades.

Residential customers will be provided information regarding irrigation controller rebates. Additionally, if the residential customer agrees, the evaluation consultant may replace minor sprinkler components such as sprinkler bodies, bubblers, and drip emitters to immediately increase efficiency. The evaluator may demonstrate high-efficiency sprinkler nozzles and leave some products behind with installation instructions so that the customer can immediately reduce overspray and run-off. Commercial customers will be encouraged to consider the regional rebate or the Water Savings Incentive Program.

Program funding to reduce residential and commercial water use in Tier 4 through on-going customer programs is outlined in the table below.

Table 5: Water Use Efficiency Programs Associated with Tier 4 Water Use

Water use Efficiency Programs			Quantity		Tier 4 Program Cost	
			Riverside	Murrieta	Riverside	Murrieta
• Tier 4						
Advanced efficiency evaluation (residential & commercial)	\$ 400	each	100	10	\$ 40,000	\$ 4,000
Rebate support (toilets, controllers, washers, other device)	\$ 200	each	400	50	\$ 80,000	\$ 10,000
Turf Replacement	\$ 1	per sq. ft.	50,000	9,000	\$ 50,000	\$ 9,000
Conservation device support (online store)	\$ 20	each	2,000	175	\$ 40,000	\$ 3,500
Subtotal					\$ 210,000	\$ 26,500
Program support costs from Table 3 above					\$ 76,158	\$ 10,738
Tier 4 Total Costs					\$ 286,158	\$ 37,238
HCF in Tier 4 from Table 3 above					325,101	45,563
Total Costs per HCF					\$ 0.88	\$ 0.82

Lastly, program funding to help customers who are not on a water budget rate structure to use water more efficiently is outlined in the table below.

Table 6: Water Use Efficiency Programs Associated with Non-Water Budget Customer Use

Water Use Efficiency Programs					
• Nonpotable/Agricultural/March East (i.e. non-water budget customers)			Quantity		Non-Water Budget Rates
Basic efficiency evaluation (residential & commercial)	\$ 200	each	15		\$ 3,000
Toilet Rebates	\$ 260	each	10		\$ 2,600
Smart Controller Rebates	\$ 215	each	10		\$ 2,150
Commercial Fixture Replacement	\$ 100	each	10		\$ 1,000
Turf Replacement Rebates	\$ 1	per sq. ft.	-		-
Large Landscape Sprinkler Nozzles	\$ 6	each	2,500		\$ 15,000
Irrigation Controller Program (Large landscapes)	Varies by Site				\$ 5,000
Commercial/Process Evaluations	Varies by Site				-
Water Savings Incentive Program Support	Varies by Site				\$ 10,000
Subtotal					\$ 38,750
Program support costs from Table 3 above					\$ 36,622
Total Costs					\$ 75,372
HCF from Table 2 for Non-Water Budget Customers					2,094,680
Total Cost per HCF					\$ 0.04

Summary of the efficiency rate component for the Riverside Servia Area from Tables 4 through 6 above:

Tier 3 = \$0.30 per hcf

Tier 4 = \$0.88 per hcf

Nonpotable/Agricultural/March East = \$0.04 per hcf

Appendix C: Pumping Charge Rates

C. PUMPING CHARGE RATES

A significant portion of the costs allocated to water pumping are associated with the energy required to operate the pumping facilities. For rate-setting purposes the District groups customers geographically into “power zones” which are areas of similar energy costs. Pumping charges recover the cost of energy, with customers at higher elevations and further from the water source paying higher costs per unit of water. The pumping charges are determined by the highest elevation the water is pumped to prior to reaching the customer.

In order to ensure the District allocates the appropriate pumping costs to the appropriate power zones, the District hired Hansen, Allen, & Luce (HAL). HAL performed a Pumping Cost Analysis to determine the pumping cost to deliver water in the Riverside potable and non-potable systems with enough spatial resolution to delineate power zones of similar cost, and to inform rate decisions. The Pumping Cost Analysis is available upon request from the District.

Basis for the Pumping Charge Rates for Riverside Potable System

Each water source and pump station has a particular pumping cost that should be passed on to the end users in an equitable manner. This required both firm pumping cost information for each facility as well as hydraulic simulations to determine the cost of water delivered to particular areas. Areas of similar pumping cost were grouped into power zones. While costs actually differ even within a power zone, it is practical, for administrative ease, to simplify them to a single representative value. Examining the pumping costs at each model node indicated several clusters of similar values for both winter and summer hydraulic scenarios. Power zones were defined such that each cluster is contained within a single power zone. The recommended pumping rate per hundred cubic feet (hcf) of water for each power zone was computed as the demand-weighted average pumping cost (i.e., the value that best represents the typical pumping cost in the power zone, based on water demand). The District provided the average price per kilowatt-hour at each pump station, based on actual 2016–2019 power costs and 2018 conditions for water system operation and water demand. The District then took the initially calculated rates by power zone and adjusted them based on historical information regarding energy cost increases as well as projections for future energy cost increases.

