

Vallecitos Water District

Comprehensive Water Cost-of-Service Study

Final Report / August 11, 2022



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August 11, 2022

Mr. Wes Owen
Chief Financial Officer
201 Vallecitos De Oro
San Marcos, CA 92069

Subject: Comprehensive Water Cost-of-Service Study Report

Dear Mr. Owen,

Raftelis is pleased to provide this report for the Vallecitos Water District's Comprehensive Water Cost-of-Service Study. The high-level objectives for the study included:

- Completion of a water cost-of-service study to quantify the amount of rate revenues that must be collected from each customer class based on their unique demand characteristics.
- Analysis of proposed alternative water rate structures.
- Proposed water rates for the five-year period FY 21-22 - FY 25-26.
- Proposed drought surcharge rates.
- The creation of a new Microsoft-Excel water cost-of-service and rate design model.

The report discusses our key findings and recommendations for each of the above listed items. It has been a pleasure collaborating with you and other members of the District staff. Thank you for the support you provided during the course of this study.

Sincerely,

A handwritten signature in blue ink that reads "John F. Wright".

John Wright
Senior Manager

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1. Executive Summary

1.1. Study Objectives

On August 20, 2020, the Vallecitos Water District (District) retained the services of Raftelis to complete a Comprehensive Water Cost-of-Service (COSS) Study. The purpose of the study was to determine the amount of rate revenues that must be collected from each customer class based on their unique demand characteristics, an analysis of proposed alternative water rate structures, the development of proposed water rates for the five-year period FY 21-22 - FY 25-26, the development of proposed drought surcharge rates, and the creation of a new Microsoft-Excel water cost-of-service and rate design model.

1.2. Study Findings and Recommendations

1.2.1. WATER FINANCIAL PLAN

The District's Finance Department staff developed the proposed water utility financial plan for the period FY 21-22 - FY 25-26. Table 1-1 summarizes the recommended rate revenue adjustments.

Table 1-1: Proposed Water Rate Revenue Adjustments

Line	Year	Effective Date	% Revenue Increase
1	FY 21-22	Oct-22	3.5%
2	FY 22-23	Jan-23	5.2%
3	FY 23-24	Jan-24	6.2%
4	FY 24-25	Jan-25	6.6%
5	FY 25-26	Jan-26	6.6%

Table 1-2 provides a high-level summary of the water utility financial plan for the period FY 21-22 - FY 25-26 which was developed by the District in consultation with Raftelis. A detail of the FY 21-22 - FY 25-26 financial plan is presented in Table 3-7 later in this report.

Table 1-2: Summary FY 21-22 - FY 25-26 Water Utility Financial Plan

Line	Item	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	Percentage Increase in Revenues Earned from Rates	3.5%	5.2%	6.2%	6.6%	6.6%
2						
3	Rate Revenues					
4	Water Sales (Commodity Rates)	\$31,471,000	\$33,452,000	\$35,901,000	\$38,636,000	\$41,580,000
5	Readiness-to-Service Charge (Monthly Fixed Charges)	\$14,310,000	\$14,730,000	\$15,280,000	\$15,890,000	\$16,520,000
6	Total Rate Revenues	\$45,781,000	\$48,182,000	\$51,181,000	\$54,526,000	\$58,100,000
7						
8	Miscellaneous Non-Rate Revenues	\$1,016,000	\$1,224,000	\$1,244,000	\$1,264,000	\$1,284,000
9	Total Operating Revenue	\$46,797,000	\$49,406,000	\$52,425,000	\$55,790,000	\$59,384,000
10						
11	Operating Expenses					
12	Water Purchases	\$32,943,000	\$35,222,000	\$37,851,000	\$40,676,000	\$43,710,000
13	Other Operating Expenses	\$12,929,000	\$13,475,000	\$14,035,000	\$14,818,000	\$15,515,000
14	Total Operating Expenses	\$45,872,000	\$48,697,000	\$51,886,000	\$55,494,000	\$59,225,000
15						
16	Net Operating Income	\$925,000	\$709,000	\$539,000	\$296,000	\$159,000
17						
18	Beginning Cash Reserves	\$41,507,000	\$36,150,680	\$33,647,980	\$35,627,980	\$35,799,980
19						
20	Operating Transfers	\$925,000	\$709,000	\$539,000	\$296,000	\$159,000
21	Property Taxes	1,254,000	1,281,000	1,309,000	1,337,000	1,366,000
22	Investment Earnings	466,000	419,000	416,000	429,000	620,000
23	RDA Pass-Through	1,200,000	1,261,000	1,298,000	1,337,000	1,378,000
24	PERs UAL Funding	(1,557,000)	(554,000)	0	0	0
25	Capital Improvement Expenditures	(7,644,320)	(5,618,700)	(1,582,000)	(3,227,000)	(4,297,000)
26	Change in Cash Reserves	(\$5,356,320)	(\$2,502,700)	\$1,980,000	\$172,000	(\$774,000)
27						
28	Ending Cash Reserves	\$36,150,680	\$33,647,980	\$35,627,980	\$35,799,980	\$35,025,980

1.2.2. WATER REVENUE REQUIREMENT FROM RATES

The financial plan defines the revenue requirement from rates. This is the amount of revenue that must be collected from customers. The FY 21-22 revenue requirement from rates is \$45,781,000 as shown in Line 6 of Table 1-2. An alternative method of summarizing the FY 21-22 revenue requirement from rates is provided in Table 1-3. A more detailed version of the FY 22-23 revenue requirement from rates is presented in Table 4-1 later in this report.

Table 1-3: Summary FY 21-22 Revenue Requirement from Rates

Line	Item	FY 21-22 Amount
1	Water Purchases	\$32,943,000
2	Other Operating Expenses	\$12,929,000
3	PERS - UAL Funding	\$1,557,000
4	Rate Funded CIP Expenditures	\$7,644,320
5	Gross Revenue Requirement	\$55,073,320
6		
7	Revenue Requirement Offsets	(\$3,936,000)
8	Consolidated Change in Cash Reserves	(\$5,356,320)
9	Net Revenue Requirement from Rates	\$45,781,000

1.2.3. WATER COST-OF-SERVICE ANALYSIS

The cost-of-service analysis is a method of allocating the annual revenue requirement from rates developed in the financial plan to customer classes based on the principle of cost causation. The District’s current rate structure features customer classes defined by water meter size (e.g., 5/8”, 3/4”, 1”, etc.). Customers pay a monthly fixed Readiness-to-Serve charge (RTS) in which larger meters pay a higher charge for additional system capacity.

Commodity rates for each customer class are billed using three inclining block tiers with the tier breakpoints varying by meter size. The first commodity tier threshold is equal to the average minimum monthly usage within each meter size class as calculated from the District’s billing data (a comprehensive excel model that extracted all water usage

data per customer per month from 2015 through 2019.) The second tier limit is equal to the average maximum monthly use from the same model, and the third tier is all usage exceeding the second tier limit. The District's model is used to calculate annual demand within each tier. Tier 1 demand is usage up to the Tier 1 limit (average minimum use). Tier 2 demand is usage up to the Tier 2 limit (average maximum use). Tier 3 demand is usage beyond the Tier 2 limit (average maximum use).

This cost-of-service study proposes to retain the existing water customer classes and the existing RTS and commodity rate structures with only one modification as discussed in Section 1.2.5. Section 4.1.3 provides a detailed discussion of the rationale of the existing commodity rate structure. Table 1-4 shows the outcome of the FY 21-22 cost-of-service analysis for each customer class.

Table 1-4: FY 21-22 Water Cost-of-Service Summary

Line	Class	FY 21-22 Cost-of-Service
1	5/8"	\$21,341,023
2	3/4"	\$1,528,100
3	1"	\$3,283,066
4	1 1/2"	\$4,995,917
5	2"	\$7,303,511
6	3"	\$1,366,187
7	4"	\$791,233
8	6"	\$1,215,362
9	10"	\$135,643
10	Agriculture	\$1,462,154
11	Construction	\$429,779
12	MF Additional Units	\$1,775,143
13	Fireline	\$342,306
14	Vacation Meters (Note 1)	(\$150,000)
15	Total	\$45,819,423
16		
17	Revenue Requirement	\$45,781,000
18	Rounding Difference	\$38,423
19	% Difference (rounding)	0.1%

Note 1: Vacation meters are meters that are temporarily locked due to customer request (i.e., customer on vacation for several months)

1.2.4. EXISTING RATES

As noted above, the District is retaining its existing water rate structure in which customer classes are defined by water meter size (e.g., 5/8", 1", etc.) rather than land use type (e.g., residential, commercial, etc.) due to the higher correlation of usage patterns with customers of similar meter sizes. The District's existing rates are shown in Table 1-5.

Table 1-5: Existing Water Rate Structure

Line	Existing Rates	Tier Thresholds (HCF)			Commodity Rates \$/HCF		
		Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3
1	Commodity Rates						
2	5/8"	6	21	>21	\$3.77	\$4.75	\$9.18
3	1"	16	78	>78	\$3.77	\$4.75	\$9.18
4	1 1/2"	43	196	>196	\$3.77	\$4.75	\$9.18
5	2"	85	335	>335	\$3.77	\$4.75	\$9.18
6	3"	430	1,190	>1,190	\$3.77	\$4.75	\$9.18
7	4"	430	1,190	>1,190	\$3.77	\$4.75	\$9.18
8	6"	430	1,190	>1,190	\$3.77	\$4.75	\$9.18
9	10"	430	1,190	>1,190	\$3.77	\$4.75	\$9.18
10	Agriculture		All Usage			\$4.75	
11	Construction			All Usage			\$9.18
12							
13	Readiness-To-Serve Charge (\$/Account/Month)						
14	5/8"	\$36.55					
15	3/4"	\$36.55					
16	1"	\$53.31					
17	1 1/2"	\$137.11					
18	2"	\$220.91					
19	3"	\$338.23					
20	4"	\$505.83					
21	6"	\$1,008.63					
22	10"	\$2,349.43					
23	MF Additional Units	\$10.06					
24	Fire Line (per Inch Diameter)	\$7.55					

1.2.5. PROPOSED WATER RATES

As an outcome of the study process, the District staff, in consultation with Raftelis, developed proposed rates for the period FY 21-22 – FY 25-26. Table 1-7 shows these proposed rates for FY 21-22. The sole modification to the District's existing rate structure is the proposed implementation of new tier consumption thresholds for customers who are served by meters 3" and greater in size. Previously, all meters 3" and larger were grouped together. Section 5.1.5 provides a detailed discussion of the rationale for modifying the thresholds. Table 1-6 shows the proposed change in tier consumption thresholds (lines 5 - 8)

Table 1-6: Proposed Change in Tier Consumption Thresholds

Line	Existing Tier Consumption Thresholds				Proposed Tier Consumption Thresholds			
	Meter Size	Tier 1	Tier 2	Tier 3	Meter Size	Tier 1	Tier 2	Tier 3
1	5/8"	6	21	>21	5/8"	6	21	>21
2	1"	16	78	>78	1"	16	78	>78
3	1 1/2"	43	196	>196	1 1/2"	43	196	>196
4	2"	85	335	>335	2"	85	335	>335
5	3"	430	1,190	>1,190	3"	342	977	>977
6	4"	430	1,190	>1,190	4"	342	977	>977
7	6"	430	1,190	>1,190	6"	722	1,955	>1955
8	10"	430	1,190	>1,190	10"	722	1,955	>1955
9	Agriculture	All Usage			Agriculture	All Usage		
10	Construction	All Usage			Construction	All Usage		

Table 1-7 shows a summary comparison of the District's existing rates and the proposed FY 21-22 rates.

