

WALNUT VALLEY WATER DISTRICT

Domestic and Recycled Water Rate Study

Final Report / December 5, 2019



December 5, 2019

Mr. Brian Teuber
Director of Finance
Walnut Valley Water District
271 South Brea Canyon Road
Walnut, CA 91789

Subject: Domestic and Recycled Water Rate Study Report

Dear Mr. Teuber,

Raftelis is pleased to provide this Domestic and Recycled Water Rate Study Report to the Walnut Valley Water District. This report presents the analyses, rationales, and methodologies utilized in the study to determine water rates that meet the requirements of California Constitution Article XIII D, Section 6, commonly referred to as Proposition 218.

The study involved a comprehensive review of the District's current domestic and recycled water rate structures, long-term financial plan, cost requirements, and alternative rate structures to determine proposed water and recycled water rates that are in line with the District's policy objectives. The main objectives that informed the study include:

- » Developing a long-term financial plan for the water and recycled water enterprises
- » Ensuring financial sufficiency for both enterprises to fully fund operating, capital, and reserve costs
- » Developing water rates that fairly and equitably recover costs from all customer classes to maintain compliance with Proposition 218 requirements
- » Designing water rates that minimize customer impacts while encouraging water conservation

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

Sincerely,

A handwritten signature in black ink, appearing to read 'Sanjay Gaur'.

Sanjay Gaur
Vice President

A handwritten signature in black ink, appearing to read 'Nancy Phan'.

Nancy Phan
Consultant

A handwritten signature in black ink, appearing to read 'Sindhu Sundar'.

Sindhu Sundar
Associate Consultant

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1. Executive Summary

Study Background

The Walnut Valley Water District (District) engaged Raftelis in 2018 to complete a Water and Recycled Water Rate Study for 2019. The study consists of a long-range financial plan, cost of service analysis, and rate design and calculation and encompasses a five-year planning horizon with five years of approved rates beginning in February 2020.

The objectives of the 2019 Water and Recycled Water Rate Study include:

- » Develop a long-term financial plan for the water and recycled water enterprises
- » Ensure financial sufficiency for both enterprises to fully fund operating, capital, and reserve costs
- » Develop water rates that fairly and equitably recover costs from all customer classes to maintain compliance with Proposition 218 requirements
- » Design water rates that minimize customer impacts while encouraging water conservation

Current Rates

The District's current rates include a monthly meter charge, private fire protection charge, commodity rate, and pump zone surcharge. **Table 1-1** and **Table 1-2** show the current domestic and recycled water rates. Monthly meter and private fire protection charges are charged based on meter size. Commodity rates and pump zone surcharges are charged based on water usage in hundred cubic feet (ccf) per class, tier, and zone.

Table 1-1: Current Fixed Charges (\$/meter)

A	B	C	D
Line	Meter Size/Customer Class	Meter Charge	Fire Protection Charge
1	5/8" and 3/4"	\$20.54	N/A
2	1"	\$25.88	\$19.22
3	1-1/2"	\$61.14	\$19.70
4	2"	\$79.84	\$20.17
5	3"	\$163.48	N/A
6	4"	\$257.59	\$23.44
7	6"	\$489.65	\$26.81
8	8"	\$753.90	\$31.03
9	10"	N/A	\$35.23
10	Private Hydrant	N/A	\$26.81

Table 1-2: Current Commodity Rates (\$/ccf)

A	B	C	D
Line	Customer/Usage Class	Monthly Tiers (ccf)	Commodity Rate
1	Potable Commodity Rate (\$/ccf)		
2	Residential		
3	Tier I	0-12 ccf	\$3.27
4	Tier II	13-39 ccf	\$3.69
5	Tier III	40+ccf	\$3.69
6	Multi-Family		\$3.49
7	Non-Residential		\$3.55
8			
9	Recycled Commodity Rate (\$/ccf)		
10	Recycled Retail		\$1.88
11			
12	Pump Zone Surcharge (\$/ccf)		
13	Zone 1		\$0.00
14	Zone 2		\$0.22
15	Zone 3		\$0.42

Results and Recommendations

Raftelis recommends that the District implement an annual 5.0 percent revenue adjustment beginning in February 2020 and for every January in the study period thereafter. The revenue adjustment will allow the District to fully fund its operating and capital costs and build reserve balances for both the domestic and recycled water enterprises.

The proposed rate structure remains the same except for the Residential tier breakpoints. Raftelis recommends that the District update Residential Tier I as defined by the 55 gallons per capita per day standard based on Senate Bill 606 and Assembly Bill 1668. Proposed Tier I is equal to 9 ccf of water (a change from the current 12 ccf), which is the estimated essential indoor use for the District’s average Residential customer. In order to allow for efficient use of outdoor water, District staff calculated a proposed Tier II equal to 40 ccf of water based on a separate analysis, attached as **Appendix A**.

Proposed Rates

Table 1-3 and

Table 1-4 show the proposed five-year rate schedule for monthly meter charges and private fire protection charges based on the aforementioned recommendations, respectively.

Table 1-3: Proposed Meter Charges (\$/meter size)

A	B	C	D	E	F	G
Line	Meter Size	February 2020	January 2021	January 2022	January 2023	January 2024
1	5/8" or 3/4"	\$20.67	\$21.71	\$22.80	\$23.94	\$25.14
2	1"	\$32.60	\$34.23	\$35.95	\$37.75	\$39.64
3	1 1/2"	\$62.42	\$65.55	\$68.83	\$72.28	\$75.90
4	2"	\$98.20	\$103.11	\$108.27	\$113.69	\$119.38
5	3"	\$193.64	\$203.33	\$213.50	\$224.18	\$235.39
6	4"	\$301.00	\$316.05	\$331.86	\$348.46	\$365.89
7	6"	\$599.22	\$629.19	\$660.65	\$693.69	\$728.38
8	8"	\$957.09	\$1,004.95	\$1,055.20	\$1,107.96	\$1,163.36

Table 1-4: Proposed Fire Protection Charges (\$/line size)

A	B	C	D	E	F	G
Line	Fire Protection Charges	February 2020	January 2021	January 2022	January 2023	January 2024
1	Private Fire Lines					
2	1"	\$9.09	\$9.55	\$10.03	\$10.54	\$11.07
3	1 1/2"	\$9.76	\$10.25	\$10.77	\$11.31	\$11.88
4	2"	\$10.92	\$11.47	\$12.05	\$12.66	\$13.30
5	4"	\$22.28	\$23.40	\$24.57	\$25.80	\$27.09
6	6"	\$48.07	\$50.48	\$53.01	\$55.67	\$58.46
7	8"	\$92.57	\$97.20	\$102.06	\$107.17	\$112.53
8	10"	\$159.50	\$167.48	\$175.86	\$184.66	\$193.90
9						
10	Private Hydrant					
11	Per Hydrant	\$48.07	\$50.48	\$53.01	\$55.67	\$58.46

Table 1-5, Table 1-6, and Table 1-7 show the proposed five-year rate schedule for domestic water commodity rates, recycled water commodity rates, and pump zone surcharges based on the aforementioned recommendations, respectively.

Table 1-5: Proposed Commodity Rates (\$/ccf)

A	B	C	D	E	F	G	H
Line	Potable Commodity Rate (\$/ccf)	Monthly Tiers (ccf)	February 2020	January 2021	January 2022	January 2023	January 2024
1	Residential						
2	Tier I	0-9 ccf	\$2.94	\$3.09	\$3.25	\$3.42	\$3.60
3	Tier II	10-40 ccf	\$3.93	\$4.13	\$4.34	\$4.56	\$4.79
4	Tier III	41+ ccf	\$4.52	\$4.75	\$4.99	\$5.24	\$5.51
5	Multi-Family		\$3.36	\$3.53	\$3.71	\$3.90	\$4.10
6	Non-Residential		\$3.56	\$3.74	\$3.93	\$4.13	\$4.34

Table 1-6: Proposed Recycled Commodity Rates (\$/ccf)

A	B	D	E	F	G	H
Line	Recycled Commodity Rate (\$/ccf)	February 2020	January 2021	January 2022	January 2023	January 2024
1	Recycled Retail	\$1.87	\$1.97	\$2.07	\$2.18	\$2.29

Table 1-7: Proposed Pump Zone Surcharges (\$/ccf)

A	B	D	E	F	G	H
Line	Pump Zone Surcharges (\$/ccf)	February 2020	January 2021	January 2022	January 2023	January 2024
1	Zone 1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	Zone 2	\$0.24	\$0.26	\$0.28	\$0.30	\$0.32
3	Zone 3	\$0.44	\$0.47	\$0.50	\$0.53	\$0.56

2. Introduction

This section provides background that frames the development of the financial plan and rates for the domestic and recycled water systems. In addition, numbers shown in the tables in this report are rounded. Therefore, hand calculations based on the displayed numbers, such as summing or multiplying, may not equal the exact results shown in this report.

Study Background

STUDY OBJECTIVES

Walnut Valley Water District is a retail agency which serves approximately 29,000 service connections within the city of Diamond Bar and portions of neighboring cities. The District is located in the San Gabriel Valley and provides both domestic and recycled water service to its service area encompassing an area of about 29 square miles.

Raftelis last completed a rate study for the District in 2013 and was engaged by the District in 2018 to complete a Water and Recycled Water Rate Study for 2019. The 2019 study consists of a long-range financial plan, cost of service analysis, and rate design and calculation that encompasses a five-year planning horizon with five years of approved rates beginning in February 2020.

The objectives of the 2019 Water and Recycled Water Rate Study include:

- » Develop a long-term financial plan for the water and recycled water enterprises
- » Ensure financial sufficiency for both enterprises to fully fund operating, capital, and reserve costs
- » Develop water rates that fairly and equitably recover costs from all customer classes to maintain compliance with Proposition 218 requirements
- » Design water rates that minimize customer impacts while encouraging water conservation

Legal Framework

The rate-making process, especially for water agencies in California, begins with reviewing the legal requirements and framework currently in place. The major legal requirements include Proposition 218 and Article X, Section 2 of the California Constitution, which are outlined in the following sections.

CALIFORNIA CONSTITUTION – ARTICLE XIII D, SECTION 6 (PROPOSITION 218)

Proposition 218 was enacted by voters in 1996 to ensure, in part, that fees and charges imposed for ongoing delivery of a service to a property (“property-related fees and charges”) are proportional to, and do not exceed, the cost of providing service. Water service fees and charges are property-related and subject to the provisions of Proposition 218.

The principal requirements, as they relate to public water service fees and charges, are as follows:

1. Revenues derived from a property-related charge imposed by a public agency shall not exceed the costs required to provide the property-related service.
2. Revenues derived by the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.
3. The amount of the fee or charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No fee or charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.

5. A written notice of the proposed fee or charge shall be mailed to the record owner of each parcel not less than 45 days prior to a public hearing, when the agency considers all written protests against the charge.

As stated in the American Water Works Association’s (AWWA) *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1, Seventh Edition* (M1 Manual), “water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers.” Proposition 218 requires that water rates cannot be “arbitrary and capricious,” meaning that the rate-setting methodology must establish a clear nexus between costs and the rates charged.

CALIFORNIA CONSTITUTION – ARTICLE X, SECTION 2

Article X, Section 2 of the California Constitution was established in 1976 and 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 California 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.

Methodology

Step 1: Long Term Financial Plan

The first step of the study is to develop a long-term financial plan that projects the water utility’s revenues, expenses, capital project financing, annual debt service, and reserve funding. The financial plan is used to determine the revenue adjustment, which allows the water utility to recover adequate revenues to fund expenses and reserves.

Step 2: Revenue Requirement Determination for Test Year

After completing the long-term financial plan, the rate-making process can begin by determining the revenue requirement for the test year, also known as the rate-setting year. Although the first proposed revenue adjustment will be implemented in FY 2020, the test year for this study is the previous year, FY 2019, which is used to capture the rate impacts resulting from a change in rate structure without a revenue adjustment. The revenue requirement should sufficiently fund the utility’s operating and maintenance (O&M) costs, annual debt service, capital improvement plan (CIP) costs, and reserve funding as projected based on the utility’s FY 2020 budget.

Step 3: Cost of Service Analysis

The annual cost of providing water service, or the revenue requirement, is then distributed to customer classes and tiers commensurate with their use of and burden on the system. A cost of service analysis involves the following steps:

1. Functionalize costs – the different components of the revenue requirement are categorized into functions such as supply, transmission and distribution (T&D), customer service and billing, etc.
2. Allocate to cost causation components – the functionalized costs are then allocated to cost causation components such as supply, base delivery, peaking, etc.
3. Develop unit costs – unit costs for each cost causation component are determined using units of service, such as total usage, peaking units, equivalent meters, number of customers, etc. for each component.
4. Distribute cost components – the cost components are allocated to each customer class and tier using the unit costs in proportion to their demand and burden on the system.

A cost of service analysis considers both the average water demand and peak demand. Peaking costs are incurred during periods of peak consumption, most often coinciding with summertime water usage. There are additional

capacity-related costs associated with designing, constructing, operating, maintaining, and replacing facilities to meet peak demand. These peaking costs are allocated to the different customer classes based on each respective class's water consumption patterns. The patterns of usage impose additional costs for the utility and are used to determine the expense of the peaking-related facilities.

Step 4: Rate Design and Calculation

After allocating the revenue requirement to each customer class and tier, the rate design and calculation process can begin. Rates do more than simply recover costs; within the legal framework and industry standards, properly designed rates should support and optimize for the District's policy objectives. Rates also act as a public information tool in communicating these policy objectives to customers. This process also includes a rate impact analysis for all proposed water rates and sample customer bill impacts.

Step 5: Administrative Record Preparation and Rate Adoption

The final step in a rate study is to develop the administrative record in preparation for the rate adoption process. The administrative record, also known as the study report, documents the results of the rate study and presents the methodologies, rationale, justifications, and calculations utilized to determine the proposed rates. A thorough and methodological administrative record serves two important functions: maintaining defensibility in a stringent legal environment and communicating the rate adoption process to customers and important stakeholders.

3. Financial Plan

This report section discusses O&M expenses, CIP, reserve funding, projected revenue under existing rates, and revenue adjustments needed to ensure the District’s fiscal sustainability and solvency. The study period covers FY 2020 through FY 2024 and includes FY 2018 and FY 2019 where appropriate. The budget year, which for this study is FY 2020, is the year from which revenues and expenses are projected for the study period.

Current Rates

Table 3-1, **Table 3-2**, and **Table 3-3** show the District’s current domestic water, recycled water, and fire service rates, respectively. Customers are charged monthly and pay a fixed meter charge based on meter size Domestic water customers also pay commodity rates based on volume and pumping zone. Residential commodity rates are structured into three tiers, with usage within each tier charged the corresponding tier rate. Pump zone surcharges account for the costs incurred in pumping water to each zone. Recycled water customers also pay a commodity rate by water usage. Private fire customers are charged monthly and pay a fixed fire protection charge based on fire line size or per private hydrant meter.

Table 3-1: Current Monthly Meter Charges (\$/meter)

A	B	C
Line	Meter Size	Domestic and Recycled Water Meter Charge
1	5/8" and 3/4"	\$20.54
2	1"	\$25.88
3	1-1/2"	\$61.14
4	2"	\$79.84
5	3"	\$163.48
6	4"	\$257.59
7	6"	\$489.65
8	8"	\$753.90

Table 3-2: Current Commodity Rates (\$/ccf)

A	B	C	D
Line	Customer/Usage Class	Monthly Tier Widths (ccf)	Commodity Rate
1	Domestic Commodity Rate (\$/ccf)		
2	Residential		
3	Tier I	0-12 ccf	\$3.27
4	Tier II	13-39 ccf	\$3.69
5	Tier III	40+ccf	\$3.69
6	Multi-Family		\$3.49
7	Non-Residential		\$3.55
8			
9	Recycled Commodity Rate (\$/ccf)		
10	Recycled Retail		\$1.88
11			
12	Pump Zone Surcharges (\$/ccf)		
13	Zone 1		\$0.00
14	Zone 2		\$0.22
15	Zone 3		\$0.42

Table 3-3: Current Fire Protection Rates

A	B	C
Line	Fire Protection Rates	Current Rate
1	Private Fire	
2	1"	\$19.22
3	1 1/2"	\$19.70
4	2"	\$20.17
5	4"	\$23.44
6	6"	\$26.81
7	8"	\$31.03
8	10"	\$35.23
9		
10	Private Hydrant Rate	
11	Per Hydrant	\$26.81

Customer Accounts and Usage

The District is largely built out and does not expect to add any significant number of accounts from new development or redevelopment during the study period. Additionally, the District does not expect a change in water demand from each account. The District provides domestic (potable) water, recycled water, and private fire services. District staff provided customer data for FY 2018 through FY 2020; all years beyond FY 2020 do not show any increases in accounts or usage.

Table 3-4 details the accounts by service and meter size projected across the study period. The District provides domestic water service to Residential (i.e. Single-Family), Multi-Family, and Non-Residential customers.