To project the needed increases to the Pumping Charge rates, the District (1) compared the actual purchased power expenses incurred during fiscal years ending June 30, 2017, 2018, and 2019 with the actual June 30, 2020 expenses; (2) incorporated the energy increases already incurred during the fiscal year ending June 30, 2021; and (3) projected the energy increase for the fiscal year ending June 30, 2022. The result is a projected purchased power expense for Fiscal Year (FY) 2021-22 (or FY 2022) of \$1,845,192. The District is projecting the need for a 5% Pumping Charge rate increase for each subsequent year of the Study period based on historical trends in the prices of energy. All rates below are rounded to the third decimal place.

Power Zone	Approximate Share of Annual Water Demand *	FY 2022 Allocated Demand (hcf) A	Revenue Requirement B	FY 2022 Rate C = B ÷ A	FY 2023 Rate D = C x (1+5%)	FY 2024 Rate E = D x (1+5%)	FY 2025 Rate F = E x (1+5%)
Potable Water		Table 1-5			5% Increase		
Power Zone 101	7.2%	651,771	\$ 0	\$ 0.000	\$ 0.000	\$ 0.000	\$ 0.000
Power Zone 102	32.1%	2,905,814	\$ 406,814	\$ 0.140	\$ 0.147	\$ 0.154	\$ 0.162
Power Zone 103	23.3%	2,109,205	\$ 381,766	\$ 0.181	\$ 0.190	\$ 0.200	\$ 0.210
Power Zone 104	30.6%	2,770,028	\$ 634,336	\$ 0.229	\$ 0.240	\$ 0.252	\$ 0.265
Power Zone 105	6.8%	615,562	\$ 422,276	\$ 0.686	\$ 0.720	\$ 0.756	\$ 0.794
Total	100.0%	9,052,380	\$ 1,845,192				

* From Pumping Cost Analysis

Basis for the Pumping Charge Rates for Riverside Non-Potable System

In the non-potable water system, customers can be grouped according to the tank or reservoir that sets the hydraulic grade line for their water service. Since the pumps that move water to each tank or reservoir are known, these customer groups are also the power zones. The District Operations team confirmed which parts of the system each tank or reservoir serves. The District’s GIS team then provided locations of customer meters to be assigned to power zones. This required firm pumping cost information for each facility to determine the cost of water delivered to particular areas. The recommended pumping rate per hcf of water for each power zone was computed using the average price per kilowatt-hour at each pump station, based on actual 2016–2019 power costs. The District used the initially calculated charges by power zone and adjusted the rates based on historical information regarding energy cost increases as well as projections for future energy cost increases. For power zones 201, 202 and 203, the pumping rates are being phased-in over the four years of the Study period since the increase over current rates is significant. The uncollected revenue from the power zones being phased-in will be offset by utilizing a portion of the District’s ad valorem property tax revenue, which the Board of Directors has discretionary use.

To project the needed increases to the Pumping Charge rates, the District (1) compared the actual purchased power expenses incurred during fiscal years ending June 30, 2017, 2018, and 2019 with the actual June 30, 2020 expenses; (2) incorporated the energy increases already incurred during the fiscal year ending June 30, 2021; and (3) projected the energy increase for the fiscal year ending June 30, 2022. The result is a projected purchased power expense for Fiscal Year (FY) 2021-22 (or FY 2022) of \$820,196. The District is projecting the need for a 5% Pumping Charge rate increase for each subsequent year of the Study period based on historical trends in the prices of energy. All rates below are rounded to the third decimal place.