Table 1-7: Comparison of Existing and Proposed FY 21-22 Rates

Line		Existing	Proposed FY 21-22	\$ Difference	% Difference
1	Commodity Rate				
2	Tier 1 (All Meter Sizes)	\$3.77	\$3.77	\$0.00	0.00%
3	Tier 2 (All Meter Sizes)	\$4.75	\$4.91	\$0.16	3.37%
4	Tier 3 (All Meter Sizes)	\$9.18	\$8.50	(\$0.68)	-7.41%
5					
6	Readiness-to-Serve				
7	5/8"	\$36.55	\$37.07	\$0.52	1.42%
8	3/4"	\$36.55	\$37.07	\$0.52	1.42%
9	1"	\$53.31	\$54.10	\$0.79	1.48%
10	1 1/2"	\$137.11	\$139.22	\$2.11	1.54%
11	2"	\$220.91	\$224.35	\$3.44	1.56%
12	3"	\$338.23	\$343.52	\$5.29	1.56%
13	4"	\$505.83	\$513.77	\$7.94	1.57%
14	6"	\$1,008.63	\$1,024.52	\$15.89	1.58%
15	10"	\$2,349.43	\$2,386.52	\$37.09	1.58%
16	MF Additional Units	\$10.06	\$9.99	(\$0.07)	-0.70%
17	Fire Line (per Inch Diameter)	\$7.55	\$8.04	\$0.49	6.49%

Table 1-8 presents projected \$/HCF commodity rates for the period FY 21-22 - FY 25-26. The FY 21-22 rates shown in Table 1-8 are based on the cost-of-service study discussed in this report. The projected rates for FY 22-23 - FY 25-26 are *preliminary in nature and offered solely for information purposes*. Costs labeled "VWD Internal Costs" increase each year by the internal budget increases (operating budget, less purchased water costs) developed in the financial plan, not to exceed 4.0%. Those costs labeled as "Pass Through" in Table 1-8 are estimates of the future costs that will be charged by the District's water suppliers. The projected water supply pass-through costs shown in Table 1-8 may differ from actual experience. For this reason, the projected FY 22-23 - FY 25-26 rates shown in Table 1-8 are preliminary in nature. **Note that pass-through costs, as well as VWD internal costs, must be approved by the Board each year.**

Table 1-8: Proposed FY 21-22 - FY 25-26 Commodity Rates (\$/HCF)

Line	Tier	Rate Component	Current	Proposed FY 21-22	Projected Commodity Rates Presented for informational purposes only. The exact \$/HCF commodity rate will be dependent on purchased water costs + VWD internal costs			
					FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	Tier 1	OMWD Pass Through		\$0.62	\$0.65	\$0.70	\$0.74	\$0.79
2		SDCWA Pass-Through		\$2.14	\$2.27	\$2.43	\$2.59	\$2.76
3		Desal Pass-Through		\$1.66	\$1.76	\$1.88	\$2.01	\$2.14
4		VWD Internal Costs		\$0.11	\$0.11	\$0.12	\$0.12	\$0.13
5		VWD Discretionary Offsets		(\$0.77)	(\$0.77)	(\$0.77)	(\$0.77)	(\$0.77)
6		Total Commodity Rate	\$3.77	\$3.77	\$4.03	\$4.35	\$4.70	\$5.06
7								
8	Tier 2	OMWD Pass Through		\$0.62	\$0.65	\$0.70	\$0.74	\$0.79
9		SDCWA Pass-Through		\$2.14	\$2.27	\$2.43	\$2.59	\$2.76
10		Desal Pass-Through		\$1.66	\$1.76	\$1.88	\$2.01	\$2.14
11		VWD Internal Costs		\$0.72	\$0.75	\$0.78	\$0.81	\$0.84
12		VWD Discretionary Offsets		(\$0.24)	(\$0.24)	(\$0.24)	(\$0.24)	(\$0.24)
13		Total Commodity	\$4.75	\$4.91	\$5.20	\$5.55	\$5.91	\$6.31
14								
15	Tier 3	OMWD Pass Through		\$0.62	\$0.65	\$0.70	\$0.74	\$0.79
16		SDCWA Pass-Through		\$2.14	\$2.27	\$2.43	\$2.59	\$2.76
17		Desal Pass-Through		\$1.66	\$1.76	\$1.88	\$2.01	\$2.14
18		VWD Internal Costs		\$4.07	\$4.23	\$4.40	\$4.58	\$4.76
19		VWD Discretionary Offsets		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
20		Total Commodity	\$9.18	\$8.50	\$8.92	\$9.40	\$9.92	\$10.46

Note: Due to rounding, totals may be off by \$0.01

Table 1-9 presents the proposed FY 21-22 - FY 25-26 readiness-to-serve (RTS) charges and fire line charges. Similar to the commodity rates shown in Table 1-8, the projected RTS charges for FY 22-23 - FY 25-26 shown in Table 1-9 are *preliminary in nature and offered solely for information purposes*.

Table 1-9: Proposed FY 21-22 - FY 25-26 Readiness-to-Serve Charges (\$/Month)

Line	Meter Size	Rate Component	Current FY 20-21	COS Calculated FY 21-22	Projected RTS Charges Presented for informational purposes only. The exact RTS charge will be dependent on purchased water costs + VWD internal costs			
					FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	5/8"	VWD Internal Costs		\$22.59	\$23.49	\$24.43	\$25.41	\$26.43
2		Pass-Through Costs:						
3		SDCWA Fixed Charges		\$10.24	\$10.85	\$11.58	\$12.36	\$13.19
4		SDCWA Infrastructure Access Charge		\$4.24	\$4.49	\$4.80	\$5.12	\$5.46
5		Total	\$36.55	\$37.07	\$38.84	\$40.81	\$42.89	\$45.08
6								
7	3/4"	VWD Internal Costs		\$22.59	\$23.49	\$24.43	\$25.41	\$26.43
8		Pass-Through Costs:						
9		SDCWA Fixed Charges		\$10.24	\$10.85	\$11.58	\$12.36	\$13.19
10		SDCWA Infrastructure Access Charge		\$4.24	\$4.49	\$4.80	\$5.12	\$5.46
11		Total	\$36.55	\$37.07	\$38.84	\$40.81	\$42.89	\$45.08
12								
13	1"	VWD Internal Costs		\$32.38	\$33.68	\$35.02	\$36.42	\$37.88
14		Pass-Through Costs:						
15		SDCWA Fixed Charges		\$15.36	\$16.28	\$17.38	\$18.54	\$19.79
16		SDCWA Infrastructure Access Charge		\$6.36	\$6.74	\$7.19	\$7.68	\$8.19
17		Total	\$53.31	\$54.10	\$56.70	\$59.59	\$62.64	\$65.86
18								
19	1 1/2"	VWD Internal Costs		\$81.30	\$84.55	\$87.93	\$91.45	\$95.11
20		Pass-Through Costs:						
21		SDCWA Fixed Charges		\$40.96	\$43.42	\$46.34	\$49.45	\$52.77
22		SDCWA Infrastructure Access Charge		\$16.96	\$17.98	\$19.19	\$20.47	\$21.85
23		Total	\$137.11	\$139.22	\$145.95	\$153.46	\$161.38	\$169.73
24								
25	2"	VWD Internal Costs		\$130.23	\$135.44	\$140.86	\$146.49	\$152.35
26		Pass-Through Costs:						
27		SDCWA Fixed Charges		\$66.56	\$70.55	\$75.29	\$80.35	\$85.75
28		SDCWA Infrastructure Access Charge		\$27.36	\$29.21	\$31.18	\$33.27	\$35.51
29		Total	\$220.91	\$224.35	\$235.21	\$247.33	\$260.12	\$273.61
30								
31	3"	VWD Internal Costs		\$198.72	\$206.67	\$214.94	\$223.53	\$232.47
32		Pass-Through Costs:						
33		SDCWA Fixed Charges		\$102.40	\$108.54	\$115.84	\$123.62	\$131.93
34		SDCWA Infrastructure Access Charge		\$42.40	\$44.94	\$47.96	\$51.19	\$54.63
35		Total	\$338.23	\$343.52	\$360.16	\$378.74	\$398.34	\$419.03
36								
37	4"	VWD Internal Costs		\$296.57	\$308.43	\$320.77	\$333.60	\$346.94
38		Pass-Through Costs:						
39		SDCWA Fixed Charges		\$153.60	\$162.82	\$173.76	\$185.43	\$197.89
40		SDCWA Infrastructure Access Charge		\$63.60	\$67.42	\$71.95	\$76.78	\$81.94
41		Total	\$505.83	\$513.77	\$538.66	\$566.47	\$595.82	\$626.78
42								
43	6"	VWD Internal Costs		\$590.12	\$613.72	\$638.27	\$663.80	\$690.36
44		Pass-Through Costs:						
45		SDCWA Fixed Charges		\$307.20	\$325.63	\$347.51	\$370.87	\$395.79
46		SDCWA Infrastructure Access Charge		\$127.20	\$134.83	\$143.89	\$153.56	\$163.88
47		Total	\$1,008.63	\$1,024.52	\$1,074.19	\$1,129.68	\$1,188.23	\$1,250.03
48								
49	10"	VWD Internal Costs		\$1,372.92	\$1,427.84	\$1,484.95	\$1,544.35	\$1,606.12
50		Pass-Through Costs:						
51		SDCWA Fixed Charges		\$716.80	\$759.81	\$810.87	\$865.36	\$923.51
52		SDCWA Infrastructure Access Charge		\$296.80	\$314.61	\$335.75	\$358.31	\$382.39
53		Total	\$2,349.43	\$2,386.52	\$2,502.25	\$2,631.57	\$2,768.02	\$2,912.02
54								
55	MF Add. Units	VWD Internal Costs		\$6.56	\$6.82	\$7.10	\$7.38	\$7.67
56		Pass-Through Costs:						
57		SDCWA Fixed Charges		\$3.43	\$3.64	\$3.88	\$4.14	\$4.42
58		SDCWA Infrastructure Access Charge		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
59		Total	\$10.06	\$9.99	\$10.46	\$10.98	\$11.52	\$12.09
60								
61	Fireline	VWD Internal Costs	\$7.55	\$8.04	\$8.36	\$8.70	\$9.04	\$9.41