Table 3-4: Projected Customer Accounts

A	B	C	D	E	F	G	H	I
Line	Customer Class	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Residential							
2	5/8" or 3/4"	22,929	22,947	22,968	22,968	22,968	22,968	22,968
3	1"	2,204	2,275	2,329	2,329	2,329	2,329	2,329
4	1 1/2"	133	136	144	144	144	144	144
5	2"	9	9	7	7	7	7	7
6	3"	0	0	0	0	0	0	0
7	4"	0	0	0	0	0	0	0
8	6"	0	0	0	0	0	0	0
9	8"	0	0	0	0	0	0	0
10	Total - Residential	25,275	25,367	25,448	25,448	25,448	25,448	25,448
11								
12	Multi-Family							
13	5/8" or 3/4"	3	3	3	3	3	3	3
14	1"	52	52	52	52	52	52	52
15	1 1/2"	18	18	18	18	18	18	18
16	2"	47	47	47	47	47	47	47
17	3"	0	0	0	0	0	0	0
18	4"	1	1	1	1	1	1	1
19	6"	28	28	28	28	28	28	28
20	8"	14	14	14	14	14	14	14
21	Total - Multi-Family	163	163	163	163	163	163	163
22								
23	Non-Residential							
24	5/8" or 3/4"	202	204	208	208	208	208	208
25	1"	401	406	412	412	412	412	412
26	1 1/2"	362	364	367	367	367	367	367
27	2"	460	460	460	460	460	460	460
28	3"	1	0	0	0	0	0	0
29	4"	6	4	4	4	4	4	4
30	6"	2	2	2	2	2	2	2
31	8"	2	2	2	2	2	2	2
32	Total - Non-Residential	1,436	1,442	1,455	1,455	1,455	1,455	1,455
33								
34	Recycled							
35	5/8" or 3/4"	13	13	14	14	14	14	14
36	1"	98	98	99	99	99	99	99
37	1 1/2"	43	42	42	42	42	42	42
38	2"	130	128	130	130	130	130	130

A	B	C	D	E	F	G	H	I
Line	Customer Class	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
39	3"	5	5	5	5	5	5	5
40	4"	5	5	5	5	5	5	5
41	6"	6	6	6	6	6	6	6
42	8"	2	1	1	1	1	1	1
43	Total - Recycled	302	298	302	302	302	302	302
44								
45	Fire Lines							
46	1"	27	27	27	27	27	27	27
47	1 1/2"	6	6	6	6	6	6	6
48	2"	7	7	7	7	7	7	7
49	4"	20	20	20	20	20	20	20
50	6"	161	162	162	162	162	162	162
51	8"	140	141	141	141	141	141	141
52	10"	72	72	72	72	72	72	72
53	Total - Fire Lines	433	435	435	435	435	435	435
54								
55	Private Hydrants							
56	6"	162	173	173	173	173	173	173
57	Total - Private Hydrants	162	173	173	173	173	173	173
58								
59	Total - Meters	27,771	27,878	27,976	27,976	27,976	27,976	27,976
60	Domestic Meters	26,874	26,797	26,891	26,891	26,891	26,891	26,891
61	Recycled Meters	302	298	302	302	302	302	302
62	Fire Lines	595	608	608	608	608	608	608

Table 3-5 shows the projected domestic and recycled water usage. Since customers pay both a commodity and zone pumping rate on their domestic water consumption, it is shown first by class, then by zone. Recycled water usage follows. Total consumption for both services is shown first in ccf then acre-feet (AF).

Table 3-5: Projected Customer Usage (ccf)

A	B	C	D	E	F	G	H	I
Line	Customer Class	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Domestic Usage (ccf)							
2	Residential							
3	Tier I	2,943,447	2,882,413	2,818,539	2,818,540	2,818,541	2,818,542	2,818,543
4	Tier II	1,926,714	1,853,027	1,844,039	1,844,040	1,844,041	1,844,042	1,844,043
5	Tier III	544,494	513,680	513,576	513,577	513,578	513,579	513,580
6	Multi-Family	773,505	737,332	747,686	747,687	747,688	747,689	747,690
7	Non-Residential	1,293,001	1,249,195	1,249,070	1,249,072	1,249,074	1,249,076	1,249,078
8	Total - Domestic Usage (ccf)	7,481,161	7,235,647	7,172,910	7,172,916	7,172,922	7,172,928	7,172,934
9								
10	Domestic Zone Usage (ccf)							
11	Zone 1	3,384,818	3,313,336	3,288,737	3,288,740	3,288,744	3,288,747	3,288,750
12	Zone 2	3,252,562	3,107,836	3,084,880	3,084,882	3,084,884	3,084,887	3,084,889
13	Zone 3	843,781	814,475	799,293	799,293	799,294	799,294	799,295
14	Total - Domestic Zone Usage (ccf)	7,481,161	7,235,647	7,172,910	7,172,916	7,172,922	7,172,928	7,172,934
15	Domestic Usage (AF)	17,174	16,611	16,467	16,467	16,467	16,467	16,467
16								
17	Recycled Usage (ccf)							
18	Recycled Retail	899,549	829,698	835,231	835,231	835,231	835,231	835,231
19	Total - Recycled Usage (ccf)	899,549	829,698	835,231	835,231	835,231	835,231	835,231
20	Recycled Usage (AF)	2,065	1,905	1,917	1,917	1,917	1,917	1,917

Revenues

RATE REVENUES

Table 3-6 shows the calculated water service revenues from FY 2021 and beyond, which is calculated by multiplying the current rates shown in Table 3-1, Table 3-2, and Table 3-3 and projected customer accounts and usage shown in Table 3-4 and Table 3-5. Rate revenues in FY 2019 through FY 2020 are derived from the District’s budget.

Total monthly meter charge revenues are calculated by multiplying the meter charge by meter size by total meters in each class of that size. This is then multiplied by 12 months for a full year’s worth of fixed charge revenue for that class in that meter size. Meter charge revenues for each class are added up after calculating revenues for each class’s total meters in each size. Total commodity rate and pump zone surcharge revenues are calculated by multiplying the usage in each customer type (potable or recycled water), class, and tier by the corresponding commodity rate.

For example, the monthly meter charge revenue for Residential customers in FY 2021 is calculated using the following equations where the letter reference is the column and the number reference is the row (i.e., A1 = Column A, Line 1):

$$\text{Residential monthly meter charge revenue in FY 2021} = 5/8'' \text{ or } 3/4'' \text{ meter charge} \times \text{number of } 5/8'' \text{ or } 3/4'' \text{ Residential meters in FY 2021} \times 12 \text{ months} + \dots + 8'' \text{ meter charge} \times \text{number of } 8'' \text{ Residential meters} \times 12 \text{ months}$$

$$([\text{Table 3-1 C1} \times \text{Table 3-4 F2}] + [\text{Table 3-1 C2} \times \text{Table 3-4 F3}] + [\text{Table 3-1 C3} \times \text{Table 3-4 F4}] + [\text{Table 3-1 C4} \times \text{Table 3-4 F5}] + [\text{Table 3-1 C5} \times \text{Table 3-4 F6}] + [\text{Table 3-1 C6} \times \text{Table 3-4 F7}] + [\text{Table 3-1 C7} \times \text{Table 3-4 F8}] + [\text{Table 3-1 C8} \times \text{Table 3-4 F9}]) \times 12 \text{ months} = \text{Residential monthly meter charge revenue in FY 2021} = \text{Table 3-6 C2}$$

Table 3-6: Calculated Rate Revenues

A	B	C	D	E	F
Line	Calculated Rate Revenues	FY 2021	FY 2022	FY 2023	FY 2024
1	Monthly Meter Charge				
2	Residential	\$6,496,803	\$6,496,803	\$6,496,803	\$6,496,803
3	Multi-Family	\$369,393	\$369,393	\$369,393	\$369,393
4	Non-Residential	\$931,405	\$931,405	\$931,405	\$931,405
5	Recycled	\$259,127	\$259,127	\$259,127	\$259,127
6	Total - Monthly Meter Charge	\$8,056,729	\$8,056,729	\$8,056,729	\$8,056,729
7					
8	Potable Commodity Rate (\$/ccf)				
9	Residential				
10	Tier I	\$9,216,626	\$9,216,629	\$9,216,632	\$9,216,636
11	Tier II	\$6,804,508	\$6,804,511	\$6,804,515	\$6,804,519
12	Tier III	\$1,895,099	\$1,895,103	\$1,895,107	\$1,895,110
13	Multi-Family	\$2,609,428	\$2,609,431	\$2,609,435	\$2,609,438
14	Non-Residential	\$4,434,206	\$4,434,213	\$4,434,220	\$4,434,227
15	Total - Potable Commodity Rate (\$/ccf)	\$24,959,866	\$24,959,887	\$24,959,908	\$24,959,929
16					
17	Recycled Commodity Rate (\$/ccf)				
18	Recycled Retail	\$1,570,234	\$1,570,234	\$1,570,234	\$1,570,234
19	Total - Recycled Commodity Rate (\$/ccf)	\$1,570,234	\$1,570,234	\$1,570,234	\$1,570,234
20					
21	Pump Zone Surcharges (\$/ccf)				
22	Residential	\$802,906	\$802,907	\$802,907	\$802,908
23	Multi-Family	\$97,063	\$97,063	\$97,064	\$97,064
24	Non-Residential	\$114,408	\$114,408	\$114,408	\$114,408
25	Total - Pump Zone Surcharges (\$/ccf)	\$1,014,377	\$1,014,378	\$1,014,379	\$1,014,379
26					
27	Fire Protection Rates				
28	Monthly Meter Charge				
29	Fire Protection	\$150,026	\$150,026	\$150,026	\$150,026
30	Private Hydrant	\$55,658	\$55,658	\$55,658	\$55,658
31	Total - Monthly Meter Charge	\$205,683	\$205,683	\$205,683	\$205,683
32					
33	Total - Domestic Rate Revenues	\$33,977,528	\$33,977,550	\$33,977,572	\$33,977,594
34	Fixed	\$8,003,285	\$8,003,285	\$8,003,285	\$8,003,285
35	Variable	\$25,974,243	\$25,974,265	\$25,974,287	\$25,974,309
36					
37	Total - Recycled Rate Revenues	\$1,829,361	\$1,829,361	\$1,829,361	\$1,829,361
38	Fixed	\$259,127	\$259,127	\$259,127	\$259,127
39	Variable	\$1,570,234	\$1,570,234	\$1,570,234	\$1,570,234

PROJECTED REVENUES

In addition to rate revenues, the domestic and recycled water funds each generate non-water service rate revenue. The District expects these revenues to remain constant, as shown in **Table 3-7**, with the exception of interest income, which is calculated based on the reserve interest rate and the District’s fund balances.

Table 3-7: Revenue Inflation Factors

A	B	C	D	E	F	G	H
Line	Revenue Escalation Factors	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Non-Rate Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	Reserve Interest Rate	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

Table 3-8 and **Table 3-9** show the projected revenues for domestic and recycled water, respectively. Rate revenues for years FY 2021 and beyond are derived from the calculations in **Table 3-6**.

Table 3-8: Projected Domestic Water Fund Revenues

A	B	C	D	E	F	G	H
Line	Domestic Water Revenues	Budgeted FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024
1	Rate Revenues - Fixed	\$7,862,950	\$8,003,326	\$8,003,285	\$8,003,285	\$8,003,285	\$8,003,285
2	Rate Revenues - Variable	\$25,742,018	\$25,974,225	\$25,974,243	\$25,974,265	\$25,974,287	\$25,974,309
3	Affordable Rate Discount	(\$75,000)	(\$85,000)	(\$85,000)	(\$85,000)	(\$85,000)	(\$85,000)
4	Property Tax	\$989,600	\$989,600	\$989,600	\$989,600	\$989,600	\$989,600
5	Other Revenues	\$1,967,180	\$1,953,669	\$1,953,675	\$1,953,675	\$1,953,675	\$1,953,675
6	Interest Income	\$225,000	\$225,000	\$162,473	\$157,445	\$166,779	\$180,970
7	Total - Domestic Water Revenues	\$36,711,748	\$37,060,820	\$36,998,276	\$36,993,270	\$37,002,626	\$37,016,840

Table 3-9: Projected Recycled Water Fund Revenues

A	B	C	D	E	F	G	H
Line	Recycled Water Revenues	Budgeted FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024
1	Rate Revenues - Fixed	\$253,269	\$259,127	\$259,127	\$259,127	\$259,127	\$259,127
2	Rate Revenues - Variable	\$1,515,764	\$1,570,123	\$1,570,234	\$1,570,234	\$1,570,234	\$1,570,234
3	Other Revenues	\$86,596	\$85,087	\$85,087	\$85,087	\$85,087	\$85,087
4	Total - Recycled Water Revenues	\$1,855,629	\$1,914,337	\$1,914,448	\$1,914,448	\$1,914,448	\$1,914,448

O&M Expenses

INFLATION FACTORS

Table 3-10 provides the inflation factors used in projecting O&M expenses across the study period. These factors are applied to the different expenses according to their nature to better forecast the change in these expenses over time. Raftelis worked closely with District staff to determine and verify the inflation factors to best match the District’s financial planning process.

Table 3-10: Expense Inflation Factors

A	B	C	D	E	F	G	H
Line	Expense Inflation Factors	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	General	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
2	Salary/Benefits	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
3	Utilities	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
4	Fixed Supply	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
5	Variable Supply	2.7%	2.7%	2.4%	2.4%	2.6%	2.1%
6	Cal Dom Supply	2.0%	2.0%	3.5%	3.5%	3.5%	3.5%
7	Capital	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

WATER SUPPLY COST

Table 3-11 shows the calculation of the water needed to meet domestic water demand and the breakdown of water supply by source for FY 2021 and beyond. Purchased water cost calculations for FY 2019 through FY 2020 are derived from the District’s budget. Projected domestic water demand is from **Table 3-5**.

The District estimates that a percentage of water purchased is lost during the transmission and delivery of water to its customers. This can occur through evaporation, leaks in the transmission and delivery system, etc. The District must purchase enough water to meet demand accounting for this water loss, resulting in the domestic water production in Line 3. The distribution of water production from the various water supply sources is shown in Lines 6-9. The District prioritizes water source purchases by the cost of water, purchasing as much as it can from the lowest-cost sources before using more expensive supplies. Therefore, it purchases most of its water through Three Valleys Water, a wholesale supplier that is a member agency of the Metropolitan Water District (MWD).

Table 3-11: Domestic Water Production by Source

A	B	C	D	E	F
Line	Domestic Water Production	FY 2021	FY 2022	FY 2023	FY 2024
1	Potable Water Demand (AF)	16,467	16,467	16,467	16,467
2	Water Loss Factor	6.0%	6.0%	6.0%	6.0%
3	Potable Water Produced (AF)	17,518	17,518	17,518	17,518
4					
5	Water Produced (AF)				
6	CDWC Project				
7	Tier I Usage	8	8	8	8
8	Tier II Usage	2,492	2,492	2,492	2,492
9	Three Valleys/MWD	15,018	15,018	15,018	15,018
10	Total - Water Produced (AF)	17,518	17,518	17,518	17,518

Table 3-12 shows the calculation of recycled water purchased by source for FY 2021 and beyond. Projecting the recycled water production requires accounting for the water loss factor, resulting in the recycled water production in Line 5. Based on data provided by District staff, the District produces approximately half of the recycled water

supply needed and purchases the remaining from Los Angeles County Sanitation District (LACSD). Lines 12-13 show the recycled water production by each source.

Table 3-12: Recycled Water Production by Source

A	B	C	D	E	F
Line	Recycled Water Production	FY 2021	FY 2022	FY 2023	FY 2024
1	Recycled Retail Demand (AF)	1,917	1,917	1,917	1,917
2	Recycled Wholesale Demand (AF)	151	151	151	151
3	Recycled Water Demand (AF)	2,069	2,069	2,069	2,069
4	Water Loss Factor	6.0%	6.0%	6.0%	6.0%
5	Recycled Water Produced (AF)	2,201	2,201	2,201	2,201
6					
7	Recycled Water				
8	Production	52.0%	52.0%	52.0%	52.0%
9	Purchase	48.0%	48.0%	48.0%	48.0%
10					
11	Recycled Water (AF)				
12	Production	1,144	1,144	1,144	1,144
13	Purchase	1,056	1,056	1,056	1,056
14	Total - Recycled Water (AF)	2,201	2,201	2,201	2,201

Table 3-13 lists all the fixed and variable charges assessed on the District’s imported domestic and recycled water supply by supplier. District staff provided costs by water source; future years’ costs are estimated using the expense inflation factors in **Table 3-10**.

The District’s wholesale water suppliers implement new rates at the start of each calendar year. Consequently, the District pays the previous calendar year rate for the first half of its fiscal year (July to December), then the current year’s calendar year rate for the remaining half of the fiscal year (January to June). For example, in FY 2020, the District will pay the MWD Treated Tier I 2020 Rate (Column C, Line 3) for water purchases made from July 1 to December 31. The District then will pay the MWD Treated Tier 1 2021 Rate (Column D, Line 3) for purchases made from January 1 to June 30. The District and Raftelis determined that, due to seasonal fluctuations in demand, the District purchases 55 percent of its annual supply from July to December, with the remaining 45 percent purchased from January to June.

Table 3-13: Imported Domestic and Recycled Water Supply Rates and Charges

A	B	C	D	E	F	G
Line	Unit Costs by Source	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Three Valleys/MWD					
2	MWD Variable Rates (\$/AF)					
3	Treated Tier I	\$1,078	\$1,104	\$1,130	\$1,159	\$1,183
4	Untreated Tier I	\$755	\$781	\$807	\$836	\$860
5						
6	TVMWD Surcharge	(\$10)	(\$10)	(\$10)	(\$10)	(\$10)
7						
8	Water Production Split					
9	July - December	55.0%	55.0%	55.0%	55.0%	55.0%
10	January - June	45.0%	45.0%	45.0%	45.0%	45.0%
11						
12	MWD/TVMWD Fixed Charges					
13	TVMWD Equivalent Small Meters	\$42,062	\$43,114	\$44,191	\$45,296	\$46,429
14	TVMWD Connected Capacity	\$63,234	\$64,815	\$66,435	\$68,096	\$69,799
15	TVMWD Water Use Charges	\$82,013	\$84,063	\$86,165	\$88,319	\$90,527
16	MWD Capacity Charge	\$374,328	\$383,686	\$393,278	\$403,110	\$413,188
17						
18	CDWC Project					
19	CDWC Variable Rates					
20	First Tier Volumetric Rate	\$951	\$984	\$1,019	\$1,054	\$1,091
21	Second Tier Volumetric Rate	\$370	\$383	\$396	\$410	\$425
22	Main San Gabriel Basin WaterMaster	\$175	\$175	\$175	\$175	\$175
23	Maintenance Reserve	\$5	\$5	\$5	\$5	\$5
24	Energy Costs	\$111	\$113	\$116	\$119	\$122
25	Treatment Costs	\$13	\$14	\$14	\$14	\$15
26						
27	CDWC Fixed Charges					
28	Annual Fixed Charge	\$47,075	\$48,525	\$50,020	\$51,561	\$53,150
29						
30	LACSD Recycled Water					
31	Volumetric Cost (\$/AF)	\$158	\$165	\$174	\$182	\$191

Table 3-14 shows the calculation of the fiscal year water supply costs for the District by water supply source for FY 2021 and beyond. Water supply costs for FY 2019 through FY 2020 are derived from the District’s budget. The water supply costs are calculated by multiplying the variable charges for each source by the water produced from each source and adding in fixed charges where applicable.