Power Zone	Approximate Share of Annual Water Demand *	FY 2022 Allocated Demand (hcf) A	Revenue Requirement B	FY 2022 Rate (\$/hcf) C = B ÷ A	FY 2023 Rate (\$/hcf) D = C x (1+5%)	FY 2024 Rate (\$/hcf) E = D x (1+5%)	FY 2025 Rate (\$/hcf) F = E x (1+5%)
Non-Potable Water		Table 1-6			5% Increase		
Power Zone 201	3.8%	61,196	\$ 21,419	\$ 0.350	\$ 0.368	\$ 0.386	\$ 0.405
Power Zone 202	42.4%	687,768	\$ 299,179	\$ 0.435	\$ 0.457	\$ 0.480	\$ 0.504
Power Zone 203	10.1%	164,305	\$ 59,643	\$ 0.363	\$ 0.381	\$ 0.400	\$ 0.420
Power Zone 204	0.0%	0	\$ 0	\$ 0.290	\$ 0.305	\$ 0.320	\$ 0.336
Power Zone 205	21.8%	354,302	\$ 213,998	\$ 0.604	\$ 0.634	\$ 0.666	\$ 0.699
Power Zone 206	18.3%	296,966	\$ 211,737	\$ 0.713	\$ 0.749	\$ 0.786	\$ 0.825
Power Zone 207	3.6%	58,763	\$ 14,221	\$ 0.242	\$ 0.254	\$ 0.267	\$ 0.280
Total	100.0%	1,623,300	\$ 820,196				

* From Pumping Cost Analysis

The rates for the three phased-in Power Zones are shown below. The goal was to reach the FY 2025 amounts shown in the table above by the fourth year of the Study period.

Power Zone	FY 2022 Rate (\$/hcf)	FY 2023 Rate (\$/hcf)	FY 2024 Rate (\$/hcf)	FY 2025 Rate (\$/hcf)
Phased-In Rates				
Power Zone 201	\$ 0.155	\$ 0.214	\$ 0.296	\$ 0.409
Power Zone 202	\$ 0.163	\$ 0.238	\$ 0.347	\$ 0.506
Power Zone 203	\$ 0.197	\$ 0.254	\$ 0.327	\$ 0.421

Basis for the Pumping Charge Rates for the Rainbow System

To project the needed increases to the Pumping Charge rates, the District used the adopted FY 2022 budgeted purchased power expense of \$ 4,643 divided by the projected sales to arrive at the proposed FY 2022 pumping rate. The District is projecting the need for a 5% Pumping Charge rate increase based on historical trends in the prices of energy. All rates below are rounded to the third decimal place.

Power Zone	Projected Sales (hcf) A	Revenue Requirement FY 2022 B	FY 2022 Rate (\$/hcf) C = B ÷ A	FY 2023 Rate (\$/hcf) D = C x (1+5%)	FY 2024 Rate (\$/hcf) E = D x (1+5%)	FY 2025 Rate (\$/hcf) F = E x (1+5%)
Rainbow	Table 1-7					
Power Zone 106	12,790	\$ 4,643	\$ 0.363	\$ 0.381	\$ 0.400	\$ 0.420

Appendix D: Water Reliability Charge

D. WATER RELIABILITY CHARGE (WRC)

A Water Reliability Charge (“WRC”) was established by the District’s Board of Directors on May 19, 2010 and is a rate applicable to all potable and non-potable retail water deliveries in the Riverside Service Area, including March East. The WRC was established to provide a funding source for District-paid capital projects that would: 1) increase water system reliability; 2) increase water system capacity; 3) improve the long-term sustainability of the water supply; and/or 4) enhance and improve water supply management.

A “Water Reliability Charge Revenue Use Policy” was adopted by the Board on April 17, 2013. This policy document provides definitions and eligibility criteria, lists current and planned projects specifically identified in the Administrative Record as being eligible for funding, and confirms a revenue/benefit nexus requirement. Two projects specifically identified in the Administrative Record are the Chino Desalter Phase 3 Expansion and the La Sierra Pipeline. Essentially, these two completed projects allow the District to bring water supplies from the Chino and Arlington Basins to the Riverside Service Area. This local water source benefits all customers in this service area, residential and commercial, because it reduces dependency on imported water and increases reliability during emergency and shortage situations. In addition, local supplies help the District remain in the lowest Metropolitan Water District (“MWD”) water rate tier, which benefits all customer rates.

On September 18, 2013, the District’s Board extended the application of the WRC to all agricultural water customers – customers who were formerly eligible for MWD’s Interim Agricultural Water Program (“IAWP”) and had not been previously subject to the WRC. The rate was established at \$0.07 per hcf with the intention to eventually increase the rate until it equaled the current non-agricultural rate of \$0.42 per hcf. Over the previous three-years of rate adjustments (calendar years 2018-2020), the WRC for agricultural customers increased to the current rate of \$0.28 per hcf. The WRC for this customer class is proposed to increase to \$0.35 per hcf effective July 1, 2021 and \$0.42 per hcf effective July 1, 2022.