1.2.6. PROPOSED DROUGHT RATES

The District recovers a portion of its fixed costs through the commodity rate. In the event of drought conditions or mandated water cutbacks, the District continues to incur fixed costs while receiving reduced revenues. The District's Board of Directors approved Ordinance 219 on November 17, 2021. Ordinance 219 implements the District's Water Shortage Contingency Plan. Within Ordinance 219, Drought Rates for the commodity charge then in effect would be adjusted as necessary to achieve full cost recovery of the District's revenue requirement. District Staff, in consultation with Raftelis, developed proposed drought rates to comply with Ordinance 219 shown in Table 1-10. These maximum drought rates will remain unchanged through FY 25-26.

Table 1-10: Proposed FY 21-22 - FY 25-26 Drought Rates (\$/HCF)

Line	Drought Level	Demand % Cutback	Demand Units (HCF)	Revenue Loss	Expense Savings	Net Budget Impact	Add'l Rate Per Unit (HCF)*
1	1	10%	5,591,291	\$ (3,621,719)	\$ (2,161,970)	\$ (1,459,749)	\$0.26
2	2	20%	5,007,197	(7,112,887)	(4,667,960)	(2,444,927)	0.49
3	3	30%	4,423,010	(10,464,439)	(7,018,935)	(3,445,504)	0.78
4	4	40%	3,838,757	(13,669,994)	(9,381,240)	(4,288,754)	1.12
5	5	50%	3,254,466	(16,717,037)	(11,727,585)	(4,989,452)	1.53
6	6	60%	2,670,177	(19,590,875)	(14,073,930)	(5,516,945)	2.07

* Drought rates are calculated by taking the "Net Budget Impact" and dividing it by the new "Demand Units". For example, line 1 shows a "Net Budget Impact" of \$1,459,749 and "Demand Units" of 5,591,291. Dividing the two numbers (\$1,459,749/5,591,291) results in a Drought Rate of \$0.26 per unit of water

2. Introduction

2.1. Study Background

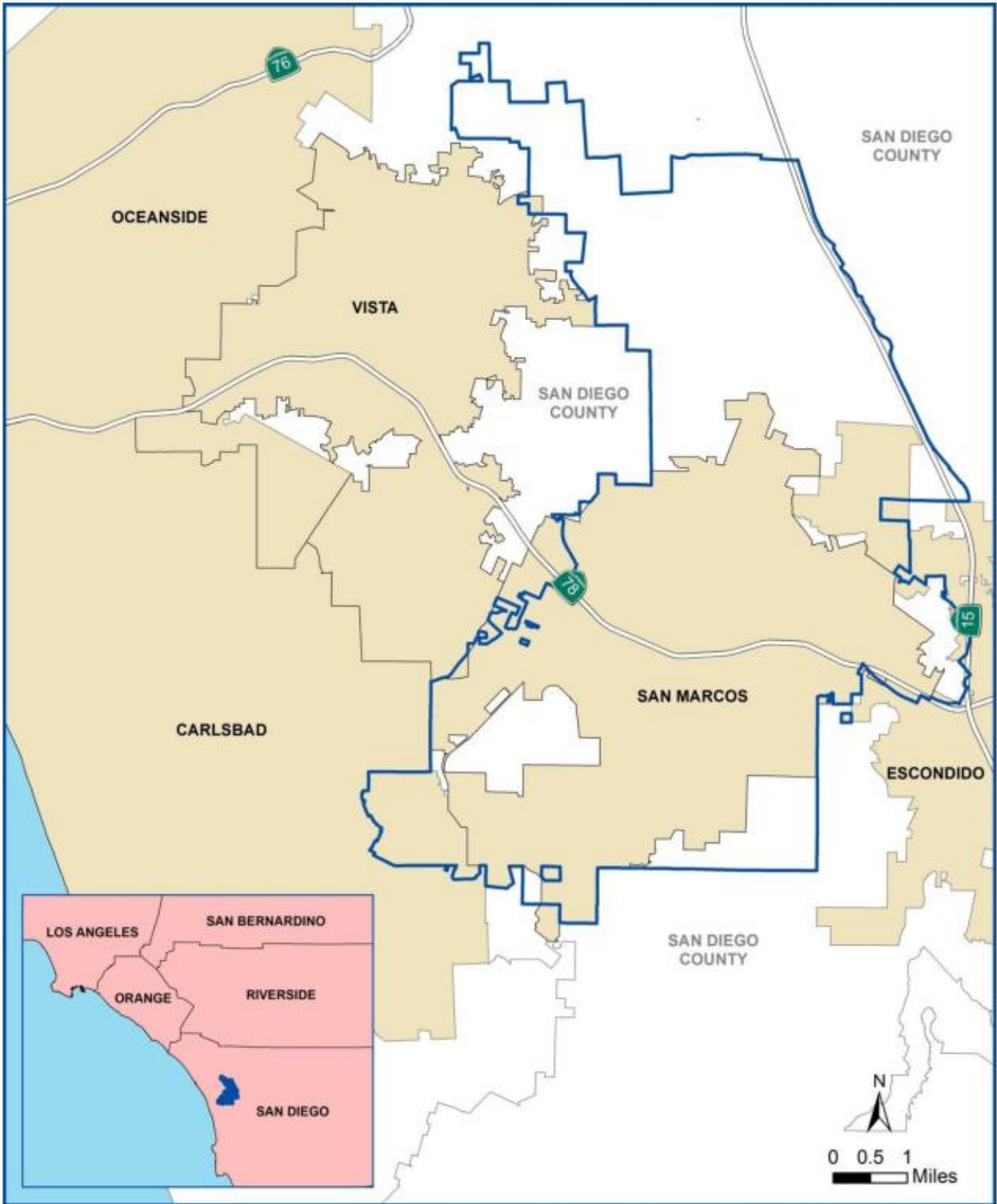
On August 20, 2020, the Vallecitos Water District (District) retained the services of Raffelis to complete a Comprehensive Water Cost-of-Service study. The purpose of the study was to quantify the amount of rate revenues that must be collected from each customer class based on their unique demand characteristics, the analysis of proposed alternative water rate structures, proposed water rates for the five-year period FY 21-22 - FY 25-26, proposed drought surcharge rates, and the creation of a new Microsoft-Excel water cost-of-service and rate design model. Water cost-of-service studies were last completed by the District in 2014 (by the consulting firm Black & Veatch), 2017 (by District Staff), and in 2019 (a review and rate update addendum by Raffelis).

2.1.1. DISTRICT SERVICE TERRITORY

The District is a publicly owned water and sewer agency, originally founded on March 12, 1955, as the San Marcos County Water District and authorized as a California special district by the State Legislature, with an entitlement to import water under the provisions of the Municipal Water District Act of 1911. The District provides water service to over 22,000 potable water accounts within approximately 45.37 square miles of north San Diego County.

The District provides potable water and wastewater services within northern San Diego County, including service to the City of San Marcos; parts of the cities of Carlsbad, Escondido, and Vista; and unincorporated areas within the County of San Diego. In addition, The District wholesales recycled water to the City of Carlsbad and the Olivenhain Municipal Water District. Figure 1-1 shows the location of the District, as well as the planning area boundary.

Figure 1: VWD Water Utility Service Territory



2.1.2. WATER SUPPLY

The District obtains 100% of its potable water supplies from the San Diego County Water Authority (SDCWA) and the Olivenhain Municipal Water District (OMWD). Potable water purchased from SDCWA is obtained from two separate supply sources. First, the District has a water purchase agreement with SDCWA that allows it to purchase supplies from SDCWA's melded sources which are primarily obtained from the Metropolitan Water District of Southern California. Second, the District has contracted with SDCWA for a direct purchase commitment of desalinated sea water from the Carlsbad Desalination Plant (Desal Plant). This commitment is structured as a "take-or-pay" contract which requires the District to pay for 3,500 AF of Desal Plant water regardless of the District's actual deliveries. The 3,500 AF commitment amount is priced at full recovery of cost – approximately \$2,900 per acre foot in 2022. Table 2-1 shows the District's projected water supply sources for FY 21-22.

Table 2-1: Estimated FY 21-22 Water Supply Sources

Supply Source	AF	% of Total AF	\$/Cost per AF
San Diego County Water Authority - Melded Supply	9,165	59.5%	\$1,439
San Diego County Water Authority Desal Plant	3,500	22.7%	\$2,931
Olivenhain Municipal Water District	2,750	17.8%	\$1,378
Total AF	15,415	100.0%	

2.1.3. WATER SYSTEM INFRASTRUCTURE

As described in the District's 2018 Water, Wastewater, and Recycled Water Master Plan prepared by the consulting firm Black & Veatch, the District delivers water through 356 miles of pipeline, operates 10 pump stations, and 19 potable water storage reservoirs ranging in size from 350,000 gallons to 40 million gallons. The District's total operational storage capacity is 121.6 million gallons.

2.2. Report Contents

This report contains the following sections:

- **Section 1: Executive Summary.** Summarizes the study results for the water financial plan, cost- of-service analysis and rate design.
- **Section 2: Study Background.** Provides an overview and purpose of the study as well as key components of the study process.
- **Section 3: Water Financial Plan.** Discussion of the development of the water financial plan including a discussion of operating expenses, capital expenditures, debt service, cash reserve requirements, debt service coverage requirements, and the annual revenue requirement from rates.
- **Section 4: Water Cost-of-Service Analysis.** Discussion of the process used to functionalize, allocate, and distribute the annual water rate revenue requirement to customer classes.
- **Section 5: Water Rate Design.** Discussion of the process of developing the recommended water rate structure and proposed water rates. This section also includes the calculation of drought surcharges and selected CY 2022 customer bill impacts.