Table 3-14: Calculated Purchased Water Supply Cost by Source

A	B	C	D	E	F
Line	Water Purchase Cost	FY 2021	FY 2022	FY 2023	FY 2024
1	Three Valleys/MWD Costs				
2	Purchased Water Tier I	\$16,364,917	\$16,755,396	\$17,166,151	\$17,567,895
3	Surcharges	(\$150,178)	(\$150,178)	(\$150,178)	(\$150,179)
4	Connected Capacity Charge	\$64,815	\$66,435	\$68,096	\$69,799
5	Equivalent Small Meter Charge	\$43,114	\$44,191	\$45,296	\$46,429
6	Water Use Charge	\$84,063	\$86,165	\$88,319	\$90,527
7	MWD Capacity Reservation Charges	\$383,686	\$393,278	\$403,110	\$413,188
8	Total - Three Valleys/MWD Costs	\$16,790,416	\$17,195,288	\$17,620,794	\$18,037,659
9					
10	CDWC Project				
11	Purchased Water	\$962,186	\$995,862	\$1,030,717	\$1,066,792
12	Untreated MWD Tier I (Stored Water)	\$1,916,750	\$1,981,750	\$2,050,125	\$2,117,000
13	Main San Gabriel Water Master	\$437,500	\$437,500	\$437,500	\$437,500
14	Maintenance Reserve	\$12,500	\$12,500	\$12,500	\$12,500
15	Energy Costs	\$283,669	\$290,760	\$298,029	\$305,480
16	Treatment Costs	\$34,145	\$34,999	\$35,874	\$36,771
17	Annual Fixed Charge	\$48,525	\$50,020	\$51,561	\$53,150
18	Total - CDWC Project	\$3,695,275	\$3,803,392	\$3,916,307	\$4,029,194
19					
20	LACSD Recycled Water				
21	Recycled Water	\$174,685	\$183,419	\$192,590	\$202,220
22	Total - LACSD Recycled Water	\$174,685	\$183,419	\$192,590	\$202,220

Table 3-15 provides the total purchased water supply costs. Water supply costs for FY 2021 and beyond are derived from **Table 3-14**. The Pomona-Walnut-Rowland Joint Water Line Commission surcharge (Line 9) for FY 2021 and beyond is calculated by inflating the FY 2020 budget value by the Fixed supply inflation factor (**Table 3-10**, Line 4).

Table 3-15: Projected Domestic Water Supply Cost

A	B	C	D	E	F
Line	Domestic Water Supply Cost	FY 2021	FY 2022	FY 2023	FY 2024
1	General Expenses				
2	Water Supply - Purchased Water Tier I	\$16,364,917	\$16,755,396	\$17,166,151	\$17,567,895
3	Water Supply - TVMWD Surcharges	(\$150,178)	(\$150,178)	(\$150,178)	(\$150,179)
4	Water Supply - TVMWD Connected Capacity Charge	\$64,815	\$66,435	\$68,096	\$69,799
5	Water Supply - TVMWD Equiv Small Meter Charge	\$43,114	\$44,191	\$45,296	\$46,429
6	Water Supply - TVMWD Water Use Charges	\$84,063	\$86,165	\$88,319	\$90,527
7	Water Supply - PWR Surcharge	\$20,398	\$20,907	\$21,430	\$21,966
8	Water Supply - Puente Basin Water Agency	\$3,695,275	\$3,803,392	\$3,916,307	\$4,029,194
9	Water Supply - MWD Capacity Reserv. Charges	\$383,686	\$393,278	\$403,110	\$413,188
10	Total - General Expenses	\$16,364,917	\$16,755,396	\$17,166,151	\$17,567,895
11					
12	Related Expenses				
13	PWR Budget Assessment	\$38,007	\$39,147	\$40,322	\$41,531
14	Puente Basin Water Agency	\$131,189	\$135,125	\$139,178	\$143,354
15	Total - Related Expenses	\$169,196	\$174,272	\$179,500	\$184,885
16	Total - Purchased Domestic Water Expenses	\$20,675,285	\$21,193,859	\$21,738,031	\$22,273,704

Table 3-16 projects the domestic water O&M expenses, including the total purchased water costs in Line 1 equal to the summed water supply cost (Table 3-15, Line 16) for FY 2021 and beyond.

Table 3-16: Projected Domestic Water O&M Expense Summary

A	B	C	D	E	F	G	H
Line	Domestic Water Expenses	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Purchased Water	\$19,206,055	\$19,779,065	\$20,675,285	\$21,193,859	\$21,738,031	\$22,273,704
2	Operations	\$4,831,197	\$5,045,112	\$5,225,556	\$5,412,577	\$5,606,418	\$5,807,334
3	Engineering	\$1,029,623	\$1,165,970	\$1,210,655	\$1,257,068	\$1,305,277	\$1,355,353
4	Finance	\$2,257,036	\$2,201,991	\$2,283,252	\$2,367,559	\$2,455,028	\$2,545,778
5	GM/Governance	\$1,242,179	\$1,279,863	\$1,330,438	\$1,383,018	\$1,437,681	\$1,494,512
6	Administrative Services	\$2,637,003	\$2,642,788	\$2,738,894	\$2,838,556	\$2,941,908	\$3,049,088
7	General Administration	\$1,073,075	\$1,078,577	\$1,110,934	\$1,144,262	\$1,178,590	\$1,213,948
8	Employee Liability	\$1,060,875	\$1,107,000	\$1,153,125	\$1,199,250	\$1,245,375	\$1,291,500
9	Total - Domestic Water	\$33,337,044	\$34,300,366	\$35,728,139	\$36,796,149	\$37,908,309	\$39,031,216

Table 3-17 shows the total recycled water supply cost. In addition to the calculated purchased recycled water cost for LACSD (Table 3-14, Line 22) the District also pays a capacity charge to LACSD and recycled water production costs from the District. The LACSD capacity charge and District recycled water production costs are inflated in FY 2021 and beyond based on the FY 2020 budget and the Fixed Supply and Variable Supply inflation factors (Table 3-10, Lines 4-5), respectively.

Table 3-17: Projected Recycled Water Supply Cost

A	B	C	D	E	F	G	H
Line	Recycled Water Supply Cost	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	General Expenses						
2	Purchased Water - LACSD	\$176,680	\$147,798	\$174,685	\$183,419	\$192,590	\$202,220
3	Purchased Water - WVWD	\$1,500	\$1,500	\$1,580	\$1,659	\$1,742	\$1,829
4	LACSD Capacity Charge	\$73,000	\$73,000	\$74,825	\$76,696	\$78,613	\$80,578
5	Total - General Expenses	\$251,180	\$222,298	\$251,090	\$261,774	\$272,946	\$284,627
6							
7	Related Expenses						
8	Puente Basin Water Agency	\$13,902	\$14,152	\$14,577	\$15,014	\$15,464	\$15,928
9	Puente Basin Water Master	\$11,900	\$5,600	\$5,768	\$5,941	\$6,119	\$6,303
10	Total - Related Expenses	\$25,802	\$19,752	\$20,345	\$20,955	\$21,584	\$22,231
11	Total - Purchased Recycled Water Expenses	\$276,982	\$242,050	\$271,435	\$282,729	\$294,529	\$306,859

Table 3-18 adds the recycled water service’s other O&M expenses to the purchased water expenses (Table 3-17, Line 11) to provide the total O&M expenses for the service.

Table 3-18: Projected Recycled Water O&M Expense Summary

A	B	C	D	E	F	G	H
Line	Recycled Water Expenses	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Purchased Water	\$276,982	\$242,050	\$271,435	\$282,729	\$294,529	\$306,859
2	Operations	\$784,070	\$841,802	\$872,046	\$728,894	\$756,443	\$785,046
3	Engineering	\$87,105	\$98,640	\$102,420	\$106,346	\$110,425	\$114,661
4	Finance	\$25,104	\$24,491	\$25,395	\$26,333	\$27,306	\$28,315
5	GM/Governance	\$13,816	\$14,235	\$14,798	\$15,382	\$15,990	\$16,622
6	Administrative Services	\$115,100	\$130,569	\$135,306	\$140,219	\$145,313	\$150,595
7	General Administration	\$63,245	\$62,673	\$64,553	\$66,490	\$68,484	\$70,539
8	Employee Liability	\$89,125	\$93,000	\$96,875	\$100,750	\$104,625	\$108,500
9	Total - Recycled Water	\$1,454,546	\$1,507,460	\$1,582,828	\$1,467,143	\$1,523,115	\$1,581,137

Debt Service

Table 3-19 lists the existing debt service for the domestic and recycled water services. There is no current recycled water debt and the District does not propose any new debt for either service.

Table 3-19: Existing Debt Service

A	B	C	D	E	F	G	H
Line	Existing Debt Service	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Existing Debt Service - Domestic	\$1,232,750	\$1,234,500	\$1,230,000	\$1,229,500	\$1,232,750	\$1,234,500
2	Existing Debt Service - Recycled	\$0	\$0	\$0	\$0	\$0	\$0

Capital Projects

Table 3-20 provides the study period’s CIP, inflated for future dollars based on the Capital inflation factor (Table 3-10, Line 7). All projects will be rate funded, with no proposed debt funding.

Table 3-20: Inflated Capital Project Costs

A	B	C	D	E	F	G	H
Line	Capital Projects	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Asset Replacement and Refurbishment	\$5,015,467	\$5,066,700	\$2,883,700	\$2,203,400	\$2,531,500	\$1,620,100
2	New Capital	\$476,500	\$549,000	\$250,000	\$250,000	\$250,000	\$250,000
3	Recycled Water	\$497,244	\$23,700	\$1,034,000	\$3,400	\$6,600	\$547,700
4	Total - Capital Projects	\$5,989,211	\$5,639,400	\$4,167,700	\$2,456,800	\$2,788,100	\$2,417,800

Recommended Reserve Policy

The study uses the District's current adopted reserve policy, which is as follows:

- » Operating: 2 months of annual O&M expenses, less purchased water
- » Replacement: 5 years (minimum) to 10 years (maximum) of replacement CIP costs
- » Capital: 1 year (minimum) to 5 years (maximum) of planned CIP costs
- » Rate Stabilization: 125 percent to 200 percent (maximum) of annual debt service

The District's current adopted reserve policy is sufficient to mitigate against potential financial risks such as unexpected O&M or capital expenses, rate spikes, and asset failure.

Current Financial Plan

Table 3-21 shows the projected financial plan for domestic water under current rates with no revenue adjustments. The revenues generated are not sufficient to meet the domestic water service's annual operating and capital expenses, as shown by the negative net cash flow (Line 23). The District's net revenue (total revenues less O&M expenses), however, does meet the debt coverage requirements of 125 percent for the first half of the study period and falls below target from FY 2022 onward (Line 26).

Table 3-22 provides the financial plan for the recycled water service under current rates with no revenue adjustments. Due to the negative cashflow (Line 21), the District's recycled water service is unable to meet its operating and capital expenses for half of the study period.

Table 3-21: Projected Domestic Water Financial Plan (No Adjustments)

A	B	C	D	E	F	G	H
Line	Domestic Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Revenues						
2	Rate Revenues	\$33,604,968	\$33,977,551	\$33,977,528	\$33,977,550	\$33,977,572	\$33,977,594
3	Other Revenues	\$2,881,780	\$2,858,269	\$2,858,275	\$2,858,275	\$2,858,275	\$2,858,275
4	Interest Income	\$225,000	\$225,000	\$153,978	\$122,958	\$87,755	\$37,766
5	Total - Revenues	\$36,711,748	\$37,060,820	\$36,989,782	\$36,958,783	\$36,923,602	\$36,873,635
6							
7	Expenses						
8	Purchased Water	\$19,206,055	\$19,779,065	\$20,675,285	\$21,193,859	\$21,738,031	\$22,273,704
9	Operations	\$4,831,197	\$5,045,112	\$5,225,556	\$5,412,577	\$5,606,418	\$5,807,334
10	Engineering	\$1,029,623	\$1,165,970	\$1,210,655	\$1,257,068	\$1,305,277	\$1,355,353
11	Finance	\$2,257,036	\$2,201,991	\$2,283,252	\$2,367,559	\$2,455,028	\$2,545,778
12	GM/Governance	\$1,242,179	\$1,279,863	\$1,330,438	\$1,383,018	\$1,437,681	\$1,494,512
13	Administrative Services	\$2,637,003	\$2,642,788	\$2,738,894	\$2,838,556	\$2,941,908	\$3,049,088
14	General Administration	\$1,073,075	\$1,078,577	\$1,110,934	\$1,144,262	\$1,178,590	\$1,213,948
15	Employee Liability	\$1,060,875	\$1,107,000	\$1,153,125	\$1,199,250	\$1,245,375	\$1,291,500
16	Total - Expenses	\$33,337,044	\$34,300,366	\$35,728,139	\$36,796,149	\$37,908,309	\$39,031,216
17							
18	Debt and Capital						
19	Existing Debt Service	\$1,232,750	\$1,234,500	\$1,230,000	\$1,229,500	\$1,232,750	\$1,234,500
20	Rate Funded Capital	\$5,491,967	\$5,615,700	\$3,133,700	\$2,453,400	\$2,781,500	\$1,870,100
21	Total - Debt and Capital	\$6,724,717	\$6,850,200	\$4,363,700	\$3,682,900	\$4,014,250	\$3,104,600
22							
23	Net Cash Flow	(\$3,350,013)	(\$4,089,746)	(\$3,102,057)	(\$3,520,266)	(\$4,998,956)	(\$5,262,181)
24	Net Revenue	\$2,141,954	\$1,525,954	\$31,643	(\$1,066,866)	(\$2,217,456)	(\$3,392,081)
25							
26	Debt Coverage	360%	313%	196%	111%	21%	-70%
27	Debt Coverage Target	125%	125%	125%	125%	125%	125%

Table 3-22: Projected Recycled Water Financial Plan (No Adjustments)

A	B	C	D	E	F	G	H
Line	Recycled Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Revenues						
2	Rate Revenues	\$1,769,033	\$1,829,250	\$1,829,361	\$1,829,361	\$1,829,361	\$1,829,361
3	Other Revenues	\$86,596	\$85,087	\$85,087	\$85,087	\$85,087	\$85,087
4	Total - Revenues	\$1,855,629	\$1,914,337	\$1,914,448	\$1,914,448	\$1,914,448	\$1,914,448
5							
6	Expenses						
7	Purchased Water	\$276,982	\$242,050	\$271,435	\$282,729	\$294,529	\$306,859
8	Operations	\$784,070	\$841,802	\$872,046	\$728,894	\$756,443	\$785,046
9	Engineering	\$87,105	\$98,640	\$102,420	\$106,346	\$110,425	\$114,661
10	Finance	\$25,104	\$24,491	\$25,395	\$26,333	\$27,306	\$28,315
11	GM/Governance	\$13,816	\$14,235	\$14,798	\$15,382	\$15,990	\$16,622
12	Administrative Services	\$115,100	\$130,569	\$135,306	\$140,219	\$145,313	\$150,595
13	General Administration	\$63,245	\$62,673	\$64,553	\$66,490	\$68,484	\$70,539
14	Employees Liability	\$89,125	\$93,000	\$96,875	\$100,750	\$104,625	\$108,500
15	Total - Expenses	\$1,454,546	\$1,507,460	\$1,582,828	\$1,467,143	\$1,523,115	\$1,581,137
16							
17	Debt and Capital						
18	Rate Funded Capital	\$497,244	\$23,700	\$1,034,000	\$3,400	\$6,600	\$547,700
19	Total - Debt and Capital	\$497,244	\$23,700	\$1,034,000	\$3,400	\$6,600	\$547,700
20							
21	Net Cash Flow	(\$96,161)	\$383,177	(\$702,379)	\$443,905	\$384,733	(\$214,389)
22	Net Revenue	\$401,083	\$406,877	\$331,621	\$447,305	\$391,333	\$333,311
23							
24	Debt Coverage	N/A	N/A	N/A	N/A	N/A	N/A
25	Debt Coverage Target	125%	125%	125%	125%	125%	125%

Table 3-23 shows the domestic water net revenue allocation. The net revenue (**Table 3-21**, Line 24) is allocated based on percentages provided by District staff to the three main funds: Operating, Replacement, and Capital. Interest income is calculated based on the reserve interest rate (**Table 3-7**, Line 2). Note that the difference between total beginning and ending balances in Line 50 is equal to the net cash flow (**Table 3-21**, Line 23).

Table 3-24 shows the recycled water net revenue calculation, which allocates the net revenue (**Table 3-22**, Line 22). The difference between beginning and ending balances in Line 27 is equal to the net cash flow (**Table 3-22**, Line 21).