No change is proposed to the \$0.42 per hcf rate currently in effect for non-agricultural customers in the Riverside Service Area.

Appendix E: March East Asset Replacement Surcharge

E. MARCH EAST ASSET REPLACEMENT SURCHARGE

In October 2002, the District acquired water and wastewater system infrastructure for an area known as the March Air Reserve Base (“MARB”) located adjacent to the District’s Riverside Service Area and east of the I-215 Freeway, southeast of the City of Riverside. This infrastructure was acquired from the Air Force as a result of the Defense Base Closure and Realignment Act of 1990. The area receiving water service from the District is referred to as the March East Service Area and consists of approximately 68 potable water service connections. The service area consists of the MARB cantonment and non-cantonment areas and includes about 130,000 feet of water pipelines.

The water infrastructure in the March East Service Area is significantly older than infrastructure in the Riverside Service Area since it was developed by the Air Force prior to the formation of the District. It is the District’s intent to merge the March East and Riverside Potable service areas, which are interconnected systems, in order to gain operational and administrative efficiencies. However, since the March East infrastructure is not equivalent to the Riverside infrastructure condition-wise, the Asset Replacement Reserves for each service area will be kept separate until both water systems are at an equivalent condition. To expedite funding of the much-needed infrastructure replacements in the March East Service Area, the District has utilized an “Asset Replacement Surcharge” as a volumetric-based rate since calendar year 2018. With the merger of the two service areas operations-wise, March East customer rates reflect a proportionate share of the Riverside revenue requirements plus the additional Asset Replacement requirement.

Revenue from the current Asset Replacement Surcharge rate is insufficient to pay for the annual interfund loan payments incurred between the District’s General Fund and the March East Asset Replacement Fund. The interfund loans were (or will be) established to pay for major pipeline replacement projects. To avoid an overly burdensome immediate increase to the surcharge needed to pay for the annual loan repayment obligation, the District is increasing the surcharge by 5% each year such that revenues from the surcharge will almost be sufficient to recover loan payments by the end of the four-year rate setting period.

The Table below presents the pipeline replacement projects (either actual or engineer’s estimate), less the surcharge revenue collected from inception through FY 2021 as an offset to the completed Graeber Street project. The Net Loan Amount has an annual payment based on an interest rate of 3.5% and a 30-year term.

		Project Cost	Use of Sur-charge revenue	Net Loan Amount	Interfund Loan Payment *
Projects Funded by Asset Replacement Surcharge					
Graeber Street water pipeline replacement	<i>Actual</i>	\$ 3,784,876	\$ (710,261)	\$ 3,074,615	\$ 167,171
Gilley, Adams and Dekay Street water pipeline replacement	<i>Estimated</i>	\$ 3,500,000	\$ -	\$ 3,500,000	\$ 190,300
Total		\$ 7,284,876	\$ (710,261)	\$ 6,574,615	\$ 357,471
* Based on an interfund loan with a 3.5% annual interest rate for 30 years per WMWD Board approval on May 15, 2019 for Graeber Street project; estimated to be the same terms for remaining pipeline projects when presented to the Board in FY 2021-22.					
Asset Replacement Surcharge - Sources and Uses					
FY 2017-18 revenue from surcharge (first year of surcharge)		\$ 124,779			
FY 2018-19 revenue from surcharge		\$ 288,353			
FY 2019-20 revenue from surcharge		\$ 297,129			
Use of funds for Graeber Street project		\$ (710,261)			
Surcharge revenue available at June 30, 2020		\$ -			

The Table below presents the revenue anticipated from the Asset Replacement Surcharge based on a 5% escalator and 1% increase in customer water demand. Note that the current and proposed surcharge rate per hcf is listed in the Table.

Asset Replacement Surcharge Revenue					
	Current	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25
Projected Deliveries in HCF	212,200	212,200	214,323	216,466	218,631
Rate per HCF	\$ 1.499	\$ 1.574	\$ 1.653	\$ 1.736	\$ 1.823
<i>Annual rate escalator</i>		5%	5%	5%	5%
Projected Revenue	\$ 318,088	\$ 334,003	\$ 354,276	\$ 375,785	\$ 398,564

The Table below is a cash flow statement showing projected revenue received from the surcharge during the four-year rate setting period from the Table immediately above less annual loan repayments from the first Table above.