2.3. Legal and Statutory Considerations

2.3.1. PROPOSITION 218

In November 1996, California voters approved Proposition 218, which amended the California Constitution by adding Article XIII C and Article XIII D. Article XIII D placed substantive limitations on the use of the revenue collected from property-related fees and on the amount of the fee that may be imposed on each parcel. Additionally, it established procedural requirements for imposing new, or increasing existing, property-related fees. The California Supreme Court has determined that water and wastewater service fees are property-related fees. These provisions require that a property-related fee must meet all of the following requirements:

- Revenues derived from the fee must not exceed the funds required to provide the property-related service.
- Revenues derived from the fee must not be used for any purpose other than that for which the fee is imposed.
- The amount of a fee imposed upon any parcel or person as an incident of property ownership must not exceed the proportional cost of the service attributable to the parcel.
- The fee may not be imposed for a service, unless the service is actually used by, or immediately available to the owner of the property subject to the fee. A fee based on potential or future use of a service is not permitted and stand-by charges must be classified as assessments subject to the ballot protest and proportionality requirements for assessments.
- No fee may be imposed for general governmental services, such as police, fire, ambulance, or libraries, where the service is available to the public in substantially the same manner as it is to property owners. The five substantive requirements in Article XIII D are structured to place limitations on (1) the use of the revenue collected from property-related fees and (2) the allocation of costs recovered by such fees to ensure that they are proportionate to the cost of providing the service attributable to each parcel.

As cited in the American Water Works publication, *Manual of Water Supply Practice M1, Principles of Water Rates, Fees, and Charges*, 7th Edition (AWWA Manual M1), “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 be sound and that there must be a nexus between the costs and the rates charged in addition to meeting the substantive requirements set forth therein. California Courts have also made clear that, while agencies are authorized to use industry-standard rate setting methodologies set forth in AWWA Manual M1, rates for water service must meet the substantive requirements of Proposition 218. This study demonstrates that such requirements have been met for the water rates and charges.

2.3.2. CALIFORNIA CONSTITUTION – ARTICLE X, SECTION 2

Article X, Section 2 of the California Constitution (established in 1976) 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 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.

2.4. The Rate Setting Process

The rate setting process includes the following key steps:

- **Revenue Requirement Determination**: The rate-making process starts by determining the "test-year" (rate-setting year) revenue requirement from rates. The revenue requirement should sufficiently fund the utility’s O&M, debt service, capital expenses, and other identified costs with funding to reserves (positive cash) or using reserves (negative cash), all based on a long-term financial plan.
- **Cost-of-Service Analysis**: The annual cost of providing water service is distributed among customer classes in proportion to their service requirements. A cost-of-service analysis involves the following key steps:
 - **Assignment of Costs to Functions**: Examples of water system functions include storage, treatment, and distribution. Examples of wastewater system functions include collection, conveyance, and treatment.
 - **Allocation of Costs to Cost Causation Components**: Examples of water cost components include base demand, maximum day demand and maximum hour demand. Examples of wastewater cost causation components include flow, biochemical oxygen demand, and suspended solids.
 - **Distribution of Costs to Customer Classes**: Costs are distributed to customer classes in proportion to the demands they place on the water and wastewater systems.
- **Rate Design and Proposed Rates**: Rates do more than simply recover costs. Properly designed rates should support and optimize a blend of various utility objectives, such as promoting cost-based water use efficiency, affordability for essential needs, and revenue stability among other objectives.
- **Rate Adoption Process**: Rate adoption is the last step of the rate-making process and is part of the procedural requirements of Proposition 218. Raftelis documents the rate study results in reports to serve as the utility’s administrative record and a public education tool about the proposed changes, the rationale and justifications behind the changes, and their anticipated financial impacts.

Raftelis conducted a comprehensive cost-of-service rate study for the District and documented the results and findings in this report. This Study focuses on financial plan updates and incorporates the latest financial information and cost projections for the next five years. The proposed revenue adjustments resulting from the financial plan will be applied across all categories of the updated rates to calculate the proposed rates for FY 22-23.

2.5. Reliance on District Provided Data

During the study, District staff provided Raftelis with a variety of technical information, including demand, cost, and revenue data. Raftelis did not independently assess or test for the accuracy of such data – historic or projected. Raftelis has relied on this data in the formulation of our findings and subsequent recommendations, as well as in the preparation of this report. Raftelis also relied on cost allocation data provided by the District as needed to complete the cost-of-service analysis.

3. Financial Plan

3.1.1. FINANCIAL PLANNING OVERVIEW

The financial plan used to develop the proposed FY 21-22 – FY 25-26 water rates discussed in this report was developed by District staff. District staff provided estimates for financial planning inputs such as projected customer account growth, projected billed water demand and associated water supply costs, projected operating expenses, and the financing strategy proposed by the District to fund capital improvement expenditures. Raftelis' role in the cost-of-service study was to:

- Allocate the FY 21-22 revenue requirement, as developed in the financial plan, to the District's customer classes in proportion to the demands they impose on the water utility system.
- Developed proposed customer class rates for the period FY 21-22 - FY 25-26.

3.1.2. PROJECTED CUSTOMER ACCOUNT GROWTH

Table 3-1 presents the District Staff's projection of customer account growth for the FY 21-22 - FY 25-26 planning horizon. The financial plan assumes growth in the number of customers accounts at each meter size to be 0.3% annually as specified by the District's staff. This growth factor is based on historical (5 year) growth of approximately 60 to 80 additional meters per year.

Table 3-1: Projected FY 21-22 - FY 25-26 Account Growth

Line	Type of Account	FY 20-21	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	Potable Water (Meter Size)						
2	5/8"	16,138	16,185	16,234	16,282	16,331	16,380
3	3/4"	3,435	3,445	3,456	3,466	3,477	3,487
4	1"	1,085	1,088	1,092	1,095	1,098	1,101
5	1 1/2"	760	762	765	767	769	772
6	2"	549	551	553	554	556	558
7	3"	32	32	32	32	32	32
8	4"	18	18	18	18	18	18
9	6"	15	15	15	15	15	15
10	10"	1	1	1	1	1	1
11							
12	Construction	25	25	25	25	25	25
13	Potable Water	22,058	22,122	22,191	22,255	22,322	22,389
14							
15	Commercial Fire Line (Pipe Diameter)						
16	1FL	5	5	5	5	5	5
17	5/8FL	28	29	29	29	29	29
18	3/4FL	9	9	9	9	9	9
19	Commercial Fire Line	42	43	43	43	43	43
20							
21	Total Accounts	22,100	22,165	22,234	22,298	22,365	22,432

3.1.3. PROJECTED BILLED WATER CONSUMPTION

Table 3-2 presents the District Staff's projection of customer account growth for the FY 21-22 - FY 25-26 planning horizon. The financial plan assumes growth in the billed water consumption at each meter size to be 0.3% annually as specified by the District's staff. The growth in billed water is based on the growth in the number of meters as described in 3.1.2 above. Demand per meter is projected to remain flat.

Table 3-2: Projected FY 21-22 - FY 25-26 Billed Water Consumption

Line	Potable Water (Meter Size)	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	5/8"	2,946,981	2,955,822	2,964,689	2,973,583	2,982,504
2	1"	479,285	480,723	482,165	483,612	485,063
3	1 1/2"	712,460	714,597	716,741	718,891	721,048
4	2"	1,117,199	1,120,550	1,123,912	1,127,284	1,130,666
5	3"	238,462	239,178	239,895	240,615	241,337
6	4"	129,462	129,850	130,239	130,630	131,022
7	6"	214,359	215,002	215,647	216,294	216,943
8	10"	22,251	22,318	22,385	22,452	22,519
9	Agricultural	298,684	299,580	300,479	301,381	302,285
10	Construction	38,553	38,669	38,785	38,901	39,018
11	VWD Internal usage	32,153	32,250	32,346	32,443	32,541
12	TOTAL	6,229,850	6,248,539	6,267,285	6,286,087	6,304,945

3.1.4. PROJECTED REVENUES

Table 3-3 shows both projected water sales revenues and projected miscellaneous non-rate revenues during the FY 21-22 - FY 25-26 planning horizon. The rate revenues shown in lines 4-6 reflect the proposed rate revenue increases shown in line 1. The miscellaneous revenues reflected in lines 9-11 include other revenues consisting of delinquency charges, recovery/reimbursements, backflow fees, and various other miscellaneous fees. These figures are based on preliminary estimates from the San Diego County Water Authority (SDCWA) and the District's 5-year projection from their FY 21-22 Budget

Table 3-3: Projected FY 21-22 - FY 25-26 Revenues

Line	Revenue Description Projected Rate Revenues at Existing Rates	FY 21-22 Budgeted	FY 22-23 Projected	FY 23-24 Projected	FY 24-25 Projected	FY 25-26 Projected
1	Percentage Increase in Revenues Earned from Rates	3.5%	5.2%	6.2%	6.6%	6.6%
2						
3	Rate Revenues					
4	Water Sales (Commodity Rates)	\$31,471,000	\$33,452,000	\$35,901,000	\$38,636,000	\$41,580,000
5	Readiness-to-Service Charge (Monthly Fixed Charges)	\$14,310,000	\$14,730,000	\$15,280,000	\$15,890,000	\$16,520,000
6	Total Rate Revenues	\$45,781,000	\$48,182,000	\$51,181,000	\$54,526,000	\$58,100,000
7						
8	Miscellaneous Non-Rate Revenues					
9	Pumping Charges	\$415,000	\$425,000	\$435,000	\$445,000	\$455,000
10	Interest	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
11	Other	\$596,000	\$794,000	\$804,000	\$814,000	\$824,000
12	Total Operating Revenues	\$1,016,000	\$1,224,000	\$1,244,000	\$1,264,000	\$1,284,000
13						
14	Total Revenue	\$46,797,000	\$49,406,000	\$52,425,000	\$55,790,000	\$59,384,000

3.1.5. PROJECTED PURCHASED WATER COSTS

Purchased water costs account for approximately 72% of the District's total operating expenses. The District obtains 100% of its potable water supplies from SDCWA and the Olivenhain Municipal Water District (OMWD). The District has a water purchase agreement with SDCWA that allows it to purchase supplies from SDCWA's melded sources which are primarily obtained from the Metropolitan Water District of Southern California. The District has contracted with SDCWA for a direct purchase commitment of desalinated sea water from the Carlsbad Desalination Plant. This commitment is structured as a "take-or-pay" contract which requires the District to pay for 3,500 AF of Desal Plant water regardless of the District's actual deliveries. Table 3-4 shows a detail of projected purchased water costs for the period FY 21-22 - FY 25-26. The projection is based on District Staff's analysis of each provider's publicly available information regarding future rate increases.