Table 3-23: Domestic Water Net Revenue Allocation

A	B	C	D	E	F	G	H
Line	Domestic Water Net Revenue Allocation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Net Revenue - Domestic Water	\$2,141,954	\$1,525,954	\$31,643	(\$1,066,866)	(\$2,217,456)	(\$3,392,081)
2							
3	Allocation Percentage to Funds						
4	Operating	-127.8%	2.0%	2.0%	2.0%	2.0%	2.0%
5	Replacement	216.1%	87.5%	88.5%	90.6%	92.1%	93.1%
6	Capital	11.7%	10.5%	9.5%	7.4%	5.9%	4.9%
7							
8	Operating						
9	Beginning Balance	\$4,985,000	\$2,247,968	\$2,278,487	\$2,279,120	\$2,257,783	\$2,213,433
10	Net Revenue Allocation	(\$2,737,032)	\$30,519	\$633	(\$21,337)	(\$44,349)	(\$67,842)
11	Ending Balance	\$2,247,968	\$2,278,487	\$2,279,120	\$2,257,783	\$2,213,433	\$2,145,592
12	Interest Income	\$49,850	\$22,480	\$22,785	\$22,791	\$22,578	\$22,134
13	Target Reserve	\$2,178,352	\$2,235,717	\$2,316,621	\$2,400,507	\$2,487,484	\$2,577,669
14	Maximum Reserve	\$2,178,352	\$2,235,717	\$2,316,621	\$2,400,507	\$2,487,484	\$2,577,669
15							
16	Replacement						
17	Beginning Balance	\$12,150,759	\$11,764,269	\$8,032,779	\$5,177,083	\$2,007,102	(\$2,566,675)
18	Net Revenue Allocation	\$4,628,978	\$1,335,209	\$28,004	(\$966,580)	(\$2,042,277)	(\$3,158,027)
19	Net Capital Projects	(\$5,015,467)	(\$5,066,700)	(\$2,883,700)	(\$2,203,400)	(\$2,531,500)	(\$1,620,100)
20	Ending Balance	\$11,764,269	\$8,032,779	\$5,177,083	\$2,007,102	(\$2,566,675)	(\$7,344,802)
21	Interest Income	\$121,508	\$117,643	\$80,328	\$51,771	\$20,071	(\$25,667)
22	Target Reserve	\$14,305,400	\$11,344,800	\$10,715,400	\$11,492,300	\$11,975,200	\$13,185,200
23	Maximum Reserve	\$27,490,600	\$26,518,900	\$26,436,000	\$27,114,200	\$27,911,800	\$28,476,200
24							
25	Capital						
26	Beginning Balance	\$1,642,801	\$1,416,310	\$1,027,535	\$780,541	\$451,593	\$70,763
27	Net Revenue Allocation	\$250,009	\$160,225	\$3,006	(\$78,948)	(\$130,830)	(\$166,212)
28	Net Capital Projects	(\$476,500)	(\$549,000)	(\$250,000)	(\$250,000)	(\$250,000)	(\$250,000)
29	Ending Balance	\$1,416,310	\$1,027,535	\$780,541	\$451,593	\$70,763	(\$345,449)
30	Interest Income	\$16,428	\$14,163	\$10,275	\$7,805	\$4,516	\$708
31	Target Reserve	\$549,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
32	Maximum Reserve	\$1,549,000	\$1,250,000	\$1,250,000	\$1,250,000	\$1,250,000	\$1,250,000
33							
34	Rate Stabilization						
35	Beginning Balance	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604
36	Net Revenue Allocation	\$0	\$0	\$0	\$0	\$0	\$0

A	B	C	D	E	F	G	H
Line	Domestic Water Net Revenue Allocation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
37	Ending Balance	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604
38	Interest Income	\$15,416	\$15,416	\$15,416	\$15,416	\$15,416	\$15,416
39	Target Reserve	\$1,540,938	\$1,543,125	\$1,537,500	\$1,536,875	\$1,540,938	\$1,543,125
40	Maximum Reserve	\$2,465,500	\$2,469,000	\$2,460,000	\$2,459,000	\$2,465,500	\$2,469,000
41							
42	Employee Liability,						
43	Beginning Balance	\$2,017,426	\$2,017,426	\$2,017,426	\$2,017,426	\$2,017,426	\$2,017,426
44							
45	Badillo Grand Insurance						
46	Beginning Balance	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
47							
48	Beginning Balances	\$22,837,590	\$19,487,577	\$15,397,831	\$12,295,773	\$8,775,508	\$3,776,552
49	Ending Balances	\$19,487,577	\$15,397,831	\$12,295,773	\$8,775,508	\$3,776,552	(\$1,485,629)
50	Difference	(\$3,350,013)	(\$4,089,746)	(\$3,102,057)	(\$3,520,266)	(\$4,998,956)	(\$5,262,181)

Table 3-24: Recycled Water Net Revenue Allocation

A	B	C	D	E	F	G	H
Line	Recycled Water Net Revenue Allocation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Net Revenue - Recycled Water	\$401,083	\$406,877	\$331,621	\$447,305	\$391,333	\$333,311
2							
3	Allocation Percentage to Funds						
4	Operating	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
5	Replacement	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%
6	Capital	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7							
8	Operating						
9	Beginning Balance	\$182,000	\$190,022	\$198,159	\$204,792	\$213,738	\$221,564
10	Net Revenue Allocation	\$8,022	\$8,138	\$6,632	\$8,946	\$7,827	\$6,666
11	Ending Balance	\$190,022	\$198,159	\$204,792	\$213,738	\$221,564	\$228,231
12	Interest Income	\$1,820	\$1,900	\$1,982	\$2,048	\$2,137	\$2,216
13	Target Reserve	\$181,407	\$195,402	\$202,420	\$180,611	\$187,327	\$194,296
14	Maximum Reserve	\$181,407	\$195,402	\$202,420	\$180,611	\$187,327	\$194,296
15							
16	Replacement						
17	Beginning Balance	\$1,286,587	\$1,182,404	\$1,557,443	\$848,432	\$1,283,390	\$1,660,297
18	Net Revenue Allocation	\$393,061	\$398,739	\$324,988	\$438,359	\$383,506	\$326,645
19	Net Capital Projects	(\$497,244)	(\$23,700)	(\$1,034,000)	(\$3,400)	(\$6,600)	(\$547,700)
20	Ending Balance	\$1,182,404	\$1,557,443	\$848,432	\$1,283,390	\$1,660,297	\$1,439,242
21	Interest Income	\$12,866	\$11,824	\$15,574	\$8,484	\$12,834	\$16,603
22	Target Reserve	\$1,615,400	\$3,245,400	\$2,854,700	\$2,947,200	\$2,978,800	\$2,567,600
23	Maximum Reserve	\$4,183,000	\$4,243,000	\$3,292,500	\$3,345,400	\$4,028,100	\$3,598,200
24							
25	Beginning Balances	\$1,468,587	\$1,372,426	\$1,755,603	\$1,053,223	\$1,497,128	\$1,881,861
26	Ending Balances	\$1,372,426	\$1,755,603	\$1,053,223	\$1,497,128	\$1,881,861	\$1,667,473
27	Difference	(\$96,161)	\$383,177	(\$702,379)	\$443,905	\$384,733	(\$214,389)

Proposed Financial Plan

Raftelis recommends an annual revenue adjustments, shown in **Table 3-25**, across the entire study period for both the domestic and recycled water services to balance the need for additional revenue and the need for stable rate adjustments for the District’s customers. The proposed adjustments will also better support the District in meeting its reserve targets towards the end of the end of the study period.

Table 3-25: Proposed Revenue Adjustments

A	B	C	D	E	F	G
Line	Revenue Adjustment	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Domestic Water	5.0%	5.0%	5.0%	5.0%	5.0%
2	Recycled Water	5.0%	5.0%	5.0%	5.0%	5.0%
3	Proposed Month Effective	February	January	January	January	January

Table 3-26 shows the proposed financial plan incorporating the proposed revenue adjustments. Since the District is undertaking significant capital improvements in FY 2020 and FY 2021, there remains some revenue shortfall in Line 25, which will be met with reserve funds. However, in subsequent years, revenues are sufficient to meet operating and capital needs, the latter reducing significantly in the study period out years.

Table 3-27 shows the resulting recycled water financial plan incorporating the proposed revenue adjustments. The District shows a positive cashflow in all years except FY 2019 and FY 2021 in Line 22 due to greater capital expenses. The District will use reserve funds to meet this shortfall.

Table 3-26: Projected Domestic Water Financial Plan (Proposed Adjustments)

A	B	C	D	E	F	G	H
Line	Domestic Water Cash Flow	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Revenues						
2	Rate Revenues	\$33,604,968	\$33,977,551	\$33,977,528	\$33,977,550	\$33,977,572	\$33,977,594
3	Revenue Adjustments	\$0	\$849,439	\$2,590,787	\$4,419,205	\$6,339,047	\$8,354,883
4	Other Revenues	\$2,881,780	\$2,858,269	\$2,858,275	\$2,858,275	\$2,858,275	\$2,858,275
5	Interest Income	\$225,000	\$225,000	\$162,473	\$157,445	\$166,779	\$180,970
6	Total - Revenues	\$36,711,748	\$37,910,259	\$39,589,063	\$41,412,475	\$43,341,673	\$45,371,723
7							
8	Expenses						
9	Purchased Water	\$19,206,055	\$19,779,065	\$20,675,285	\$21,193,859	\$21,738,031	\$22,273,704
10	Operations	\$4,831,197	\$5,045,112	\$5,225,556	\$5,412,577	\$5,606,418	\$5,807,334
11	Engineering	\$1,029,623	\$1,165,970	\$1,210,655	\$1,257,068	\$1,305,277	\$1,355,353
12	Finance	\$2,257,036	\$2,201,991	\$2,283,252	\$2,367,559	\$2,455,028	\$2,545,778
13	GM/Governance	\$1,242,179	\$1,279,863	\$1,330,438	\$1,383,018	\$1,437,681	\$1,494,512
14	Administrative Services	\$2,637,003	\$2,642,788	\$2,738,894	\$2,838,556	\$2,941,908	\$3,049,088
15	General Administration	\$1,073,075	\$1,078,577	\$1,110,934	\$1,144,262	\$1,178,590	\$1,213,948
16	Employee Liability	\$1,060,875	\$1,107,000	\$1,153,125	\$1,199,250	\$1,245,375	\$1,291,500
17	Total - Expenses	\$33,337,044	\$34,300,366	\$35,728,139	\$36,796,149	\$37,908,309	\$39,031,216
18							
19	Debt and Capital						
20	Existing Debt Service	\$1,232,750	\$1,234,500	\$1,230,000	\$1,229,500	\$1,232,750	\$1,234,500
21	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
22	Rate Funded Capital	\$5,491,967	\$5,615,700	\$3,133,700	\$2,453,400	\$2,781,500	\$1,870,100
23	Total - Debt and Capital	\$6,724,717	\$6,850,200	\$4,363,700	\$3,682,900	\$4,014,250	\$3,104,600
24							
25	Net Cash Flow	(\$3,350,013)	(\$3,240,308)	(\$502,776)	\$933,427	\$1,419,115	\$3,235,907
26	Net Revenue	\$2,141,954	\$2,375,392	\$2,630,924	\$3,386,827	\$4,200,615	\$5,106,007
27							
28	Debt Coverage	360%	382%	408%	473%	542%	618%
29	Debt Coverage Target	125%	125%	125%	125%	125%	125%

Table 3-27: Projected Recycled Water Financial Plan (Proposed Adjustments)

A	B	C	D	E	F	G	H
Line	Recycled Water Financial Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Revenues						
2	Rate Revenues	\$1,769,033	\$1,829,250	\$1,829,361	\$1,829,361	\$1,829,361	\$1,829,361
3	Revenue Adjustments	\$0	\$45,731	\$139,489	\$237,931	\$341,296	\$449,829
4	Other Revenues	\$86,596	\$85,087	\$85,087	\$85,087	\$85,087	\$85,087
5	Total - Revenues	\$1,855,629	\$1,960,068	\$2,053,937	\$2,152,379	\$2,255,744	\$2,364,277
6							
7	Expenses						
8	Purchased Water	\$276,982	\$242,050	\$271,435	\$282,729	\$294,529	\$306,859
9	Operations	\$784,070	\$841,802	\$872,046	\$728,894	\$756,443	\$785,046
10	Engineering	\$87,105	\$98,640	\$102,420	\$106,346	\$110,425	\$114,661
11	Finance	\$25,104	\$24,491	\$25,395	\$26,333	\$27,306	\$28,315
12	GM/Governance	\$13,816	\$14,235	\$14,798	\$15,382	\$15,990	\$16,622
13	Administrative Services	\$115,100	\$130,569	\$135,306	\$140,219	\$145,313	\$150,595
14	General Administration	\$63,245	\$62,673	\$64,553	\$66,490	\$68,484	\$70,539
15	Employee Liability	\$89,125	\$93,000	\$96,875	\$100,750	\$104,625	\$108,500
16	Total - Expenses	\$1,454,546	\$1,507,460	\$1,582,828	\$1,467,143	\$1,523,115	\$1,581,137
17							
18	Debt and Capital						
19	Rate Funded Capital	\$497,244	\$23,700	\$1,034,000	\$3,400	\$6,600	\$547,700
20	Total - Debt and Capital	\$497,244	\$23,700	\$1,034,000	\$3,400	\$6,600	\$547,700
21							
22	Net Cash Flow	(\$96,161)	\$428,908	(\$562,891)	\$681,836	\$726,029	\$235,440
23	Net Revenue	\$401,083	\$452,608	\$471,109	\$685,236	\$732,629	\$783,140

Table 3-28: Domestic Water Net Revenue Allocations (Proposed Adjustments)

A	B	C	D	E	F	G	H
Line	Domestic Water Net Revenue Allocation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Net Revenue - Domestic Water	\$2,141,954	\$2,375,392	\$2,630,924	\$3,386,827	\$4,200,615	\$5,106,007
2							
3	Allocation Percentage to Funds						
4	Operating	-127.8%	2.0%	2.0%	2.0%	2.0%	2.0%
5	Replacement	216.1%	87.5%	88.5%	90.6%	92.1%	93.1%
6	Capital	11.7%	10.5%	9.5%	7.4%	5.9%	4.9%
7							
8	Operating						
9	Beginning Balance	\$4,985,000	\$2,247,968	\$2,295,476	\$2,348,094	\$2,415,831	\$2,499,843
10	Net Revenue Allocation	(\$2,737,032)	\$47,508	\$52,618	\$67,737	\$84,012	\$102,120
11	Ending Balance	\$2,247,968	\$2,295,476	\$2,348,094	\$2,415,831	\$2,499,843	\$2,601,963
12	Interest Income	\$49,850	\$22,480	\$22,955	\$23,481	\$24,158	\$24,998
13	Target Reserve	\$2,178,352	\$2,235,717	\$2,316,621	\$2,400,507	\$2,487,484	\$2,577,669
14	Maximum Reserve	\$2,178,352	\$2,235,717	\$2,316,621	\$2,400,507	\$2,487,484	\$2,577,669
15							
16	Replacement						
17	Beginning Balance	\$12,150,759	\$11,764,269	\$8,776,037	\$8,220,705	\$9,085,770	\$10,423,036
18	Net Revenue Allocation	\$4,628,978	\$2,078,468	\$2,328,368	\$3,068,465	\$3,868,766	\$4,753,693
19	Net Capital Projects	(\$5,015,467)	(\$5,066,700)	(\$2,883,700)	(\$2,203,400)	(\$2,531,500)	(\$1,620,100)
20	Ending Balance	\$11,764,269	\$8,776,037	\$8,220,705	\$9,085,770	\$10,423,036	\$13,556,629
21	Interest Income	\$121,508	\$117,643	\$87,760	\$82,207	\$90,858	\$104,230
22	Target Reserve	\$14,305,400	\$11,344,800	\$10,715,400	\$11,492,300	\$11,975,200	\$13,185,200
23	Maximum Reserve	\$27,490,600	\$26,518,900	\$26,436,000	\$27,114,200	\$27,911,800	\$28,476,200
24							
25	Capital						
26	Beginning Balance	\$1,642,801	\$1,416,310	\$1,116,726	\$1,116,664	\$1,117,289	\$1,115,125
27	Net Revenue Allocation	\$250,009	\$249,416	\$249,938	\$250,625	\$247,836	\$250,194
28	Net Capital Projects	(\$476,500)	(\$549,000)	(\$250,000)	(\$250,000)	(\$250,000)	(\$250,000)
29	Ending Balance	\$1,416,310	\$1,116,726	\$1,116,664	\$1,117,289	\$1,115,125	\$1,115,320
30	Interest Income	\$16,428	\$14,163	\$11,167	\$11,167	\$11,173	\$11,151
31	Target Reserve	\$549,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
32	Maximum Reserve	\$1,549,000	\$1,250,000	\$1,250,000	\$1,250,000	\$1,250,000	\$1,250,000
33							
34	Rate Stabilization						
35	Beginning Balance	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604

A	B	C	D	E	F	G	H
Line	Domestic Water Net Revenue Allocation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
36	Net Revenue Allocation	\$0	\$0	\$0	\$0	\$0	\$0
37	Ending Balance	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604	\$1,541,604
38	Interest Income	\$15,416	\$15,416	\$15,416	\$15,416	\$15,416	\$15,416
39	Target Reserve	\$1,540,938	\$1,543,125	\$1,537,500	\$1,536,875	\$1,540,938	\$1,543,125
40	Maximum Reserve	\$2,465,500	\$2,469,000	\$2,460,000	\$2,459,000	\$2,465,500	\$2,469,000
41							
42	Employee Liability						
43	Beginning Balance	\$2,017,426	\$2,017,426	\$2,017,426	\$2,017,426	\$2,017,426	\$2,017,426
44							
45	Badillo Grand Insurance						
46	Beginning Balance	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000	\$500,000
47							
48	Beginning Balances	\$22,837,590	\$19,487,577	\$16,247,269	\$15,744,493	\$16,677,920	\$18,097,035
49	Ending Balances	\$19,487,577	\$16,247,269	\$15,744,493	\$16,677,920	\$18,097,035	\$21,332,942
50	Difference	(\$3,350,013)	(\$3,240,308)	(\$502,776)	\$933,427	\$1,419,115	\$3,235,907

Table 3-29: Recycled Water Net Revenue Allocations (Proposed Adjustments)

A	B	C	D	E	F	G	H
Line	Recycled Water Net Revenue Allocation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Net Revenue - Recycled Water	\$401,083	\$452,608	\$471,109	\$685,236	\$732,629	\$783,140
2							
3	Allocation Percentage to Funds						
4	Operating	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
5	Replacement	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%
6	Capital	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7							
8	Operating						
9	Beginning Balance	\$182,000	\$190,022	\$199,074	\$208,496	\$222,201	\$236,853
10	Net Revenue Allocation	\$8,022	\$9,052	\$9,422	\$13,705	\$14,653	\$15,663
11	Ending Balance	\$190,022	\$199,074	\$208,496	\$222,201	\$236,853	\$252,516
12	Interest Income	\$1,820	\$1,900	\$1,991	\$2,085	\$2,222	\$2,369
13	Target Reserve	\$181,407	\$195,402	\$202,420	\$180,611	\$187,327	\$194,296
14	Maximum Reserve	\$181,407	\$195,402	\$202,420	\$180,611	\$187,327	\$194,296
15							
16	Replacement						
17	Beginning Balance	\$1,286,587	\$1,182,404	\$1,602,260	\$1,029,947	\$1,698,079	\$2,409,455
18	Net Revenue Allocation	\$393,061	\$443,556	\$461,687	\$671,531	\$717,976	\$767,477
19	Net Capital Projects	(\$497,244)	(\$23,700)	(\$1,034,000)	(\$3,400)	(\$6,600)	(\$547,700)
20	Ending Balance	\$1,182,404	\$1,602,260	\$1,029,947	\$1,698,079	\$2,409,455	\$2,629,233
21	Interest Income	\$12,866	\$11,824	\$16,023	\$10,299	\$16,981	\$24,095
22	Target Reserve	\$1,615,400	\$3,245,400	\$2,854,700	\$2,947,200	\$2,978,800	\$2,567,600
23	Maximum Reserve	\$4,183,000	\$4,243,000	\$3,292,500	\$3,345,400	\$4,028,100	\$3,598,200
24							
25	Beginning Balances	\$1,468,587	\$1,372,426	\$1,801,334	\$1,238,443	\$1,920,279	\$2,646,308
26	Ending Balances	\$1,372,426	\$1,801,334	\$1,238,443	\$1,920,279	\$2,646,308	\$2,881,749
27	Difference	(\$96,161)	\$428,908	(\$562,891)	\$681,836	\$726,029	\$235,440

Figure 3-1 shows the proposed revenue adjustments and resulting debt coverage. Note that only domestic water service has current debt and the proposed adjustments allow the service to more than meet its debt coverage requirements.