Cash flow statement	
Surcharge revenue available at June 30, 2020	\$ -
FY 2020-21 projected revenue from surcharge	\$ 318,088
FY 2020-21 interfund loan payment	\$ (357,471)
FY 2021-22 projected revenue from surcharge	\$ 334,003
FY 2021-22 interfund loan payment	\$ (357,471)
FY 2022-23 projected revenue from surcharge	\$ 354,276
FY 2022-23 interfund loan payment	\$ (357,471)
FY 2023-24 projected revenue from surcharge	\$ 375,785
FY 2023-24 interfund loan payment	\$ (357,471)
FY 2024-25 projected revenue from surcharge	\$ 398,564
FY 2024-25 interfund loan payment	\$ (357,471)
Ending balance at end of four-year rate setting period	\$ (6,639)

Appendix F: Phase-In of Fixed System Charge for 6” and Larger Meters

F. PHASE-IN OF FIXED SYSTEM CHARGE FOR 6” AND LARGER METERS

In 2018 the District began implementing AWWA’s capacity-based rate setting methodology for its Fixed System Charge. This change in methodology resulted in the Fixed System Charge for larger meters increasing substantially compared with then-current rates. Due to the substantial increase for larger meters, the District decided to phase-in the impact of the new methodology over multiple years. The Table below presents the monthly Fixed System Charge for the various meter sizes based on the rate model for each of the four years of the rate setting period using the AWWA methodology for Years 1-4. Years 5 through 7 have an annual escalation rate of 3.5% which matches the escalation rate for Years 1 through 4. The yellow highlighted cells are the “target” or the amount that the Fixed System Charge will reach after the phase-in is complete.

	Rate Model Years				Year 5 Projected	Year 6 Projected	Year 7 Projected
	Year 1	Year 2	Year 3	Year 4			
	AWWA	AWWA	AWWA	AWWA			
6" Meter	\$ 1,334.71	\$ 1,381.30	\$ 1,429.53	\$ 1,479.47	\$ 1,531.25	\$ 1,584.84	\$ 1,640.31
8" Meter	\$ 1,779.10	\$ 1,841.19	\$ 1,905.47	\$ 1,972.04	\$ 2,041.06	\$ 2,112.50	\$ 2,186.44
10" Meter	\$ 2,373.78	\$ 2,456.59	\$ 2,542.33	\$ 2,631.12	\$ 2,723.21	\$ 2,818.52	\$ 2,917.17
12" Meter	\$ 3,334.80	\$ 3,451.15	\$ 3,571.62	\$ 3,696.36	\$ 3,825.73	\$ 3,959.63	\$ 4,098.22

The Table below presents the difference between the target year amount and the current Fixed System Charge monthly rate. The difference is then divided by the number of phase-in years to arrive at an amount to increase the rate each year (Column E). Column E’s dollar amount is added to the prior year’s rate until the target amount is reached.

	A	B	C	D=C-B	E=D/A
	Phase-in	CY 2020	Target Year	Difference	Rate Increase
Meter Size	Years	(\$/Month)	(\$/Month)	(\$/Month)	per Year
6" Meter	3	\$ 847.75	\$ 1,429.53	\$ 581.78	\$ 193.93
8" Meter	4	\$ 986.44	\$ 1,972.04	\$ 985.60	\$ 246.40
10" Meter	5	\$ 1,157.24	\$ 2,723.21	\$ 1,565.97	\$ 313.19
12" Meter	7	\$ 1,429.61	\$ 4,098.22	\$ 2,668.61	\$ 381.23

The resulting monthly Fixed System Charge for each year is presented in the Table below and are the rates that will be proposed to the District’s Board of Directors for 6” and larger meters.

		FY 2022	FY 2023	FY 2024	FY 2025
Meter Size	CY 2020	Year 1	Year 2	Year 3	Year 4
6" Meter	\$ 847.75	\$ 1,041.68	\$ 1,235.61	\$ 1,429.54	\$ 1,479.47
8" Meter	\$ 986.44	\$ 1,232.84	\$ 1,479.24	\$ 1,725.64	\$ 1,972.04
10" Meter	\$ 1,157.24	\$ 1,470.43	\$ 1,783.62	\$ 2,096.81	\$ 2,410.00
12" Meter	\$ 1,429.61	\$ 1,810.84	\$ 2,192.07	\$ 2,573.30	\$ 2,954.53

The difference between the projected revenue earned if the AWWA method was fully implemented and the projected revenue from the phased-in rate is met by utilizing a portion of the District's ad valorem property tax revenue, which the Board of Directors has discretionary use. The amount of property tax revenue allocated to the phase-in of the Fixed System Charge for 6" and larger meters is \$159,253 for Year 1 (FY 2022); \$114,039 for Year 2; \$69,041 for Year 3; and \$40,915 for Year 4.