Table 3-4: Projected FY 21-22 - FY 25-26 Purchased Water Costs

Line	Purchased Water Component	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	Purchased Water Costs - Fixed					
2	San Diego County Water Authority Fixed Charge	\$4,135,775	\$4,262,000	\$4,548,000	\$4,854,000	\$5,180,000
3	San Diego County Water Authority Infrastructure Access Charge	\$1,484,225	\$1,450,000	\$1,547,000	\$1,651,000	\$1,762,000
4	Total Fixed Costs	\$5,620,000	\$5,712,000	\$6,095,000	\$6,505,000	\$6,942,000
5						
6	Purchased Water Costs - Commodity					
7						
8	San Diego County Water Authority Melded Supply					
9	Demand (AF)	9,165	9,320	9,480	9,640	9,800
10	Cost (\$/AF)	\$1,445	\$1,542	\$1,646	\$1,756	\$1,874
11	Total Cost	\$13,244,000	\$14,372,663	\$15,601,828	\$16,931,288	\$18,368,972
12						
13	San Diego County Water Authority Desal Plant					
14	Demand (AF)	3,500	3,500	3,500	3,500	3,500
15	Cost (\$/AF)	\$2,935	\$3,163	\$3,375	\$3,602	\$3,844
16	Total Cost	\$10,273,000	\$11,069,856	\$11,813,750	\$12,607,634	\$13,454,867
17						
18	Olivenhain Municipal Water District					
19	Demand (AF)	2,750	2,750	2,750	2,750	2,750
20	Cost (\$/AF)	\$1,384	\$1,479	\$1,578	\$1,685	\$1,798
21	Total Cost	\$3,806,000	\$4,067,474	\$4,340,809	\$4,632,511	\$4,943,816
22						
23	Total Commodity Costs	\$27,323,000	\$29,509,993	\$31,756,387	\$34,171,433	\$36,767,655
24						
25	Total Purchased Water Costs (Line 4 + Line 23, Total rounded up to the nearest \$1,000 increment)	\$32,943,000	\$35,222,000	\$37,851,000	\$40,676,000	\$43,710,000

3.1.6. PROJECTED OPERATING EXPENSES

Table 3-5 shows the operating expenses included in the District's FY 21-22 – FY 25-26 financial plan. The projected annual percentage in operating expenses is shown in line 44. The percentage growth rate in operating expenses for the years FY 22-23, FY 23-24, and FY 24-25 are driven by estimated increases in purchased water costs as well as detailed analysis of the District’s internal costs by major cost component. Factors such as historical increases, planned expenditures, increase in costs from San Diego Gas & Electric, customer growth and increases passed on from SDCWA for wholesale water costs are used to derive estimated expenditures. The backup data can be found in the Districts’ FY 21-22 Budget, which includes a detailed 5 year plan.

Table 3-5: Projected FY 21-22 - FY 25-26 Operating Expenses

Line	Operating Costs	FY 21-22 Budgeted	FY 22-23 Projected	FY 23-24 Projected	FY 24-25 Projected	FY 25-26 Projected
1	Water Purchases	\$32,943,000	\$35,222,000	\$37,851,000	\$40,676,000	\$43,710,000
2	Pumping	\$923,000	\$954,000	\$1,035,000	\$1,127,000	\$1,217,000
3	Water Quality	\$211,000	\$225,000	\$240,000	\$256,000	\$272,000
4	Water Treatment	\$476,000	\$498,000	\$523,000	\$551,000	\$574,000
5	Tanks & Reservoirs	\$380,000	\$393,000	\$406,000	\$422,000	\$434,000
6	Transmission & Dist.	\$1,910,000	\$2,103,000	\$2,347,000	\$2,644,000	\$2,965,000
7	Services	\$82,000	\$86,000	\$92,000	\$98,000	\$103,000
8	Meters	\$966,000	\$918,000	\$955,000	\$991,000	\$1,003,000
9	Backflow Prevention	\$74,000	\$77,000	\$79,000	\$81,000	\$83,000
10	Customer Accounts	\$888,000	\$921,000	\$791,000	\$828,000	\$854,000
11	Equipment & Vehicles	\$339,000	\$374,000	\$387,000	\$401,000	\$412,000
12	Building & Grounds	\$494,000	\$496,000	\$509,000	\$521,000	\$531,000
13	Engineering	\$1,637,000	\$1,771,000	\$1,838,000	\$1,907,000	\$1,942,000
14	Safety & Reg. Affairs	\$285,000	\$299,000	\$317,000	\$327,000	\$329,000
15	Information Technology	\$1,130,000	\$1,159,000	\$1,194,000	\$1,226,000	\$1,256,000
16	General & Administrative Costs	\$2,567,685	\$2,607,026	\$2,707,805	\$2,794,010	\$2,880,587
17	Conservation Costs					
18	Salaries	\$283,322	\$313,820	\$333,675	\$351,606	\$357,957
19	Benefits	\$169,993	\$185,154	\$183,521	\$193,383	\$200,456
20	Materials and Service	\$113,000	\$95,000	\$97,000	\$99,000	\$101,000
21	Total Operating Expenses	\$45,872,000	\$48,697,000	\$51,886,000	\$55,494,000	\$59,225,000
22						
23	Total Operating Expenses		6.16%	6.55%	6.95%	6.72%

3.1.7. PROJECTED CAPITAL EXPENDITURES

Rate-funded CIP expenditures are included in the revenue requirement from rates. Rate-funded CIP expenditures are the capital costs incurred to repair, rehabilitate, and/or replace existing water system infrastructure. Rate-funded CIP expenditures do *not* include the cost of water system infrastructure intended to increase system capacity or pay for growth-related capital improvements. Table 3-6 shows the rate-funded CIP included in the FY 21-22 revenue requirement from rates.

Table 3-6: Projected FY 21-22 - FY 25-26 Rate-Funded Capital Expenditures

Line	Project	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	City of San Marcos Creek District Phase 1	\$760,500	\$1,855,500	\$0	\$0	\$0
2	Tres-Amigos Water Line Replacement Phase 1	\$1,405,000	\$1,455,000	\$0	\$0	\$0
3	Ductile Iron Pipe Condition Assessment	\$300,000	\$300,000	\$300,000	\$300,000	\$0
4	District-wide SCADA Upgrade Project	\$280,500	\$0	\$0	\$0	\$0
5	Sage Canyon Tank Refurbishment	\$1,125,000	\$0	\$0	\$0	\$0
6	Steel Pipeline Condition Assessment	\$250,000	\$250,000	\$355,000	\$0	\$0
7	Asset Management Replacement Schedule	\$160,000	\$97,000	\$0	\$0	\$0
8	Palos Vista Pump Station - Motor Starters Upgrade	\$512,000	\$0	\$0	\$0	\$0
9	Las Posas Water Line Replacement	\$486,000	\$0	\$0	\$0	\$0
10	Coronado Hills Tank Exterior Refurbishment	\$5,000	\$455,000	\$0	\$0	\$0
11	Richland I Tank Exterior Refurbishment	\$45,000	\$360,000	\$0	\$0	\$0
12	Technology Infrastructure Upgrades	\$66,300	\$0	\$0	\$0	\$0
13	Redundancy for Admin. Wireless Radio Network	\$154,020	\$0	\$0	\$0	\$0
14	Coggan Pump Station - Generator	\$325,000	\$0	\$0	\$0	\$0
15	Rock Springs Valve Replacement	\$20,000	\$273,000	\$0	\$0	\$0
16	Fire Services - Backflow Preventer Upgrades	\$75,000	\$0	\$0	\$0	\$0
17	Via Vera Cruz Tank Hill Stabilization	\$0	\$0	\$20,000	\$195,000	\$0
18	DHS- Upgrades for Critical Infrastructure Hardware	\$116,280	\$0	\$0	\$0	\$0
19	District Wide Solar	\$2,550	\$0	\$0	\$0	\$0
20	Door Access Control System Expansion -MRF & Mahr	\$24,990	\$0	\$0	\$0	\$0
21	Upgrades to Surveillance Video Management System	\$76,500	\$0	\$0	\$0	\$0
22	HVAC Communication Upgrade	\$72,930	\$0	\$0	\$0	\$0
23	Update Restrooms to ADA Compliance	\$68,850	\$0	\$0	\$0	\$0
24	City of San Marcos Joint Projects Relocate/Adjust	\$0	\$60,750	\$0	\$0	\$0
25	Maximo Mobility	\$10,200	\$127,500	\$0	\$0	\$0
26	Energy Management Study	\$117,300	\$0	\$0	\$0	\$0
27	Maintenance Services Department - Offices	\$76,500	\$0	\$0	\$0	\$0
28	Wulff Pressure Reducing Station	\$140,000	\$0	\$0	\$0	\$0
29	Maximo - GIS interface	\$38,250	\$22,950	\$0	\$0	\$0
30	District-wide Valve Replacement Program	\$100,000	\$0	\$0	\$0	\$0
31	Fleet Maintenance - Hydraulic Lift Replacement	\$40,800	\$0	\$0	\$0	\$0
32	Safety Nets and Climbing System for Twin Oaks	\$70,000	\$0	\$0	\$0	\$0
33	E Building - Minor Repairs and Painting	\$30,600	\$0	\$0	\$0	\$0
34	Administration Building - Concrete Repairs	\$28,050	\$0	\$0	\$0	\$0
35	Painting of Car Wash Building	\$25,500	\$0	\$0	\$0	\$0
36	Craven Pressure Station - Interior Refurbishment	\$40,000	\$0	\$0	\$0	\$0
37	Trussell FCF - Water Quality Analyzer	\$35,000	\$0	\$0	\$0	\$0
38	San Elijo Pump Station - Water Quality Analyzer	\$35,000	\$0	\$0	\$0	\$0
39	Administration Building - Roof Repairs	\$17,340	\$0	\$0	\$0	\$0
40	Palomar Tank: Asphalt Repair & Sealcoat	\$33,000	\$0	\$0	\$0	\$0
41	Maximo 7.6.1.2 Upgrade	\$15,300	\$0	\$0	\$0	\$0
42	GEMS AB Suite 6.1 Upgrade	\$15,300	\$0	\$0	\$0	\$0
43	Mountain Belle Tank: Asphalt Repair & Sealcoat	\$21,000	\$0	\$0	\$0	\$0
44	NeoGOV Applicant Tracking Software	\$10,720	\$0	\$0	\$0	\$0
45	OpenGOV Digital Transparency and Reporting	\$10,200	\$0	\$0	\$0	\$0
46	District Headquarters - HVAC Repairs	\$10,200	\$0	\$0	\$0	\$0
47	Schoolhouse Pump Station - Roof Replacement	\$20,000	\$0	\$0	\$0	\$0
48	Website Redesign - VWD.ORG	\$7,650	\$0	\$0	\$0	\$0
49	N Twin Oaks #2 Tank: Asphalt Repair & Sealcoat	\$12,000	\$0	\$0	\$0	\$0
50	Vehicles	\$353,000	\$332,000	\$332,000	\$332,000	\$332,000
51	Future Projects	\$0	\$30,000	\$575,000	\$2,400,000	\$3,965,000
52	Capital Improvement Expenditures	\$7,644,320	\$5,618,700	\$1,582,000	\$3,227,000	\$4,297,000
53						
54	Less: Transfer from Operating	(\$925,000)	(\$709,000)	(\$539,000)	(\$296,000)	(\$159,000)
55	Less: Property Taxes	(\$1,254,000)	(\$1,281,000)	(\$1,309,000)	(\$1,337,000)	(\$1,366,000)
56	Less: Investment Earnings	(\$466,000)	(\$419,000)	(\$416,000)	(\$429,000)	(\$620,000)
57	Less: RDA Pass-Through	(\$1,200,000)	(\$1,261,000)	(\$1,298,000)	(\$1,337,000)	(\$1,378,000)
58	Add: Funding for PERS UAL	\$1,557,000	\$554,000	\$0	\$0	\$0
59	Net Capital Improvement Expenditures	\$5,356,320	\$2,502,700	(\$1,980,000)	(\$172,000)	\$774,000