Figure 3-1: Revenue Adjustments and Debt Coverage (Proposed Adjustments)

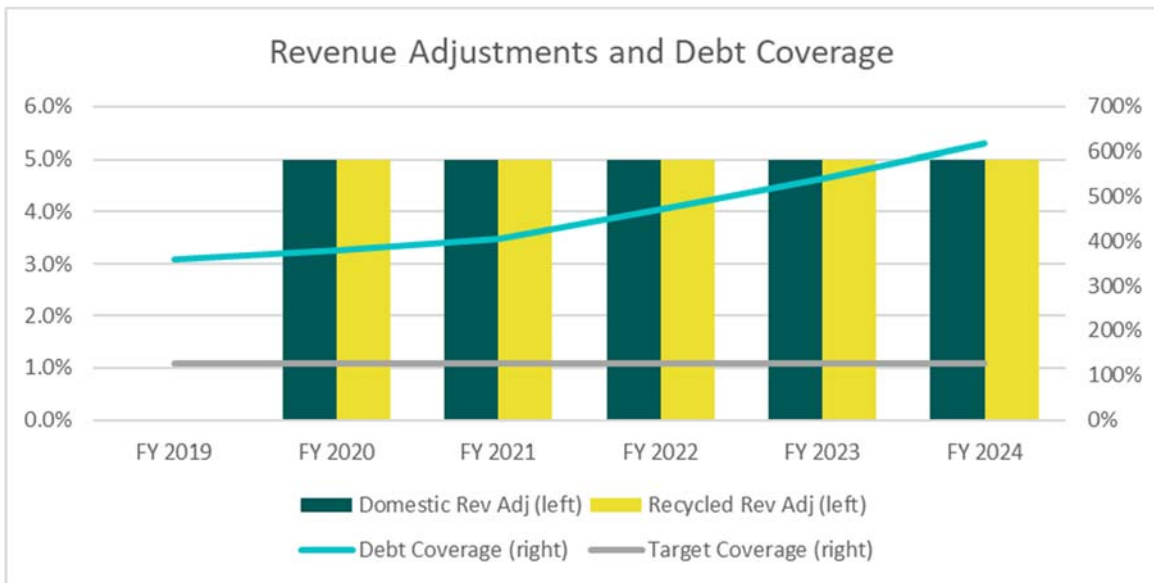


Figure 3-2 and **Figure 3-3** compare the current and proposed financial plans. The bars represent the District’s various expenses, with the yellow bar representing the net cash flow. The solid black line shows the District’s revenues under current rates, which are insufficient to meet the District’s costs. The revenue for each service under proposed rates is shown with the segmented black line and shows the District increasingly able to meet these obligations while minimizing significant rate increases.

Figure 3-2: Domestic Water Financial Plan (Proposed Adjustments)

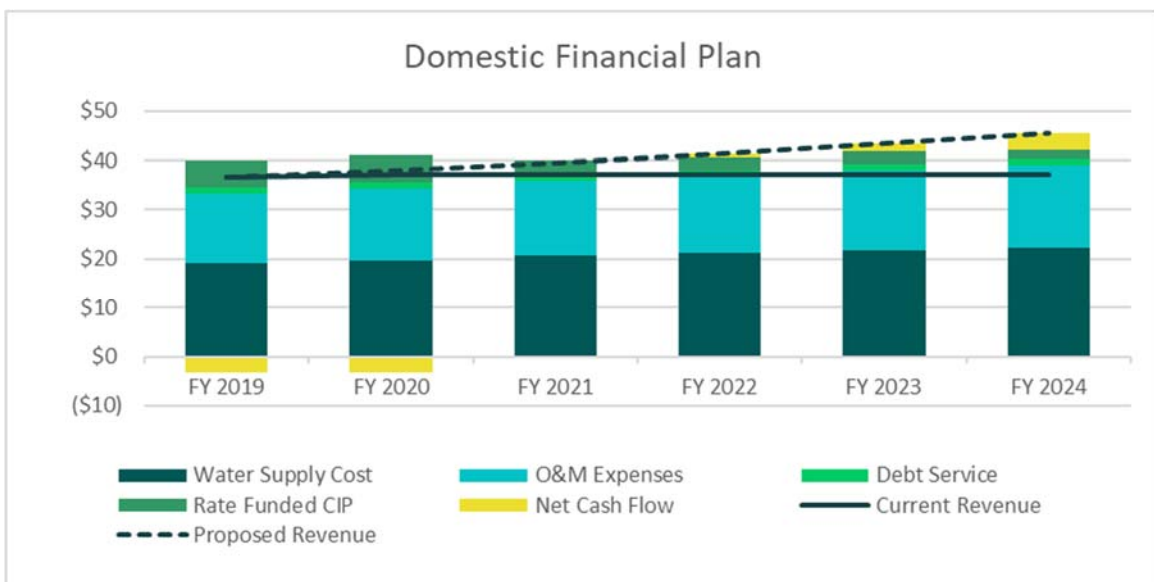


Figure 3-3: Recycled Water Financial Plan (Proposed Adjustments)

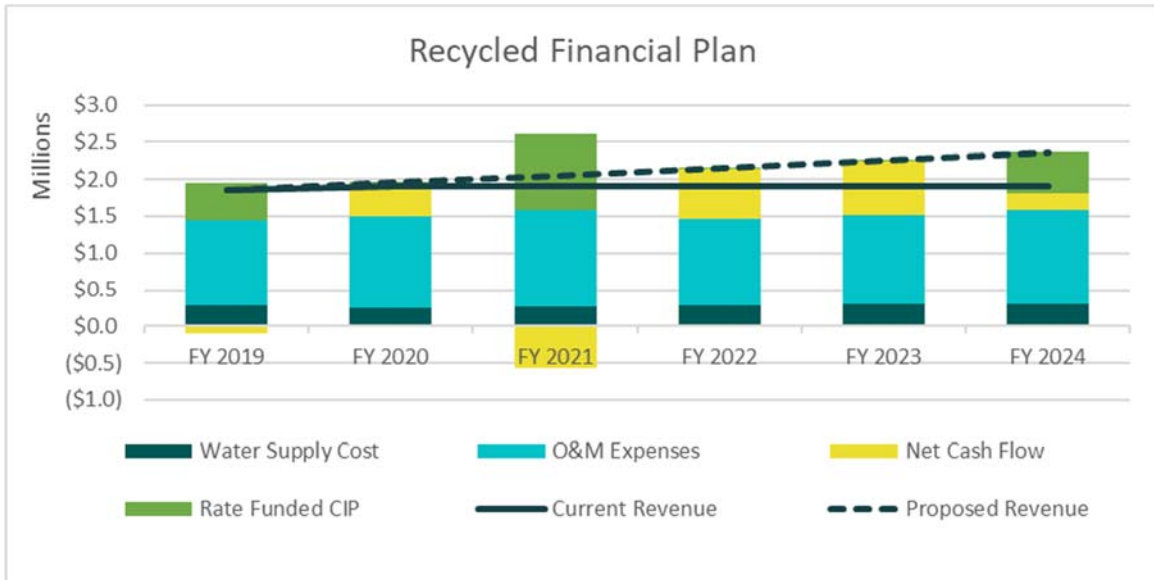


Figure 3-4 and Figure 3-5 show how the services’ reserve balances for the study period meet the limitations of the maximum and minimum target balances set by the District’s reserve policies. The domestic water utility is able to steadily increase reserves while still remaining below its maximum target. The recycled water utility is also steadily increasing reserves. The reserve targets for recycled water fluctuate from year to year due to sporadic jumps in the recycled water CIP.

Figure 3-4: Domestic Water Projected Ending Balances (Proposed Adjustments)

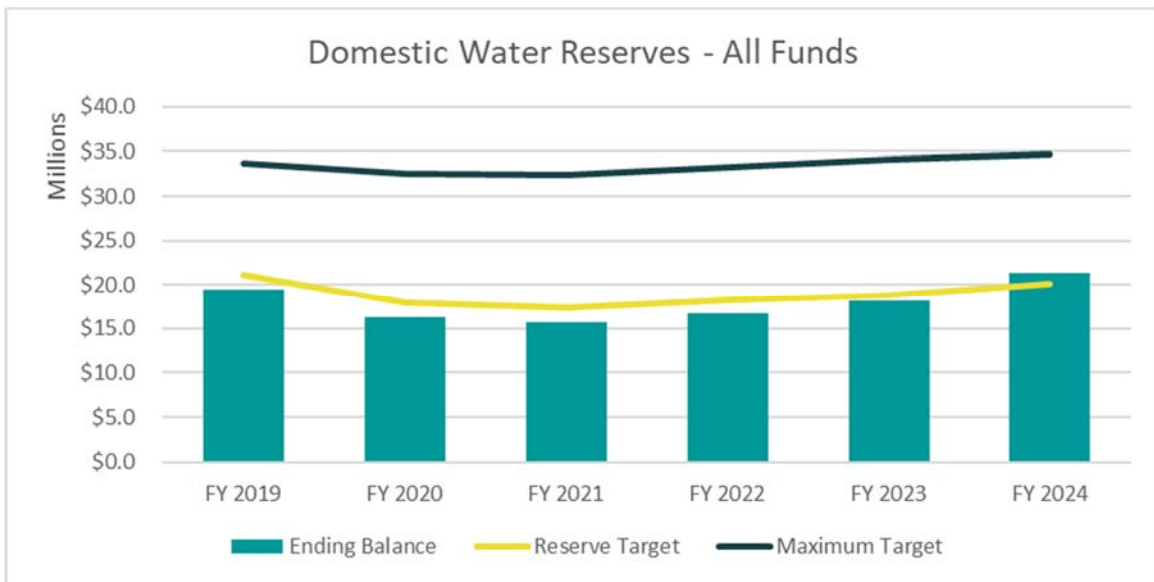
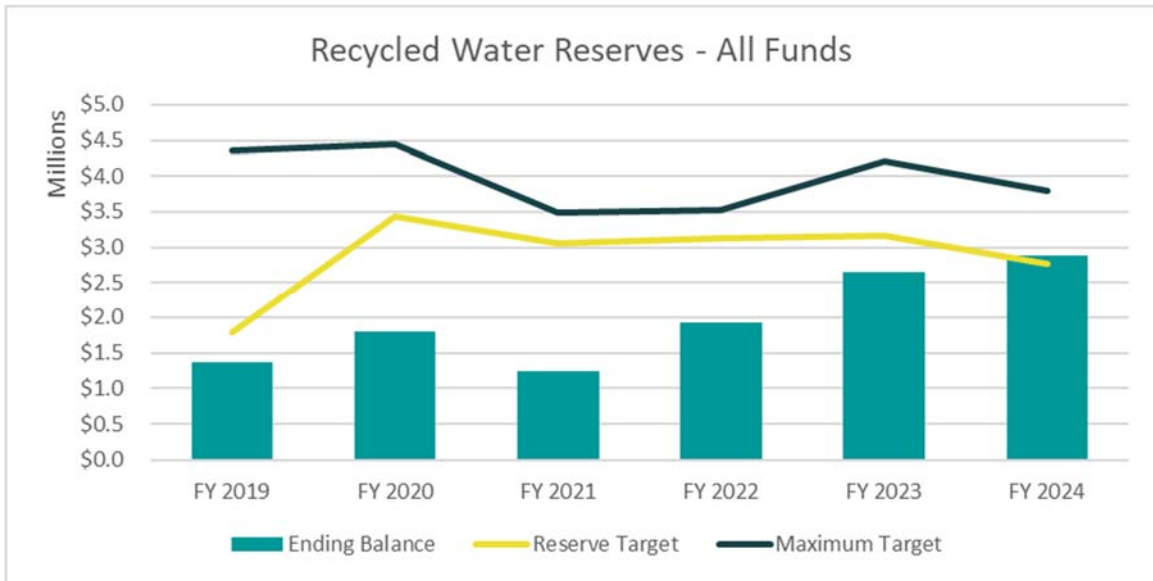


Figure 3-5: Recycled Water Projected Ending Balances (Proposed Adjustments)



4. Cost of Service Analysis

This section of the report outlines the cost of service analysis, which allocates the revenue requirement to each cost component and customer class.

Process and Approach

The first step in the cost of service analysis process is to determine the revenue requirement, which is based on the results of the financial plan and the proposed revenue adjustments. The framework and methodology utilized to develop the cost of service analysis and apportion the revenue requirement to each customer class and tier is informed by the processes outlined in the M1 Manual.

Cost of service analyses are tailored specifically to meet the unique needs of each utility. However, there are four distinct steps in every analysis to recover costs from customer classes in accurate, equitable, and defensible manner:

1. Cost functionalization: O&M expenses and capital assets are categorized by their function in the system. Functions include supply, production, T&D, customer service, billing, etc.
2. Cost causation component allocation: the functionalized costs are then allocated to cost causation components based on their burden on the system. The cost causation components include supply, peaking, delivery, meter, customer, etc. The revenue requirement is allocated accordingly to the cost causation components and results in the total revenue requirement for each cost causation component.
3. Unit cost development: the revenue requirement for each cost causation component is divided by the appropriate units of service to determine the unit cost for each cost causation component.
4. Revenue requirement distribution: the unit cost is utilized to distribute the revenue requirement for each cost causation component to customer classes and tiers based on their individual service units. The District's customer classes include SFR, MFR, Non-Residential, etc.

Revenue Requirement

Table 4-1 shows the revenue requirement for domestic and recycled water services. The test year, also known as the rate-setting year, is FY 2019 for this study. FY 2019 is the year before the first proposed revenue adjustment in FY 2020; setting rates for this year will show the exact impacts of changes to the rate structure without a revenue adjustment. Isolating the causes of the rate impacts will allow the District and its customers to better understand the reasons for specific rate changes.

Line 25 shows the total revenue requirement from rates for each system for FY 2019. This is derived by taking the total revenue from rates in Line 12 and subtracting non-rate revenues shown in Lines 15-17. Non-rate revenues can be used to reduce the revenue that must be generated by the rates. Next, the requirement needs to be adjusted to account for cash balances in Line 21. This corresponds to the net cash flow shown (**Table 3-26**, Column C, Line 25) for domestic water and (**Table 3-27**, Column C, Line 25) for recycled water. The cash balance will also be subtracted from the revenue requirement to accurately reflect the results of the revenue adjustment recommended for the financial plan. This calculation of the revenue requirement for the rates is shown below:

$$\text{Revenue Requirement} - \text{Revenue Offsets} - \text{Adjustments} = \text{Total Revenue Required from Rates}$$

Table 4-1: Proposed Revenue Requirement

A	B	C	D	E	F	G	H
		Domestic			Recycled		
Line	Revenue Requirement - FY 2019	Operating	Capital	Total	Operating	Capital	Total
1	Revenue Requirement						
2	Purchased Water	\$19,206,055		\$19,206,055	\$276,982		\$276,982
3	Operations	\$4,831,197		\$4,831,197	\$784,070		\$784,070
4	Engineering		\$1,029,623	\$1,029,623		\$87,105	\$87,105
5	Finance	\$2,257,036		\$2,257,036	\$25,104		\$25,104
6	GM/Governance	\$1,242,179		\$1,242,179	\$13,816		\$13,816
7	Administrative Services	\$2,637,003		\$2,637,003	\$115,100		\$115,100
8	General Administration	\$1,073,075		\$1,073,075	\$63,245		\$63,245
9	Employee Liability	\$1,060,875		\$1,060,875	\$89,125		\$89,125
10	Debt Service		\$1,232,750	\$1,232,750		\$0	\$0
11	Rate Funded Capital		\$5,491,967	\$5,491,967		\$497,244	\$497,244
12	Total - Revenue Requirement	\$32,307,420	\$7,754,341	\$40,061,761	\$1,367,442	\$584,349	\$1,951,790
13							
14	Revenue Offsets						
15	Property Tax	\$989,600		\$989,600	\$0		\$0
16	Other Revenues	\$1,892,180		\$1,892,180	\$86,596		\$86,596
17	Interest Income	\$225,000		\$225,000	\$0		\$0
18	Total - Revenue Offsets	\$3,106,780	\$0	\$3,106,780	\$86,596	\$0	\$86,596
19							
20	Adjustments						
21	Adjustment for Cash Balance	\$3,350,013		\$3,350,013	\$96,161		\$96,161
23	Total - Adjustments	\$3,350,013	\$0	\$3,350,013	\$96,161	\$0	\$96,161
24							
25	Revenue Required from Rates	\$25,850,627	\$7,754,341	\$33,604,968	\$1,184,684	\$584,349	\$1,769,033
26	Revenue Required w/o Offsets	\$28,957,407	\$7,754,341	\$36,711,748	\$1,271,280	\$584,349	\$1,855,629

Proposed Tiers

The proposed rates calculated in this study maintain the District’s current rate structure with the tier breakpoints for Residential customers. The proposed first tier will change from 12 ccf to 9 ccf per month. This change is based on the 55 gallons per capita per day (gpcd) standard set forth by SB 606 and AB 1668 and the average household size for the District of 3.86 people. The first tier breakpoint is calculated using the following equation:

$$55 \text{ gallons/person per day} \times 30 \text{ days/month} \times 3.86 \text{ people/household} \times 1 \text{ ccf/748 gallons} = 9 \text{ ccf (rounded up to nearest ccf)}$$

The second tier breakpoint will change from 39 ccf to 40 ccf per direction from District staff. The District and its staff developed a separate analysis to determine the second tier breakpoint of 40 ccf. The analysis developed by District staff is included in **Appendix A**.