3.1.8. WATER UTILITY FINANCIAL PLAN

Table 3-7 shows the District's water utility financial plan for the period FY 21-22 - FY 25-26. This financial plan reflects the District's preferred capital financing strategy as determined by District staff. Line 1 of Table 3-7 indicates the estimated annual rate revenue increases. The District does not plan to use external debt financing to pay for any capital improvement expenditures during the planning horizon.

Table 3-7: Water Utility Financial Plan for FY 21-22 - FY 25-26

Line	Item	FY 21-22	FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	Percentage Increase in Revenues Earned from Rates	3.5%	5.2%	6.2%	6.6%	6.6%
2						
3	Rate Revenues					
4	Water Sales (Commodity Rates)	\$31,471,000	\$33,452,000	\$35,901,000	\$38,636,000	\$41,580,000
5	Readiness-to-Service Charge (Monthly Fixed Charges)	\$14,310,000	\$14,730,000	\$15,280,000	\$15,890,000	\$16,520,000
6	Total Rate Revenues	\$45,781,000	\$48,182,000	\$51,181,000	\$54,526,000	\$58,100,000
7						
8	Miscellaneous Non-Rate Revenues					
9	Pumping Charges	\$415,000	\$425,000	\$435,000	\$445,000	\$455,000
10	Interest	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
11	Other	\$596,000	\$794,000	\$804,000	\$814,000	\$824,000
12	Total Operating Revenues	\$1,016,000	\$1,224,000	\$1,244,000	\$1,264,000	\$1,284,000
13						
14	Total Revenue	\$46,797,000	\$49,406,000	\$52,425,000	\$55,790,000	\$59,384,000
15						
16	Operating Expenses					
17	Water Purchases	\$32,943,000	\$35,222,000	\$37,851,000	\$40,676,000	\$43,710,000
18	Pumping	\$923,000	\$954,000	\$1,035,000	\$1,127,000	\$1,217,000
19	Water Quality	\$211,000	\$225,000	\$240,000	\$256,000	\$272,000
20	Water Treatment	\$476,000	\$498,000	\$523,000	\$551,000	\$574,000
21	Tanks & Reservoirs	\$380,000	\$393,000	\$406,000	\$422,000	\$434,000
22	Transmission & Dist.	\$1,910,000	\$2,103,000	\$2,347,000	\$2,644,000	\$2,965,000
23	Services	\$82,000	\$86,000	\$92,000	\$98,000	\$103,000
24	Meters	\$966,000	\$918,000	\$955,000	\$991,000	\$1,003,000
25	Backflow Prevention	\$74,000	\$77,000	\$79,000	\$81,000	\$83,000
26	Customer Accounts	\$888,000	\$921,000	\$791,000	\$828,000	\$854,000
27	Equipment & Vehicles	\$339,000	\$374,000	\$387,000	\$401,000	\$412,000
28	Building & Grounds	\$494,000	\$496,000	\$509,000	\$521,000	\$531,000
29	Engineering	\$1,637,000	\$1,771,000	\$1,838,000	\$1,907,000	\$1,942,000
30	Safety & Reg. Affairs	\$285,000	\$299,000	\$317,000	\$327,000	\$329,000
31	Information Technology	\$1,130,000	\$1,159,000	\$1,194,000	\$1,226,000	\$1,256,000
32	General & Administrative Costs	\$2,567,685	\$2,607,026	\$2,707,805	\$2,794,010	\$2,880,587
33	Conservation Costs					
34	Salaries	\$283,322	\$313,820	\$333,675	\$351,606	\$357,957
35	Benefits	\$169,993	\$185,154	\$183,521	\$193,383	\$200,456
36	Materials and Service	\$113,000	\$95,000	\$97,000	\$99,000	\$101,000
37	Total Operating Expenses	\$45,872,000	\$48,697,000	\$51,886,000	\$55,494,000	\$59,225,000
38						
39	Net Operating Income	\$925,000	\$709,000	\$539,000	\$296,000	\$159,000
40						
41						
42	Beginning Cash Reserves	\$41,507,000	\$36,150,680	\$33,647,980	\$35,627,980	\$35,799,980
43						
44	Operating Transfers	\$925,000	\$709,000	\$539,000	\$296,000	\$159,000
45	Property Taxes	\$1,254,000	\$1,281,000	\$1,309,000	\$1,337,000	\$1,366,000
46	Investment Earnings	\$466,000	\$419,000	\$416,000	\$429,000	\$620,000
47	RDA Pass-Through	\$1,200,000	\$1,261,000	\$1,298,000	\$1,337,000	\$1,378,000
48	PERs UAL Funding	(\$1,557,000)	(\$554,000)	\$0	\$0	\$0
49	Capital Improvement Expenditures	(7,644,320)	(5,618,700)	(1,582,000)	(3,227,000)	(4,297,000)
50	Change in Cash Reserves	(\$5,356,320)	(\$2,502,700)	\$1,980,000	\$172,000	(\$774,000)
51						
52	Ending Cash Reserves	\$36,150,680	\$33,647,980	\$35,627,980	\$35,799,980	\$35,025,980

4. Cost-of-Service Analysis

4.1.1. COST-OF-SERVICE METHODOLOGY

A cost-of-service analysis distributes a utility's revenue requirements from rates (costs) to each customer class based on their proportionate share of total system water demand. The analysis completed by Raftelis follows industry standard cost allocation principles as presented in AWWA Manual M1. Under these principles the revenue requirement for each customer class should reflect their proportionate share of the demands and associated costs they impose on the water utility system.

4.1.2. REVENUE REQUIREMENT FROM RATES

The critical outcome of the financial planning process, and the starting point of the water cost-of-service analysis, is the determination of the annual revenue requirement from rates. Table 4-1 shows the FY 21-22 revenue requirement. Note that all of the values in Table 4-1 have been derived from the financial plan but have been restated into a traditional format used in the cost allocation process. Verification of this can be found in line 45 in Table 4-1 which identifies the total FY 21-22 level of rate revenue as \$45,781,000. This matches the total rate revenue of \$45,781,000 shown on Line 6 of Table 3-7.

Table 4-1: FY 21-22 Revenue Requirement from Rates

Line	Item	Operating	Capital	Total
1	Water Purchases	\$32,943,000		\$32,943,000
2	Less: Offsets	\$0		\$0
3	Net Water Purchase Costs	\$32,943,000		\$32,943,000
4				
5	Operating Expenses			
6	Pumping	\$923,000		\$923,000
7	Water Quality	\$211,000		\$211,000
8	Water Treatment	\$476,000		\$476,000
9	Tanks & Reservoirs	\$380,000		\$380,000
10	Transmission & Dist.	\$1,910,000		\$1,910,000
11	Services	\$82,000		\$82,000
12	Meters	\$966,000		\$966,000
13	Backflow Prevention	\$74,000		\$74,000
14	Customer Accounts	\$888,000		\$888,000
15	Equipment & Vehicles	\$339,000		\$339,000
16	Buildings & Grounds	\$494,000		\$494,000
17	Engineering	\$1,637,000		\$1,637,000
18	Safety & Reg. Affairs	\$285,000		\$285,000
19	Information Technology	\$1,130,000		\$1,130,000
20	General & Admin.	\$2,567,685		\$2,567,685
21	Conservation Related General & Admin. Costs			
22	Salaries	\$283,322		\$283,322
23	Benefits	\$169,993		\$169,993
24	Materials and Service	\$113,000		\$113,000
25	Total Operating Expenses	\$12,929,000		\$12,929,000
26				
27	PERs UAL Funding		\$1,557,000	\$1,557,000
28	Rate Funded CIP Expenditures		\$7,644,320	\$7,644,320
29	Gross Revenue Requirement	\$45,872,000	\$9,201,320	\$55,073,320
30				
31	Operating Transfers	\$925,000	(\$925,000)	\$0
32				
33	Less: Revenue Requirement Offsets			
34	Pumping Charges	(\$415,000)		(\$415,000)
35	Interest	(\$5,000)		(\$5,000)
36	Other	(\$596,000)		(\$596,000)
37	Property Tax Receipts		(\$1,254,000)	(\$1,254,000)
38	Redevelopment Authority Pass-Through		(\$1,200,000)	(\$1,200,000)
39	Investment Earnings		(\$466,000)	(\$466,000)
40	Total Revenue Requirement Adjustments	(\$1,016,000)	(\$2,920,000)	(\$3,936,000)
41				
42	Net Revenue Requirement Before Change in Cash Reserves	\$45,781,000	\$5,356,320	\$51,137,320
43				
44	Change in Cash Reserves		(\$5,356,320)	(\$5,356,320)
45	Net Revenue Requirement from Rates	\$45,781,000	\$0	\$45,781,000

4.1.3. RETENTION OF THE EXISTING RATE STRUCTURE

The commodity rate structure employed by a utility defines, to at least some degree, the cost allocation methodologies used in the cost-of-service analysis. The District's decision to retain its existing meter-size based rate structure was made based on the following considerations:

First, inclining block rate structures in which customer classes are based on meter size are considered an acceptable alternative to customer classes based on land use type *if* there is a homogeneous or consistent usage pattern by meter size. This statement is supported in the 7th edition of AWWA Manual M1 (Chapter IV.4, Increasing Block Rates, page 127) which states:

Blocks by Meter Size

In some cases, it may be better to determine customer classes based on meter size (see chapter III.2). A utility can also implement an increasing block structure by meter size if it can demonstrate a consistent relationship or homogenous usage pattern by meter size. For example, the first block for a 5/8'in. meter might be 7 thousand gallons while increasing to 12 thousand gallons for a 1-in. meter. As noted previously, this rate structure is best applied to customer classes that demonstrate a significant peaking pattern and might not be appropriate for industrial or commercial customers that use water relatively consistent levels throughout the year.

Second, the District has completed various analyses, including those reviewed by Raftelis, which indicate that customer usage patterns within each meter size have less variability than usage patterns based on land use. District staff calculated relative standard deviations in average use of customers within meter size classifications compared to customers within customer type classifications for the most recent 12 months. Meter size classification results in a more homogeneous usage pattern as illustrated in Table 4-2 when compared to Table 4-3.

Table 4-2: Average Use Standard Deviation by Meter Size

Line	Meter Size	Meter Count	Avg use per Month	Standard Deviation	
				Absolute	Relative
1	5/8	14,594	11.2	8.9	79%
2	3/4	4,307	15.2	14.3	94%
3	1	1,086	39.7	60.5	152%
4	1 1/2	769	91.6	131.2	143%
5	2	545	187.5	223.1	119%
6	3	32	615.8	679.0	110%
7	4	18	914.6	992.9	109%
8	6	15	1099.5	1046.6	95%
9	10	1	1,942.8	725.2	37%

Table 4-3: Average Use Standard Deviation by Customer Class

Line	Customer Class	Meter Count	Avg use per Month	Standard Deviation	
				Absolute	Relative
1	Residential - SF	19,428	12.4	10.6	86%
2	Comm/Ind	962	46.2	97.4	211%
3	Irrigation	880	116.1	228.6	197%
4	Residential - MF	573	145.5	313.8	216%
5	Agriculture	123	202.5	301.1	149%
6	Other	93	120.8	339.4	281%

Most importantly, the existing rate structure is structured to comply with the substantive requirements of Proposition 218 and allows for cost allocations in a manner that reflects proportional cost of service to each parcel.

4.1.4. ALLOCATION OF WATER SUPPLY COSTS

The District's previous cost-of-service studies allocated water supply costs in the following manner:

- Tier 1 was allocated the low cost OMWD water and SDCWA melded water
- Tier 2 was allocated SDCWA melded water and some Desal Plant water
- Tier 3 was allocated high cost SDCWA Desal Plant water

The prior COSS allocated costs equitably and in a manner consistent with Proposition 218, however, this study is recommending that the FY 21-22 - FY 25-26 commodity rates allocate the average cost of all three sources of the District's water supplies to each tier equally. District Staff and Raftelis believe this approach is appropriate because the District entered into its water purchase agreement for Carlsbad Desalinated Water in order to obtain a droughtproof source of supply that would accrue to the benefit of all customers - not just the customers in Tier 3. In addition, the District entered into an agreement with the Olivenhain Municipal Water District (OMWD) where OMWD treats raw water for a 20% discount over what the District would pay to SDCWA. This agreement benefits all rate payers. Table 4-4 shows this allocation. Note that SDCWA fixed charges and the SDCWA Infrastructure Access Charge have been allocated to the meter component to be included with other costs that do not vary with usage. This results in these costs being recovered via the District's readiness-to-serve charge. The projection for water purchases is estimated at 15,415 AF with sales of approximately 14,300 AF as shown on line 31 of Table 4-4.

Table 4-4: Allocation of Water Supply Costs to Consumption Tiers

Line	Metric	FY 21-22	Allocation by Tier			Meter Costs
			Tier 1	Tier 2	Tier 3	
Water Supply						
1	Projected AF purchases					
2	OMWD	2,750	1,028	1,297	425	
3	SDCWA	9,165	3,427	4,322	1,416	
4	Desal - committed	3,500	1,309	1,651	541	
5	Total AF	15,415	5,764	7,269	2,382	
6						
7	Cost per AF					
8	OMWD		\$1,384	\$1,384	\$1,384	
9	SDCWA		\$1,445	\$1,445	\$1,445	
10	Desal Committed		\$2,935	\$2,935	\$2,935	
11						
12	Water Purchases (\$)					
13	OMWD		\$1,424,000	\$1,795,000	\$589,000	
14	SDCWA		\$4,952,000	\$6,245,000	\$2,046,000	
15	Desal - committed		\$3,841,000	\$4,844,000	\$1,587,000	
16						
17	Total Water Cost	\$32,943,000	\$10,217,000	\$12,884,000	\$4,222,000	\$5,620,000
18	Percentage of Total Costs	100.00%	31.01%	39.11%	12.82%	17.06%
19	Percentage of Commodity Costs	100.00%	37.39%	47.15%	15.45%	
Projected AF Water Sales (Note 1)						
Line		TOTAL	Tier 1	Tier 2	Tier 3	
20	5/8"	6,745	2,923	3,062	760	
21	1"	1,097	355	481	261	
22	1 1/2"	1,631	581	713	337	
23	2"	2,557	868	1,187	503	
24	3"	546	216	218	111	
25	4"	296	112	119	65	
26	6"	491	229	201	61	
27	10"	51	20	26	5	
28	AG	684	0	684	0	
29	Construction	88	0	0	88	
30	District Internal Use	74	28	35	11	
31	Total	14,259	5,332	6,724	2,203	
<p>Note 1: The difference between the projected water supplied of 15,415 AF and the projected water sales of approximately 14,259 AF is due to unbilled water (e.g., leaks, evaporation, line losses, etc.) of approximately 7.5%</p>						

4.1.5. COST CAUSATION COMPONENTS

As part of the cost-of-service process, the revenue requirement from rates is allocated to specific functional categories and cost causation components. The assignment of costs to functional categories answers the question, what water utility functions are supported by (i.e., paid for) the rate revenue provided by customers? Functional categories for water utilities may include, but not necessarily be limited to, the supply, wells, reservoirs, treatment, pumping, transmission and distribution, customer service, and general and administration functions.

Cost causation components reflect the types of demands the water utility must have the ability to serve. The allocation of costs to cost causation components answers the question, what types of customer demands are met by (i.e., paid for) each function of the water utility system? Cost causation components used in the study include:

- Supply
- Base Delivery
- Maximum Day Demand
- Maximum Hour Demand
- Meters
- Fire
- Customer Service
- Conservation

The maximum day demand is the maximum amount of water used in a single day in a year. Maximum hour demand is the maximum hour usage on the maximum usage day. Both maximum day and maximum hour demands are used to calculate peaking factors that are critical in distributing costs to customer classes. In the cost-of-service analysis, peaking costs are allocated in proportion to how the different customer classes use water during maximum day and maximum hour usage. This method is consistent with the AWWA M1 Manual and is widely used in the water industry to perform the cost-of-service analyses.

4.1.6. SYSTEM PEAKING FACTORS AND DEMAND RATIOS

Water utility systems must be designed, constructed, and operated to meet both the base demands and maximum day and maximum hour peak demands of customers.

The revenue requirement is allocated to functional categories such as treatment, storage, pumping and transmission (among many others). Many of these functionalized costs are then allocated to the volumetric cost causation components of base demand, maximum day demand, and maximum hour demand. For example, for many water utility systems, the treatment and transmission functions meet both base and maximum day customer demands. Therefore, the costs incurred to provide treatment and transmission are generally allocated to the base and maximum day cost causation components.

Table 4-5 shows the system peaking factors and demand ratios used in the cost-of-service analysis. The maximum day system peaking factor of 1.90 and the maximum hour peaking factor of 3.0 were based on the District's master plan hydraulic analysis. The maximum day peaking factor of 1.90 was based on actual District meter data. The maximum hour peaking factor of 3.0 was calculated based on available meter data as monitored by the District SCADA system. The SCADA system monitors and controls the operation of the District's water infrastructure.

To understand the system demand ratio percentages shown in Table 4-5, we must first establish that annual average day demand throughout the year (referred to as base demand) has a peaking factor of 1.0. Thus, functionalized costs that are only incurred to meet annual average day demand are allocated 100% to the base demand cost causation component. Similarly, functionalized costs that are incurred to meet a combination of annual average day and maximum day demand are allocated 53% to the base cost causation component ($1.00/1.90 = 53\%$) and 47% to the

maximum day cost causation component (100% - 53%). Expenses that are incurred to meet a combination of base, maximum day, and maximum hour demand are allocated 33% to the base cost causation component ($1.0/3.0 = 33\%$), 30% to the maximum day cost causation component ($(1.90 - 1.0)/3.0$), and 37% to the maximum hour cost causation component ($100\% - 33\% - 30\% = 37\%$).

Table 4-5: System Peaking Metrics and Demand Ratios

Line	System Production Metrics	
1	Average Daily Demand	1.00
2	Maximum Day Demand	1.90
3	Maximum Hour Demand	3.00
4	Maximum Day X Maximum Hour	5.70
5		
6	System Demand Ratios	
7	Base/Maximum Day Allocations	
8	Maximum Day / Average Day Ratio	1.90
9	Base Allocation %	52.63%
10	Maximum Day Allocation %	47.37%
11	Total Allocation %	100.00%
12		
13	Base/Maximum Hour Allocations	
14	Maximum Hour to Average Day Ratio	3.00
15	Base Allocation %	33.33%
16	Maximum Hour Allocation %	66.67%
17	Total Allocation %	100.00%
18		
19	Base/Maximum Day/Maximum Hour Allocation	
20	Maximum Hour X System Maximum Day	5.70
21	Base Allocation %	33.33%
22	Maximum Day Allocation %	30.00%
23	Maximum Hour Allocation %	36.67%
24	Total Allocation %	100.00%

4.1.7. CONSUMPTION TIERS

Having established the system peaking factors and demand ratios shown in Table 4-5, the demand ratios are then used to allocate costs between the tiers. Table 4-7 shows the outcome of this process. The process shown in Table 4-7 must be completed to ensure that rates are reflective of the costs incurred by the District to provide water service in each tier. Peaking costs (costs associated with maintaining the portion of facilities sized to meet above average demands) are allocated to the higher tiers. Above average use drives additional costs. As shown in lines 11 and 12, Tier 1 receives no allocation of maximum day demand or maximum hour demand.