Peaking Factors

Table 4-2 shows the system-wide peaking factors used to derive the cost component allocation bases for Base Delivery, Max Day, and Max Hour costs. The Base Delivery, or Base use is considered average daily demand during the year, which has been normalized to a factor of 1.00 (Column C, Line 1). The Max Day peaking factor (Column C, Line 2) represents that the Max Day demand is 1.88 times greater than the average daily demand. Similarly, the Max Hour peaking factor (Column C, Line 3) shows that the Max Hour demand is 2.90 times greater than average demand. Max Day and Max Hour system peaking factors were provided by District staff.

The allocation bases (Columns D to F) are calculated using the equations outlined in this section. Columns are represented in these equations as letters, and rows are represented as numbers. For example, Column D, Line 2 is shown as D2.

The Max Day allocations are calculated as follows:

- » Base Delivery: $C1 / C2 \times 100\% = D2$
- » Max Day: $(C2 - C1) / C2 \times 100\% = E2$

The Max Hour allocations are calculated as follows:

- » Base Delivery: $C1 / C3 \times 100\% = D3$
- » Max Day: $(C2 - C1) / C3 \times 100\% = E3$
- » Max Hour: $(C3 - C2) / C3 \times 100\% = F3$

The average between Max Day and Max Hour (Line 4) is equal to the average of the allocation bases for Max Day (Columns D to F, Line 2) and Max Hour (Columns D to F, Line 3).

Table 4-2: Domestic Water System Peaking Factors

A	B	C	D	E	F	G
Line	Allocation Factor	Peaking Factor	Base Delivery	Max Day	Max Hour	Total
1	Base Delivery	1.00	100.0%	0.0%	0.0%	100%
2	Max Day	1.88	53.2%	46.8%	0.0%	100%
3	Max Hour	2.90	34.5%	30.3%	35.2%	100%
4	Average Max Day/Max Hour		62.6%	25.7%	11.7%	100%

Table 4-3 shows the peaking factors by customer class and tier based on the maximum monthly usage divided by average monthly usage for each class and tier. The maximum month peaking factor is used as a proxy for the class- and tier-specific Max Day peaking factors. The tiers for Residential customers are based on the proposed tiers. All

other customers are charged a uniform rate and therefore have a class-specific peaking factor. Each zone is additionally given a peaking factor to utilize in developing the zone pumping rates.

Table 4-3: Domestic Water Peaking Factors

A	B	C	D
Line	Customer Class	Selected Monthly Tiers	Peaking Factor
1	Residential		
2	Tier I	9	1.05
3	Tier II	40	1.30
4	Tier III	41+	1.53
5	Multi-Family		1.14
6	Non-Residential		1.22
7	Recycled		1.49
8			
9	Zone 1		1.18
10	Zone 2		1.21
11	Zone 3		1.24

Table 4-4 shows the calculation of additional capacity needed to meet Max Day and Max Hour demands of each class and zone. First, annual use is converted to daily use. The capacity factors (Column E) from **Table 4-3** are multiplied by the average daily use (Column D) to arrive at the total capacity needed to meet each class' Max Day peak usage (Column F). The extra capacity needed to meet Max Day demands (Column G) is calculated by subtracting the average daily use (Column D) from the total capacity for Max Day (Column F).

For Max Hour demands, the class- and tier-specific peaking factors (Column E) are inflated based on the ratio between the system-wide Max Day and Max Hour peaking factors (**Table 4-2**, Column C, Line 3 divided by **Table 4-2**, Column C, Line 2) to determine the class- and tier-specific Max Hour peaking factors. The total capacity for Max Hour (Column I) is calculated by multiplying the average daily use (Column D) by the Max Hour peaking factors (Column H). The extra capacity demanded for Max Hour (Column J) is equal to the Max Hour total capacity (Column I) less the Max Day total capacity (Column F).

Table 4-4: Domestic Water Additional Capacity Calculations

A	B	C	D	E	F	G	H	I	J
Line	Customer Class	Annual Use (ccf)	Average Daily Use (ccf/day)	Capacity Factor	Max Day		Max Hour		
					Total Capacity (ccf/day)	Extra Capacity (ccf/day)	Capacity Factor	Total Capacity (ccf/day)	Extra Capacity (ccf/day)
1	Domestic Water by Class								
2	Residential	5,249,120							
3	Tier I	2,296,175	6,291	1.05	6,628	337	1.63	10,224	3,596
4	Tier II	2,446,177	6,702	1.30	8,730	2,029	2.01	13,467	4,737
5	Tier III	506,768	1,388	1.53	2,120	731	2.36	3,270	1,150
6	Multi-Family	737,332	2,020	1.14	2,304	284	1.76	3,555	1,250
7	Non-Residential	1,249,195	3,422	1.22	4,164	741	1.88	6,423	2,259
8	Total	8,133,742	22,284		27,876	5,592		43,000	15,124
9									
10	Domestic Water by Pumping Zone								
11	Zone 1	3,313,336	9,078	1.18	10,675	1,597	1.81	16,467	5,792
12	Zone 2	3,107,836	8,515	1.21	10,278	1,763	1.86	15,855	5,576
13	Zone 3	814,475	2,231	1.24	2,760	529	1.91	4,258	1,498

Equivalent Meters

Equivalent meter units are used to allocate meter-related costs appropriately and equitably. Larger meters impose larger demands; are more expensive to install, maintain, and replace than smaller meters; and commit a greater capacity in the water system.

Equivalent meter units are based on meter hydraulic capacity and are calculated to represent the potential demand on the water system compared to a base meter size. A ratio of hydraulic capacity is calculated by dividing larger meter capacities by the base meter capacity. The base meter class in this study is the 5/8" and 3/4" meter class and set as the smallest meter size.

Table 4-5 shows the equivalent domestic meters for the test year, FY 2019. The actual number of meters (Column E) is derived from the total domestic water customer account projections for FY 2019 (**Table 3-4**, Column D, Line 60).

The capacity in gallons per minute (gpm) is based on capacity data from the M1 Manual (Column C). The capacity ratios (Column D) are calculated by dividing the capacity for each meter size by the capacity for the 5/8" and 3/4" meter sizes. The actual number of accounts (Column E) is multiplied by the capacity ratios (Column D) to determine the number of equivalent meters (Column F).

Table 4-5: Domestic Water Equivalent Meters

A	B	C	D	E	F
Line	Meter Size	Capacity (gpm)	AWWA Ratio	Number of Meters	Equivalent Meters
1	5/8" or 3/4"	30	1.00	23,154	23,154
2	1"	50	1.67	2,733	4,555
3	1 1/2"	100	3.33	518	1,727
4	2"	160	5.33	516	2,752
5	3"	320	10.67	0	0
6	4"	500	16.67	5	83
7	6"	1,000	33.33	30	1,000
8	8"	1,600	53.33	16	853
9	Total			26,972	34,124

Similar to equivalent water meters, private fire line and public fire hydrant accounts are also converted to equivalent lines based on fire line capacities. **Table 4-6** shows the equivalent lines for private fire lines, private fire hydrants, and public fire hydrants. Private fire line and hydrant counts are derived from the customer account projections for FY 2019 (**Table 3-4**, Column D, Lines 46-56).

The fire line capacity ratios are determined based on the Hazen-Williams equation for flow through pressure conduits, as explained in the M1 Manual. The flow potential is dependent on the diameter of the fire line raised to the power of 2.63. The fire line capacity ratio for each line size is normalized based on the capacity of a 6" fire line.

For example, the equation used to calculate the fire ratio for a 4" line is as follows:

$$(4'' \text{ line} / 6'' \text{ line})^{2.63} = 0.34$$

Table 4-6: Domestic Water Equivalent Private Fire Lines

A	B	C	D	E	F
Line	Fire Line Size	Fire Ratio	Number of Lines	Equivalent Lines	Percentage of Fire System
1	Private Fire				
2	1"	0.01	27	0	0.0%
3	1 1/2"	0.03	6	0	0.0%
4	2"	0.06	7	0	0.0%
5	4"	0.34	20	7	0.2%
6	6"	1.00	162	162	4.1%
7	8"	2.13	141	300	7.7%
8	10"	3.83	72	276	7.0%
9	Private Hydrants				
10	6"	1.00	173	173	4.4%
11	Public Hydrants				
12	6"	1.00	3,000	3,000	76.5%
13	Total		3,608	3,919	100.0%

Operating Allocation

Table 4-7 shows the allocation of domestic water O&M expenses to each cost component, as developed from the District's operations and maintenance budget. O&M expenses are used in the cost of service analysis to allocate the operating revenue requirement prior to revenue offsets and adjustments (**Table 4-1**, Line 26) to derive the relative share of costs under each cost category. The operating functions (Column B) are allocated based on a percentage

(Lines 2-9) for each cost component based on the nature of each function. Then the percentages for each cost component are multiplied by the O&M costs (Lines 11-20) to determine the total percentage allocation of O&M expenses to each cost component (Line 21).

Domestic Supply costs are fully allocated to the Supply cost component (Column D). Storage and Water Quality costs are allocated based Max Day (**Table 4-2**, Line 2) because these facilities are designed to withstand Max Day capacity. The remaining costs are allocated to its own cost component or General. Conservation costs are allocated to Conservation (Column K). Customer Service costs are allocated to Customer (Column J). Meter Service costs are allocated to Meter (Column I). General/Admin and OPEB costs are allocated to General (Column M).

The total O&M costs (Column N, Line 20) is equal to that shown in the financial plan for FY 2019 (**Table 3-26**, Column C, Line 17). The O&M expenses are allocated to each of the cost components based on the percentages described previously. This process results in the dollar amount of the O&M expenses in each cost component (Line 20). The proportion of costs in each cost component of the total O&M costs is equal to the O&M allocation percentage (Line 21).

Table 4-7: Domestic Water Operating Cost Allocation

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Line	Functions	Rationale	Supply	Base Delivery	Max Day	Max Hour	Pumping	Meter	Customer	Conservation	Offset	General	Total
1	Percent Allocations												
2	Domestic Supply	Supply	100.0%										100.0%
3	Storage	Max Day		53.2%	46.8%								100.0%
4	Water Quality	Max Day		53.2%	46.8%								100.0%
5	Conservation	Conservation								100.0%			100.0%
6	Customer Service	Customer							100.0%				100.0%
7	Meter Service	Meter						100.0%					100.0%
8	General/Admin	General										100.0%	100.0%
9	Empl. Liability	General										100.0%	100.0%
10													
11	Dollar Allocations												
12	Supply	Supply	\$19,206,055										\$19,206,055
13	Storage	Max Day		\$1,051,974	\$925,737								\$1,977,711
14	Water Quality	Max Day		\$147,638	\$129,922								\$277,560
15	Conservation	Conservation								\$493,942			\$493,942
16	Customer Service	Customer							\$590,742				\$590,742
17	Meter Service	Meter						\$244,817					\$244,817
18	General/Admin	General										\$9,485,342	\$9,485,342
19	Empl. Liability	General										\$1,060,875	\$1,060,875
20	Total		\$19,206,055	\$1,199,612	\$1,055,659	\$0	\$0	\$244,817	\$590,742	\$493,942	\$0	\$10,546,217	\$33,337,044
21	Operating Allocation		57.6%	3.6%	3.2%	0.0%	0.0%	0.7%	1.8%	1.5%	0.0%	31.6%	100.0%

Capital Allocation

Table 4-8 shows the allocation of capital assets to each cost component. Capital assets are utilized in cost of service analyses to allocate capital costs because annual capital project costs can fluctuate greatly from year to year. Capital assets remain relatively stable and are more representative of the District's investments in its water utility. The capital assets are allocated in a similar manner to the O&M expenses: each capital function is allocated to each cost component using a percentage based on the nature of that function as developed through the District's capital improvement budget, then the allocation percentages for each function is multiplied by the capital asset value for that function to determine the asset allocation for each cost component.

District staff provided asset information and values using original cost and provided depreciation on that cost. We then valued the assets based on Original Cost Less Depreciation.

Assets functionalized as pertaining to General, Supply, Meters, Building, and Equipment are each solely allocated to their matching cost allocation, with Building and Equipment considered General costs. Storage, Pumping, T&D, and Fire and Hydrants are allocated according to the capacity needs they are built to meet. The resulting capital asset allocation (Line 23) is used to allocate the Capital revenue requirement without revenue offsets (**Table 4-1**, Column D, Line 26).

Table 4-8: Domestic Water Capital Cost Allocation

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Line	Functions	Rationale	Supply	Base Delivery	Max Day	Max Hour	Pumping	Meter	Customer	Conservation	Offset	General	Total
1	Percent Allocations												
2	General	General										100.0%	100.0%
3	Supply	Supply	100.0%										100.0%
4	Storage	Max Day		53.2%	46.8%								100.0%
5	Pumping	Max Day		53.2%	46.8%								100.0%
6	T&D	Avg. MD/MH		62.6%	25.7%	11.7%							100.0%
7	Fire	Max Hour		34.5%	30.3%	35.2%							100.0%
8	Meters	Meters						100.0%					100.0%
9	Building	General										100.0%	100.0%
10	Equipment	General										100.0%	100.0%
11													
12	Dollar Allocations												
13	General	General										\$1,139,574	\$1,139,574
14	Supply	Supply	\$81,435										\$81,435
15	Storage	Max Day		\$8,311,410	\$7,314,041								\$15,625,452
16	Pumping	Max Day		\$4,268,877	\$3,756,612								\$8,025,489
17	T&D	Avg. MD/MH		\$25,759,020	\$10,589,596	\$4,827,551							\$41,176,166
18	Fire	Max Hour		\$1,916,758	\$1,686,747	\$1,955,093							\$5,558,597
19	Meters	Meters						\$3,501,769					\$3,501,769
20	Building	General										\$21,619	\$21,619
21	Equipment	General										\$661,320	\$661,320
22	Total		\$81,435	\$40,256,065	\$23,346,995	\$6,782,643	\$0	\$3,501,769	\$0	\$0	\$0	\$1,822,513	\$75,791,421
23	Capital Allocations		0.1%	53.1%	30.8%	8.9%	0.0%	4.6%	0.0%	0.0%	0.0%	2.4%	100.0%

Revenue Offset Allocation

Table 4-9 shows the revenue offset allocation to each cost component. Revenue offsets are miscellaneous, non-rate revenues that are used to reduce the revenue required from rates. A portion of these revenues are not directly linked to any service that the District provides to its water customers and can be used at the District's discretion to provide offsets to specific customer classes and tiers.

Property tax revenue (Line 2) is one such revenue and is allocated to the Offset cost component to offset Tier I rates for Residential customers. Section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, section 2, Water Code section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water. Based on Article X, Section 2 of the California Constitution, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation. The beneficial use of water includes indoor usage, which provides clean water for drinking and sanitation to the District's residents. Property tax is an offset for Residential Tier I usage, which is designed for necessary indoor usage.

The remaining revenue offsets (Line 3-4) are allocated to the cost components based on the O&M allocation (**Table 4-7**, Line 21). Note that the total revenue offset amount (Column L, Line 7) is equal to the revenue offset portion of the revenue requirement (**Table 4-1**, Column C, Line 18).

Table 4-9: Domestic Water Revenue Offset Allocation

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Line	Revenue Offsets	Rationale	Supply	Base Delivery	Max Day	Max Hour	Pumping	Meter	Customer	Conservation	Offset	General	Total
1	Percent Allocations												
2	Property Tax	Offset									100.0%		100.0%
3	Other Revenues	O&M	57.6%	3.6%	3.2%	0.0%	0.0%	0.7%	1.8%	1.5%	0.0%	31.6%	100.0%
4	Interest Income	O&M	57.6%	3.6%	3.2%	0.0%	0.0%	0.7%	1.8%	1.5%	0.0%	31.6%	100.0%
5													
6	Dollar Allocations												
7	Property Tax	Offset									\$989,600		\$989,600
8	Other Revenues	O&M	\$1,090,118	\$68,089	\$59,918	\$0	\$0	\$13,896	\$33,530	\$28,036	\$0	\$598,594	\$1,892,180
9	Interest Income	O&M	\$129,626	\$8,096	\$7,125	\$0	\$0	\$1,652	\$3,987	\$3,334	\$0	\$71,179	\$225,000
10	Total		\$1,219,744	\$76,185	\$67,043	\$0	\$0	\$15,548	\$37,517	\$31,369	\$989,600	\$669,773	\$3,106,780

Adjusted Allocations

The Fire and Hydrant costs defined in **Table 4-8** encompass both public and private fire services. The Fire and Hydrant costs were originally allocated to Base Delivery, Max Day, and Max Hour. The public fire portion of the Max Day and Max Hour costs are reallocated based on the public fire service’s share of additional Max Day and Max Hour capacity required. **Table 4-10** derives the public fire service’s share of the Max Day and Max Hour additional capacity needs and shows the estimates for additional fire capacity, as outlined in the M1 Manual. The fire Max Hour capacity assumes a four hour fire with 5,000 gallons per minute of capacity required.

The total Max Day capacity demanded for fire (Column C, Line 4) is calculated as follows, with letters representing columns and numbers representing rows:

$$C2 \text{ kgals/min} * 60 \text{ min/hour} * C1 \text{ hours} * 1000 \text{ gals} / 748 \text{ gals/ccf}$$

The total Max Hour capacity demanded for fire (Column D, Line 4) is calculated as follows:

$$[D2 \text{ kgals/min} * 60 \text{ min/hour} * 24 \text{ hours/day} * 1000 \text{ gals} / 748 \text{ gals/ccf}] - C8 \text{ ccf}$$

Public fire accounts for 76.5 percent of the total capacity based on its proportionate share of the equivalent fire lines in **Table 4-6**. The total capacity demanded for fire (Line 4) is multiplied by the public fire allocation (Line 5) to determine the additional capacity required for public fire service (Line 7). The remaining capacity demanded for fire is allocated to private fire (Line 8). The customer demand capacity is equal to the total Max Day and Max Hour demand for all other customers (**Table 4-4**, Column G and J, Line 8).

Table 4-10: Fire Capacity Estimates

A	B	C	D
Line	Fire Estimate	Max Day	Max Hour
1	Hours for Fire	4.0	
2	kgals/minute	5.0	5.0
3			
4	Capacity Demanded for Fire (ccf)	1,604	8,021
5	Allocation to Public Fire	76.5%	76.5%
6			
7	Public Fire Capacity	1,228	6,140
8	Private Fire Capacity	376	1,881
9	Customer Demand Capacity	5,592	15,124
10	Total	7,196	23,146

Table 4-11 incorporates the allocations defined in **Table 4-7**, **Table 4-8**, and **Table 4-9**. The operating revenue requirement (Line 1) is allocated to each cost component based on the O&M expense percentage allocation (**Table 4-7**, Line 21). The capital revenue requirement (Line 2) is allocated based on the capital asset percentage allocation (**Table 4-8**, Line 23). The revenue offsets are allocated based on **Table 4-9**. Note that the total cost of service (Column N, Line 4) is equal to the total domestic water revenue requirement (**Table 4-1**, Column E, Line 26).

Public fire costs are reallocated to the Meter component because public fire service is a benefit shared by all customers. This is done by subtracting out the public fire share of the Max Day and Max Hour costs based on the proportion of the public fire capacity (**Table 4-10**, Line 7 divided by **Table 4-10**, Line 10).

Similarly, private fire costs are reallocated to the new Private Fire cost component. This is done by subtracting out the private fire share of the Max Day and Max Hour costs based on the proportion of private fire capacity required (**Table 4-10**, Line 8 divided by **Table 4-10**, Line 10).

Next, General costs are reallocated from the General component to the other components based on each's proportional share of the total costs less the Supply and Offset components.

Pumping costs are allocated to their own component to derive their own rates. Pumping costs were provided by District staff (Column E, Line 8) based on a separate analysis and are subtracted from the Max Day cost component; pumping facilities are built to withstand Max Day capacity.

The resulting allocation of costs provides the components for developing the domestic water meter charge, commodity rate, pumping rate, and private fire charges.

Table 4-11: Domestic Water Cost of Service by Cost Component

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Line	Domestic Water	Supply	Base Delivery	Max Day	Max Hour	Pumping	Meter	Customer	Conservation	Private Fire	Offset	General	Total
1	Operating Revenue Requirement	\$16,682,870	\$1,042,014	\$916,972	\$0	\$0	\$212,655	\$513,133	\$429,050	\$0	\$0	\$9,160,714	\$28,957,407
2	Capital Revenue Requirement	\$8,332	\$4,118,662	\$2,388,668	\$693,943	\$0	\$358,272	\$0	\$0	\$0	\$0	\$186,464	\$7,754,341
3	Revenue Offsets	(\$1,219,744)	(\$76,185)	(\$67,043)	\$0	\$0	(\$15,548)	(\$37,517)	(\$31,369)	\$0	(\$989,600)	(\$669,773)	(\$3,106,780)
4	Total Cost of Service	\$15,471,457	\$5,084,490	\$3,238,597	\$693,943	\$0	\$555,378	\$475,616	\$397,681	\$0	(\$989,600)	\$8,677,405	\$33,604,968
5	Allocation of Public Fire			(\$552,678)	(\$184,095)		\$736,772						\$0
6	Allocation of Private Fire			(\$169,318)	(\$56,399)					\$225,716			\$0
7	Allocation of General Costs		\$4,223,763	\$2,090,579	\$376,687	\$0	\$1,073,409	\$395,102	\$330,360	\$187,506		(\$8,677,405)	\$0
8	Allocation of Pumping Costs			(\$988,238)		\$988,238							\$0
9	Adjusted Cost of Service	\$15,471,457	\$9,308,253	\$3,618,943	\$830,137	\$988,238	\$2,365,560	\$870,718	\$728,040	\$413,223	(\$989,600)	\$0	\$33,604,968

Unit Cost Derivation

RATE COMPONENTS

The first step in determining the unit costs is to define the final rate components based on the current cost components. The following rate components are defined as and include the following costs:

- » Meter charge: costs associated with meter capacity – 50 percent of Base Delivery costs
- » Meter maintenance charge: costs associated with meter maintenance – all Meter costs
- » Customer charge: costs associated with customer service and billing – all Customer costs
- » Private fire charge: costs associated with private fire – all Private Fire costs
- » Commodity charge: costs associated with providing average demand – 50 percent of Base Delivery costs
- » Commodity peaking charge: costs associated with providing peak demand – all Max Day and Hour costs
- » Commodity conservation charge: costs associated with the conservation program – all Conservation costs
- » Commodity charge offset: revenue offsets – all Offsets
- » Pumping surcharge: costs associated with pumping – all Pumping costs

UNITS OF SERVICE

The next step in the cost of service analysis to determine the appropriate units of service to calculate the unit costs for each cost component. **Table 4-12** provides the units used for allocating the total cost per component on a per unit basis. For example, the total customer charge is distributed across all customers equally over 12 bills per year because customer service and billing are not affected by the size of a customer’s meter or the quantity of water they purchase.

Table 4-12: Definition of Cost Units

A	B	C	D
Line	Unit Value	Unit Type	Allocation Description
1	409,492	equivalent meters/year	Domestic Water equivalent meters across 12 bills per year
2	416,788	equivalent meters/year	Domestic Water equivalent meters and fire lines across 12 bills per year
3	330,960	customer bills/year	Domestic and Private Fire Line and Hydrant across 12 bills per year
4	11,029	equivalent lines/year	Equivalent Private Fire Lines and Hydrants across 12 bills per year
5	7,235,647	ccf of usage	Annual domestic water usage
6	4,123	ccf/day Max Day	Max Day additional capacity above average
7	12,992	ccf/day Max Hour	Max Hour additional capacity above average converted from an hourly rate to daily for consistent units

Table 4-13 identifies the units that will be used to convert the total cost by rate component into the per unit charge to distribute the costs across all customers equitably and fairly.

Table 4-13: Cost Units Used for Domestic Water Rate Components

A	B	C	D
Line	Rate Component	Unit Value	Unit Type
1	Meter Charge	409,492	equivalent meters/year
2	Meter Maintenance Charge	416,788	equivalent meters/year
3	Customer Charge	330,960	customer bills/year
4	Private Fire Charge	11,029	equivalent lines/year
5	Commodity Charge	7,235,647	ccf of usage
6	Commodity Charge - Max Day	4,123	ccf/day Max Day
7	Commodity Charge - Max Hour	12,992	ccf/day Max Hour
8	Commodity Charge - Conservation	7,235,647	ccf of usage
9	Commodity Charge - Offset	7,235,647	ccf of usage

PER UNIT COST DERIVATION

Next, the adjusted cost component allocations above are then allocated to the different rate components to begin to develop the domestic water rate structure. **Table 4-14** shows the final allocation of costs to the different rate components (Line 11). These total costs are then divided by the appropriate units determined in **Table 4-13**. Line 16 provides the resultant per unit cost for each rate component.

Table 4-14: Domestic Water Unit Rate Component Derivation

A	B	C	D	E	F	G	H	I	J	K	L	M
Line	System Function	Meter Charge	Meter Maintenance Charge	Customer Charge	Private Fire Charge	Domestic Commodity Charge	Domestic Commodity Charge - Max Day	Domestic Commodity Charge - Max Hour	Domestic Commodity Charge - Conservation	Domestic Commodity Charge - Offset	Pumping Surcharge	Total
1	Supply					\$15,471,457						\$15,471,457
2	Base Delivery	\$4,654,126				\$4,654,126						\$9,308,253
3	Max Day						\$3,618,943					\$3,618,943
4	Max Hour							\$830,137				\$830,137
5	Pumping										\$988,238	\$988,238
6	Meter		\$2,365,560									\$2,365,560
7	Customer			\$870,718								\$870,718
8	Conservation								\$728,040			\$728,040
9	Private Fire				\$413,223							\$413,223
10	Offset									(\$989,600)		(\$989,600)
11	Total	\$4,654,126	\$2,365,560	\$870,718	\$413,223	\$20,125,584	\$3,618,943	\$830,137	\$728,040	(\$989,600)	\$988,238	\$33,604,968
12												
13	Units of Service	409,492	416,788	330,960	11,029	7,235,647	4,123	12,992	7,235,647	7,235,647		
14	Unit	equivalent meters/year	equivalent meters/year	customer bills/year	equivalent lines/year	ccf of usage	ccf/day Max Day	ccf/day Max Hour	ccf of usage	ccf of usage		
15												
16	Unit Cost	\$11.37	\$5.68	\$2.63	\$37.47	\$2.78	\$877.84	\$63.90	\$0.10	(\$0.14)		
17	Unit	equivalent meter / month	equivalent meter / month	customer bill / month	equivalent line / month	ccf	ccf/day	ccf/day	ccf	ccf		

5. Rate Design and Derivation

This section of the report details the calculation of the proposed domestic water, recycled water, and fire service rates that were developed in the study. All rates shown in this section are rounded up to the nearest cent.

Proposed Adjustments

Table 5-1 shows the proposed rate adjustments for both domestic and recycled water. The rate-setting year (of which the cost of service analysis is based upon) is FY 2019, meaning that the rate adjustment in FY 2020 will be applied to the proposed rates to determine the final rate schedule.

Table 5-1: Proposed Rate Adjustments

A	B	C	D	E	F	G
Line	Rate Adjustment	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	Domestic Water	5.0%	5.0%	5.0%	5.0%	5.0%
2	Recycled Water	5.0%	5.0%	5.0%	5.0%	5.0%
3	Proposed Month Effective	February	January	January	January	January

Domestic Water Rates

MONTHLY METER CHARGE CALCULATION

Table 5-2 shows the monthly meter charge calculation for domestic water customers. The monthly meter charge for domestic water customers will consist of the Meter, Meter Maintenance, and Customer rate components identified in Table 4-14. As identified earlier, the Meter and Meter Maintenance costs are divided into per unit charges based on meters and equivalent meters with the base meter charge for 5/8" or 3/4" meters. The meter charge unit cost must be multiplied by the capacity ratio for each meter size to appropriately reflect the share of cost by meter size. A customer's share of the Customer component does not vary with meter size and is therefore allocated equally across all meter sizes. These components are all added together to arrive at the total proposed charge for FY 2019 (Column G). The proposed charge results in a reduction in monthly meter charges for most meter sizes (Column I).

Table 5-2: Monthly Meter Charge Calculation

A	B	C	D	E	F	G	H	I
Line	Monthly Meter Charge	Capacity Ratio	Meter	Meter Maint.	Customer	Proposed Charge	Current Charge	Difference (\$)
1	5/8" or 3/4"	1.00	\$11.37	\$5.68	\$2.63	\$19.68	\$20.54	(\$0.86)
2	1"	1.67	\$18.94	\$9.46	\$2.63	\$31.04	\$25.88	\$5.16
3	1 1/2"	3.33	\$37.89	\$18.92	\$2.63	\$59.44	\$61.14	(\$1.70)
4	2"	5.33	\$60.62	\$30.27	\$2.63	\$93.52	\$79.84	\$13.68
5	3"	10.67	\$121.23	\$60.54	\$2.63	\$184.41	\$163.48	\$20.93
6	4"	16.67	\$189.43	\$94.59	\$2.63	\$286.66	\$257.59	\$29.07
7	6"	33.33	\$378.85	\$189.19	\$2.63	\$570.68	\$489.65	\$81.03
8	8"	53.33	\$606.17	\$302.70	\$2.63	\$911.51	\$753.90	\$157.61

COMMODITY RATE CALCULATION

Customers pay two commodity rates on their total usage. The first is the primary volumetric rate that varies based on customer class characteristics and, in the case of Residential customers, tiered rates. The second rate is based on

pumping zone. Depending on which elevation zone a customer’s connection is in, the District must incur additional costs to pump water to that zone.

Residential usage is divided into a tiered rate structure with tier break points defined below. The proposed first tier is 9 ccf per month, based on the 55 gallons per capita per day (gpcd) standard set forth by SB 606 and AB 1668 and the average household size for the District of 3.86 people. The first tier breakpoint is calculated using the following equation:

$$55 \text{ gallons/person per day} \times 30 \text{ days/month} \times 3.86 \text{ people/household} \times 1 \text{ ccf/748 gallons} = 9 \text{ ccf (rounded up to nearest ccf)}$$

The proposed second tier breakpoint will change is 40 ccf per direction from District staff. The District and its staff developed a separate analysis to determine the second tier breakpoint of 40 ccf. The analysis developed by District staff is included in **Appendix A**.

Table 5-3: Residential Tier Widths

A	B	C	D
Line	Tier	Tier Width	Basis for Tier Breakpoint
1	Tier I	0 to 9	Essential indoor needs
2	Tier II	10 to 40	Analysis and direction provided by District staff
3	Tier III	41+	Any additional usage

Table 5-4 allocates Max Day and Max Hour peaking costs to the customer classes by multiplying their respective per unit rate component cost by the relevant additional capacity needed to meet Max Day or Max Hour needs (**Table 4-4**, Columns F and J, Lines 2-7). These costs are then allocated across the annual usage by class to arrive at the unit cost by class and tier (Column G).

Table 5-4: Domestic Water Peaking Costs by Customer Class

A	B	C	D	E	F	G
Line	Customer Class	Max Day	Max Hour	Peaking Costs	Annual Usage (ccf)	Proposed Unit Cost
1	Residential					
2	Tier I	\$295,890	\$229,769	\$525,660	2,296,175	\$0.23
3	Tier II	\$1,780,768	\$302,655	\$2,083,423	2,446,177	\$0.85
4	Tier III	\$641,948	\$73,482	\$715,430	506,768	\$1.41
5	Multi-Family	\$249,640	\$79,888	\$329,528	737,332	\$0.45
6	Non-Residential	\$650,697	\$144,342	\$795,039	1,249,195	\$0.64

Table 5-5 shows the pumping surcharge calculation. The District identified the total pumping costs incurred by zone (Column C). Zone 1 customers reside at the base elevation. Therefore, no additional pumping costs are incurred to distribute water to these customers based. Zone 2 is the first zone to require additional pumping. Zone 3 customers’ water must first be pumped to the Zone 2 elevation. Therefore, Zone 2 and Zone 3 customers equally share the responsibility of these costs. As shown in Column F, the costs are distributed between the two zones based on their relative share of total Zone 2 and Zone 3 annual usage (Column D, Lines 2 and 3). Finally, Zone 3 customers solely pay for the cost to pump their water to their elevation. The total cost for each zone (Column H) is then divided by the annual usage for that zone (Column D) to arrive at the pumping unit cost per zone.

Table 5-5: Domestic Water Pumping Unit Cost by Pumping Zone

A	B	C	D	E	F	G	H	I
Line	Pumping Zone	Pumping	Annual Usage (ccf)	Zone 1 Cost	Zone 2 Cost	Zone 3 Cost	Pumping Costs	Unit Cost
1	Zone 1	\$0	3,313,336	\$0			\$0	\$0.00
2	Zone 2	\$828,522	3,107,836	\$0	\$656,478		\$656,478	\$0.22
3	Zone 3	\$159,716	814,475	\$0	\$172,044	\$159,716	\$331,760	\$0.41
4	Total	\$988,238	7,235,647	\$0	\$828,522	\$159,716	\$988,238	\$0.14

Table 5-6 allocates the non-rate revenue offset across customer classes based on each class' total annual use. The District proposes allocating the Residential customers' offset entirely to Tier I, which generally encompasses essential indoor use. Therefore, the total allocation of the Residential offset is then divided only by the Tier I annual usage to arrive at the conservation rate component for that tier.

Table 5-6: Domestic Water Offset Cost Allocation

A	B	C	D	E
Line	Customer Class	Offsets	Annual Usage (ccf)	Unit Cost
1	Residential	(\$717,908)		
2	Tier I	(\$717,908)	2,296,175	(\$0.31)
3	Tier II	\$0	2,446,177	\$0.00
4	Tier III	\$0	506,768	\$0.00
5	Multi-Family	(\$100,843)	737,332	(\$0.14)
6	Non-Residential	(\$170,849)	1,249,195	(\$0.14)

Table 5-7 combines all components derived in the tables above for each class and pumping zone. In addition, the conservation unit cost is the same across all classes and tiers. Combining all components results in the proposed rates for FY 2019 (Column G), again with a comparison to the current rates (Column I).

Table 5-7: Domestic Water Commodity Rate Calculation

A	B	C	D	E	F	G	H	I
Line	Customer Class	Base and Supply	Peaking	Conservation	Offset	Proposed Charge	Current Charge	Difference (\$)
1	Residential							
2	Tier I	\$2.78	\$0.23	\$0.10	(\$0.31)	\$2.80	\$3.27	(\$0.47)
3	Tier II	\$2.78	\$0.85	\$0.10	\$0.00	\$3.74	\$3.69	\$0.05
4	Tier III	\$2.78	\$1.41	\$0.10	\$0.00	\$4.30	\$3.69	\$0.61
5	Multi-Family	\$2.78	\$0.45	\$0.10	(\$0.14)	\$3.20	\$3.49	(\$0.29)
6	Non-Residential	\$2.78	\$0.64	\$0.10	(\$0.14)	\$3.39	\$3.55	(\$0.16)
7								
8	Pumping Zone							
9	Zone 1		\$0.00			\$0.00	\$0.00	\$0.00
10	Zone 2		\$0.21			\$0.22	\$0.22	\$0.00
11	Zone 3		\$0.41			\$0.41	\$0.42	(\$0.01)

PROPOSED WATER RATES

As determined during the financial plan analysis, Raftelis recommends a 5.0 percent annual revenue adjustment, which is applied equally to the proposed rates starting in February 2020 and every January of the study period thereafter. **Table 5-8**, **Table 5-9**, and **Table 5-10** show the proposed charges and rates for domestic water customers. The proposed charges and rates developed during the cost of service analysis are based on FY 2019

revenue requirements. These rates are escalated by 5.0 percent to arrive at the FY 2020 charges and rates to be implemented in February 2020. The tables then provide the proposed charges and rates for the remainder of the study period.

Table 5-8: Proposed Monthly Meter Charges (\$/meter size)

A	B	C	D	E	F	G	H
Line	Monthly Meter Charge	Proposed Charge	February 2020	January 2021	January 2022	January 2023	January 2024
1	5/8" or 3/4"	\$19.68	\$20.67	\$21.71	\$22.80	\$23.94	\$25.14
2	1"	\$31.04	\$32.60	\$34.23	\$35.95	\$37.75	\$39.64
3	1 1/2"	\$59.44	\$62.42	\$65.55	\$68.83	\$72.28	\$75.90
4	2"	\$93.52	\$98.20	\$103.11	\$108.27	\$113.69	\$119.38
5	3"	\$184.41	\$193.64	\$203.33	\$213.50	\$224.18	\$235.39
6	4"	\$286.66	\$301.00	\$316.05	\$331.86	\$348.46	\$365.89
7	6"	\$570.68	\$599.22	\$629.19	\$660.65	\$693.69	\$728.38
8	8"	\$911.51	\$957.09	\$1,004.95	\$1,055.20	\$1,107.96	\$1,163.36

Table 5-9: Proposed Commodity Rates (\$/ccf)

A	B	C	D	E	F	G	H
Line	Potable Commodity Rate (\$/ccf)	Proposed Charge	February 2020	January 2021	January 2022	January 2023	January 2024
1	Residential						
2	Tier I	\$2.80	\$2.94	\$3.09	\$3.25	\$3.42	\$3.60
3	Tier II	\$3.74	\$3.93	\$4.13	\$4.34	\$4.56	\$4.79
4	Tier III	\$4.30	\$4.52	\$4.75	\$4.99	\$5.24	\$5.51
5	Multi-Family	\$3.20	\$3.36	\$3.53	\$3.71	\$3.90	\$4.10
6	Non-Residential	\$3.39	\$3.56	\$3.74	\$3.93	\$4.13	\$4.34

Table 5-10: Proposed Pump Zone Surcharges (\$/ccf)

A	B	C	D	E	F	G	H
Line	Pump Zone Surcharges (\$/ccf)	Proposed Charge	February 2020	January 2021	January 2022	January 2023	January 2024
1	Zone 1	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	Zone 2	\$0.22	\$0.24	\$0.26	\$0.28	\$0.30	\$0.32
3	Zone 3	\$0.41	\$0.44	\$0.47	\$0.50	\$0.53	\$0.56

Recycled Water Rates

METER CHARGE AND COMMODITY RATE DERIVATIONS

The recycled water meter charge is equal to the domestic water meter charge determined in **Table 5-2**. The District incurs the same costs for meter maintenance and customer billing regardless if the customer is using domestic or recycled water.

Table 5-11 shows the proposed recycled water monthly meter charge revenue calculation. **Table 5-12** shows the recycled water commodity rate revenue requirement, which is calculated by subtracting the monthly meter charge revenue from the recycled water revenue requirement (**Table 4-1**, Column H, Line 25). The commodity rate revenue requirement (Line 3) is divided by total recycled water usage (Line 4) to determine the recycled water commodity rate (Line 5).

Table 5-11: Recycled Water Monthly Meter Charge Revenue Calculation

A	B	C	D	E
Line	Meter Size	Recycled Meter Count	Monthly Meter Charge	Revenue
1	5/8" or 3/4"	13	\$19.68	\$3,070
2	1"	98	\$31.04	\$36,503
3	1 1/2"	42	\$59.44	\$29,958
4	2"	128	\$93.52	\$143,647
5	3"	5	\$184.41	\$11,065
6	4"	5	\$286.66	\$17,200
7	6"	6	\$570.68	\$41,089
8	8"	1	\$911.51	\$10,938
0	Total	298		\$293,469

Table 5-12: Recycled Charge Calculation

A	B	C
Line	Calculation Component	Total Value
1	Total Recycled Water Revenue Requirement	\$1,769,033
2	Less Meter Charge Revenues	(\$293,469)
3	Commodity Rate Revenue Requirement	\$1,475,564
4	Recycled Water Usage (ccf)	829,698
5	Commodity Rate (\$/ccf)	\$1.78

PROPOSED RECYCLED WATER RATES

As with the domestic water rates, recycled water rates will be escalated by 5.0 percent annually starting in February 2020. **Table 5-13** and **Table 5-14** show the proposed recycled water meter charges and commodity rates, respectively.

Table 5-13: Proposed Recycled Water Monthly Meter Charges

A	B	C	D	E	F	G	H
Line	Monthly Meter Charge	Proposed Charge	February 2020	January 2021	January 2022	January 2023	January 2024
1	5/8" or 3/4"	\$19.68	\$20.67	\$21.71	\$22.80	\$23.94	\$25.14
2	1"	\$31.04	\$32.60	\$34.23	\$35.95	\$37.75	\$39.64
3	1 1/2"	\$59.44	\$62.42	\$65.55	\$68.83	\$72.28	\$75.90
4	2"	\$93.52	\$98.20	\$103.11	\$108.27	\$113.69	\$119.38
5	3"	\$184.41	\$193.64	\$203.33	\$213.50	\$224.18	\$235.39
6	4"	\$286.66	\$301.00	\$316.05	\$331.86	\$348.46	\$365.89
7	6"	\$570.68	\$599.22	\$629.19	\$660.65	\$693.69	\$728.38
8	8"	\$911.51	\$957.09	\$1,004.95	\$1,055.20	\$1,107.96	\$1,163.36

Table 5-14: Proposed Recycled Commodity Rates d(\$/ccf)

A	B	C	D	E	F	G	H
Line	Recycled Commodity Rate (\$/ccf)	Proposed Charge	February 2020	January 2021	January 2022	January 2023	January 2024
1	Recycled	\$1.78	\$1.87	\$1.97	\$2.07	\$2.18	\$2.29

Fire Service Charges

DERIVATION AND CALCULATION

Table 5-15 shows the calculation of the monthly private fire service charge. The private fire rate component derived in **Table 4-14** is multiplied by the fire ratios derived in **Table 4-6** to arrive at the private fire rate component by fire line size. Meter Maintenance and Customer rate components are equally shared by all fire meters and are thus not multiplied by the fire ratios. These components are combined to result in the proposed fire service charge for FY 2019 (Column G).

Table 5-15: Monthly Fire Service Charge Calculation

A	B	C	D	E	F	G	H	I
Line	Monthly Private Fire Service Charge	Fire Ratio	Private Fire	Meter Maint.	Customer	Proposed Charge	Current Charge	Difference (\$)
1	Private Fire							
2	1"	0.01	\$0.34	\$5.68	\$2.63	\$8.65	\$19.22	(\$10.57)
3	1 1/2"	0.03	\$0.98	\$5.68	\$2.63	\$9.29	\$19.70	(\$10.41)
4	2"	0.06	\$2.08	\$5.68	\$2.63	\$10.40	\$20.17	(\$9.77)
5	4"	0.34	\$12.90	\$5.68	\$2.63	\$21.21	\$23.44	(\$2.23)
6	6"	1.00	\$37.47	\$5.68	\$2.63	\$45.78	\$26.81	\$18.97
7	8"	2.13	\$79.84	\$5.68	\$2.63	\$88.16	\$31.03	\$57.13
8	10"	3.83	\$143.59	\$5.68	\$2.63	\$151.90	\$35.23	\$116.67
9	Private Hydrants							
10	6"	1.00	\$37.47	\$5.68	\$2.63	\$45.78	\$26.81	\$18.97

PROPOSED FIRE SERVICE CHARGES

Table 5-16 provides the five-year rate schedule increasing the proposed charge by 5.0 percent annually beginning February 2020.

Table 5-16: Proposed Monthly Fire Service Charges (\$/line size)

A	B	D	E	F	G	H	I
Line	Private Fire Service Charges	Proposed Charge	February 2020	January 2021	January 2022	January 2023	January 2024
1	Private Fire Lines						
3	1"	\$8.65	\$9.09	\$9.55	\$10.03	\$10.54	\$11.07
4	1 1/2"	\$9.29	\$9.76	\$10.25	\$10.77	\$11.31	\$11.88
5	2"	\$10.40	\$10.92	\$11.47	\$12.05	\$12.66	\$13.30
6	4"	\$21.21	\$22.28	\$23.40	\$24.57	\$25.80	\$27.09
7	6"	\$45.78	\$48.07	\$50.48	\$53.01	\$55.67	\$58.46
8	8"	\$88.16	\$92.57	\$97.20	\$102.06	\$107.17	\$112.53
9	10"	\$151.90	\$159.50	\$167.48	\$175.86	\$184.66	\$193.90
10							
11	Private Hydrant Rate						
12	Per Meter	\$45.78	\$48.07	\$50.48	\$53.01	\$55.67	\$58.46

Residential Customer Impacts

Figure 5-1 shows a graph of the proposed customer bill impacts for Residential customers. The impacts are determined by calculating the current and proposed bills based on actual customer data from FY 2018 provided by District staff. The difference in each monthly customer bill is shown in the graph. For instance, approximately 50 percent of Residential customers will see no increase or a decrease in their monthly bill.

Figure 5-1: Residential Customer Impacts (\$)

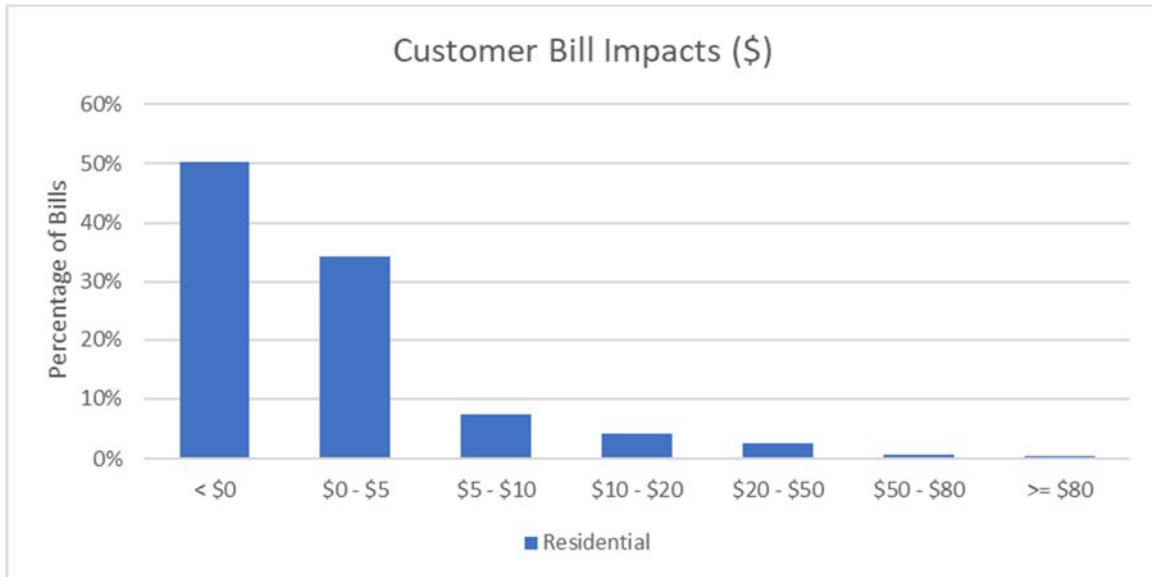


Table 5-17 shows the bill impacts on Residential customers using the most common meter sizes, 5/8" and 3/4", consuming water at different levels. The usage levels were chosen based on the actual consumption of customers in previous years in order to provide relevant references. For example, half of the District's Residential customers consume 14 ccf or less per monthly bill. In other words, half of the customer class should see about a 0.6 percent or more decrease in their bill.

Table 5-17: Domestic Water Residential Customer Impacts (5/8" and 3/4" Meter)

A	B	C	D	E	F	G
Line	Usage Percentile (all meter sizes)	Usage (ccf)	Current Monthly Bill	Proposed Monthly Bill	Difference (\$)	Difference (%)
1	10th Percentile	5	\$36.89	\$35.37	(\$1.52)	-4.1%
2	25th Percentile	8	\$46.70	\$44.19	(\$2.51)	-5.4%
3	50th Percentile (Median)	14	\$67.16	\$66.78	(\$0.38)	-0.6%
4	Average	19	\$85.61	\$86.43	\$0.82	1.0%
5	75th Percentile	22	\$96.68	\$98.22	\$1.54	1.6%
6	90th Percentile	35	\$144.65	\$151.93	\$7.28	5.0%

6. Appendix A

WVWD – MEMORANDUM



TO: File
FROM: Erik Hitchman, General Manager/Chief Engineer
DATE: November 1, 2019
SUBJECT: Single Family Residential Tier Width Analysis - 2019 Water Rate Study

Through the rate study process, the District has had to evaluate many aspects of rate design, including the development of Single Family Residential (SFR) Tier width options. Currently, the Tiers are set as follows:

Tier I 12 billing units*
 Tier II 39 billing units*
 Tier III 40+ billing units*
**(1 billing unit = 100cubic feet=748.1 gallons)*

For purposes of this rate study, the District has defined the three proposed Tiers as follows:

Tier I: Essential/efficient indoor water use
 Tier II: Efficient outdoor water use
 Tier III: Excessive water use

In developing the new rates, the District has evaluated three tier width options, in billing units:

Monthly Tier Options	Tier 1	Tier 2
Current Tiers	12	39
Average Usage	17	21
Average Water Budget	17	24
Beneficial Use	9	40

The Average Usage tiers are based on:

Tier I: Average winter usage (November-February)
 Tier II: Average Summer Usage (June-September)

Average Water Budget tiers are based on:

Tier I: Indoor water budget plus winter outdoor water budget (based on winter average Evapotranspiration [ET])
 Tier II: Indoor water budget plus summer outdoor water budget (based on summer average ET)
 For purposes of developing the tier widths for beneficial use, the District considered a variety of determining factors. Recently enacted legislation Making Water Conservation a California Way of Life, AB1668 (Friedman) and SB606 (Hertzberg), define efficient indoor residential water use to be 55 gallons per person per day, until January 1, 2025.

In addition, the legislation requires water purveyors to calculate a water supply objective that include the following major components:

- (1) Aggregate estimated efficient indoor residential water use.
- (2) Aggregate estimated efficient outdoor residential water use.
- (3) Aggregate estimated efficient outdoor irrigation of landscape areas with dedicated irrigation meters or equivalent technology in connection with CII water use.
- (4) Aggregate estimated efficient water losses.
- (5) Aggregate estimated water use in accordance with variances, as appropriate.

For purposes of calculating the Tier I breakpoint, indoor efficient water use was calculated based on the average number of persons per household of 3.86 persons per household.

Using this data and the 55 gallons per person per day efficient use standard, results in 9 units per month, per single family residence for essential indoor water use within Tier I.

$$(55 \text{ gallons/person/day}) \times (30 \text{ days/month}) \times (4 \text{ persons/Single Family Residence}) \times (1 \text{ unit/748.1 gallons}) = 8.82 \text{ units}$$

Since the District bills in whole billing units, the number is rounded up to the next whole billing unit of 9 units in Tier I.

In determining the breakpoint for Tier II, the District looked at efficient outdoor water use. In recognition of the variability of SFR lot sizes in the District’s service area and relative percentage of landscape area, we calculated an average lot size of a SFR parcel. However, due to the various types of single family residential lots in the District’s service area, from individually metered townhomes and condominiums without outdoor irrigation as well as large hillside lots that are predominately non-irrigated we excluded from the average lot size calculation the lowest and highest five percent of SFR lots.

Focusing on the 90 percent of remaining SFR lots resulted in the following results:

Less Than:

Parcel Size (Acres)	Number of Lots
0.15	1954
0.2	8224
0.25	4782
0.3	2216
0.4	2106
0.5	924
0.75	972
1	435
1.5	92
Grand Total	21705

Median	0.205478585
Average	0.257137072

*Removed Top and Bottom +/-5%

Based on the average lot size of the parcels, 0.26 acres, average summer ETo of 24.25 inches (June-September), an ET Adjustment Factor (ETAF) of 0.8, and 33 percent estimated landscape area, we get an average summer water budget of:

(9 units indoor use + 15.84 units efficient outdoor use) = 24.84 unit (rounded to 25 units).

ETo data is taken from the California Irrigation Management System, Pomona Station 78, for the period July 1, 2017 through June 30, 2018.

However, in recognition of the variability of lots sizes within the District, the District desires that adequate water is available in the summer for efficient use of water on large lots as well as the average lot. Based on the above data, we evaluated the outdoor water needs of lots up to 0.5 acres. Utilizing the same parameters with respect to ETo, ETAF, and percent landscape area, yields a calculated Tier II breakpoint of the following:

(9 units indoor use + 30.81 units outdoor use) = 39.81 units (rounded to 40).

The data for lot sizes was obtained from the District's GIS utilizing the County of Las Angeles parcel data. This data was cross referenced to the District's customer service database by utilizing available Assessor Parcel Numbers (APN). This resulted in a total population of SFR lots of 24,464 which is slightly less than the number of SFR meters of 25,467, as of June 2019, due to missing data.

Based on the above calculations, the Tier widths used for the 2019 Rate Study are:

- Tier I: 9 billing units
- Tier II: 40 billing units
- Tier III: 41+ billing units

From the available data discussed above, the total SFR lots in the District's service area, 20,206 of the 21,705 lots shown above are less than 0.5 acres. This represents 93.1 percent of the SFR lots in the dataset utilized. Additionally, of the total of 24,115 SFR lots, 21,411 are less than 0.5 acres. This represents 88.8 percent of the total SFR lots.