The tier consumption thresholds used in the District’s commodity rate structure were developed as part of comprehensive study of customer water demand characteristics completed in 2020 and updated for the most recent 12 months. The study analyzed the usage patterns of all customers by meter size and calculated the average minimum monthly use, the average monthly use, and the average maximum monthly use to determine the tier consumption thresholds. The average minimum use provides a natural and non-arbitrary threshold for the Tier 1 limit. Similarly, the average maximum use provides a non-arbitrary threshold for the Tier 2 limit. Any usage above the average monthly maximum usage is assigned to Tier 3.

Table 4-6: Tier Consumption Thresholds

Line	Meter Size	Average Min Use	Use Captured	Average Max Use	Use Captured	> Avg Max Use	Use Captured	TOTAL
1	5/8", 3/4"	6	2,995	21	3,053	22+	770	6,818
2	1"	16	355	78	481	79+	261	1,097
3	1 1/2"	43	581	196	713	197+	337	1,631
4	2"	85	868	335	1,187	336+	503	2,557
5	3," 4"	342	328	977	337	978+	177	842
6	6", 10"	722	249	1,955	227	1956+	66	542
7	AG		-		684		-	684
8	Construction		-		-		88	88
9	TOTAL		5,376		6,680		2,202	14,259

Tier 1

The first tier consumption threshold is equal to the average minimum monthly usage within each meter size class as calculated from the District’s billing data (a comprehensive excel model that extracted all water usage data per customer per month from 2015 through 2019). The Tier 1 rate is equal to the average wholesale cost of water produced to supply Tier 1 demand plus an allocation of transmission and distribution, water treatment, tanks and reservoirs, and other costs associated with flow, divided by Tier 1 demand.

Tier 2

The second tier consumption threshold is equal to the average maximum monthly use. The Tier 2 rate is equal to the average wholesale cost of water produced to supply Tier 2 demand plus an allocation of transmission and distribution, water treatment, tanks and reservoirs, and other costs associated with flow multiplied by a peaking factor, divided by Tier 2 demand.

Tier 3

The third tier consumption threshold is all water usage above Tier 2. The Tier 3 rate is equal to the average wholesale cost of water produced to supply Tier 3 demand plus conservation costs and an allocation of transmission and distribution, water treatment, tanks and reservoirs, and other costs associated with flow multiplied by a peaking factor, divided by Tier 3 demand.

Table 4-7: Demand Ratios for Consumption Tiers

Line	Input	System Total	Tier 1	Tier 2	Tier 3
1	AF Demand	14,259	5,378	6,680	2,202
2	%AF Demand by Tier	100.00%	37.71%	46.85%	15.44%
3					
4	Allocation of Base / Maximum Day				
5	Base Demand	52.63%	19.85%	24.66%	8.13%
6	Maximum Day Demand	47.37%	0.00%	35.63%	11.74%
7	Weighted Base / Maximum Day	100.00%	19.85%	60.28%	19.87%
8					
9	Allocation of Base / Maximum Day / Maximum Hour				
10	Base Demand	33.33%	12.57%	15.62%	5.15%
11	Maximum Day Demand	30.00%	0.00%	22.56%	7.44%
12	Maximum Hour Demand	36.67%	0.00%	0.00%	36.67%
13	Weighted Base/Maximum Day/Maximum Hour	100.00%	12.57%	38.18%	49.25%

4.1.8. ALLOCATION OF UTILITY PLANT ASSETS

Components of the capital cost revenue requirement are allocated to each tier based on the profile of the District’s assets. Table 4-8 shows the allocation of the District’s plant assets to each consumption tier, the RTS, and private fire protection. The commodity allocations were developed by multiplying the net book value of each functional asset type by the weighted allocation calculated for each tier as shown line 13 of Table 4-7. Meter related assets were allocated directly to the RTS meter function. Note that the column labeled "Fire Protection" is associated with the allocation of assets used to provide private fire line service. This allocation was developed by District Staff and reflects the estimated system capacity that must be provided to meet potential private fire line demands on the District’s system.

The District does not own, operate, or maintain any public fire hydrants. Therefore, it incurs no direct public fire protection related operating costs associated with hydrants. The District’s water utility infrastructure is sized to meet potential public fire flow demands. However, no explicit allocation of assets or operating costs related to public fire protection service is made to individual customer classes as part of the cost allocation process. This is because the costs incurred by the District to meet fire flow demands benefit all customers and are allocated based on overall revenue requirements.

Table 4-8: Allocation of Plant Assets to Consumption Tiers

Line	Asset Function	Net Book Value	Commodity (Variable)			RTS (Fixed)		Fire Protection
			Tier1	Tier2	Tier3	Meters	Billing	
1	Pumping	\$6,234,121	\$744,582	\$2,261,218	\$2,916,927			\$311,394
2	Water Treatment	\$119,319	\$23,685	\$71,928	\$23,706			
3	Tanks & Reservoirs	\$49,311,382	\$5,889,579	\$17,886,049	\$23,072,651			\$2,463,104
4	Transmission & Distribution	\$52,980,485	\$6,327,804	\$19,216,893	\$24,789,414			\$2,646,375
5	Services	\$12,005,980	\$0	\$0	\$0	\$12,005,980		
6	Meters	\$4,196,045	\$0	\$0	\$0	\$4,196,045		
7	General Plant	\$9,027,842	\$1,134,944	\$3,446,710	\$4,446,188			
8	Total	\$133,875,173	\$14,120,593	\$42,882,797	\$55,248,885	\$16,202,025	\$0	\$5,420,873
9	% Allocation		10.55%	32.03%	41.27%	12.10%	0.00%	4.05%

4.1.9. REVENUE REQUIREMENT ALLOCATION FACTORS

Table 4-9 provides a summary of the allocation factors used to allocate the FY 21-22 revenue requirement to each consumption tier or readiness-to-serve cost component. The percentages show in Table 4-9 are a direct result of the allocation process described above in this section of the report.

Table 4-9: FY 21-22 Revenue Requirement Allocation Factors

Line	Allocation Factors	Total	Variable Cost Recovery (Commodity Rates)			Fixed Cost Recovery (Readiness-to-Serve Charge)		Fireline Cost Recovery	
			Tier 1	Tier 2	Tier 3	Meters	Billing	Capacity	Billing
1	Water Purchase Commodity Costs by TIER	100.0%	37.4%	47.2%	15.5%	0.0%	0.0%	0.0%	0.0%
2	Water Purchase Fixed Costs	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
3	Base	100.0%	37.7%	46.9%	15.4%	0.0%	0.0%	0.0%	0.0%
4	Max Day Demands	100.0%	19.8%	60.3%	19.9%	0.0%	0.0%	0.0%	0.0%
5	Max Hour Demands	100.0%	12.6%	38.2%	49.2%	0.0%	0.0%	0.0%	0.0%
6	Max Hour Demands w/Fire	100.0%	11.9%	36.3%	46.7%	0.0%	0.0%	5.0%	0.0%
7	Meters	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
8	Billing	100.0%	0.0%	0.0%	0.0%	0.0%	99.8%	0.0%	0.2%
9	Capital	100.0%	10.6%	32.1%	41.2%	12.1%	0.0%	4.0%	0.0%
10	Conservation in G&A	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
11	Property Tax	100.0%	72.0%	28.0%	0.0%	0.0%	0.0%	0.0%	0.0%
12	Total Operating Costs	100.0%	24.1%	31.8%	13.4%	28.6%	0.0%	1.9%	0.2%

4.1.10. REVENUE REQUIREMENT ALLOCATION

Using the factors from Table 4-9, Table 4-10 shows the allocation of the revenue requirement components to variable cost-recovery (commodity rates), fixed cost-recovery (readiness-to-serve), and firelines. Note that as shown in line 53, the outcome of the revenue requirement allocation process is within (\$20,750) of the total revenue requirement of \$45,781,000 as developed in the financial plan.

Table 4-10: Allocation of the FY 21-22 Revenue Requirement

Line	Cost Component	Total Allocation	Variable Cost Recovery (Commodity Rates)			Fixed Cost Recovery (Readiness-to-Serve)		Fireline	
			Tier 1	Tier 2	Tier 3	Meters	Billing	Capacity	Billing
1	Water Purchases								
2	Commodity								
3	OMWD	\$3,806,000	\$1,423,193	\$1,794,697	\$588,110	\$0	\$0	\$0	\$0
4	SDCWA	\$13,244,000	\$4,952,383	\$6,245,130	\$2,046,487	\$0	\$0	\$0	\$0
5	SDCWA - Desal	\$10,273,000	\$3,841,424	\$4,844,173	\$1,587,403	\$0	\$0	\$0	\$0
6									
7	Fixed								
8	SDCWA Non-IAC	\$4,135,775				\$4,135,775			
9	SDCWA IAC	\$1,484,225				\$1,484,225			
10	Total Water Purchases	\$32,943,000	\$10,217,000	\$12,884,000	\$4,222,000	\$5,620,000	\$0	\$0	\$0
11									
12	Other Operating Costs								
13	Pumping	\$923,000	\$348,108	\$433,017	\$141,876	\$0	\$0	\$0	\$0
14	Water Quality	\$211,000	\$79,578	\$98,989	\$32,433	\$0	\$0	\$0	\$0
15	Water Treatment	\$476,000	\$94,486	\$287,362	\$94,153	\$0	\$0	\$0	\$0
16	Tanks & Reservoirs	\$380,000	\$45,383	\$138,026	\$177,590	\$0	\$0	\$19,000	\$0
17	Transmission & Dist.	\$1,910,000	\$228,112	\$693,764	\$892,624	\$0	\$0	\$95,500	\$0
18	Services	\$82,000	\$0	\$0	\$0	\$82,000	\$0	\$0	\$0
19	Meters	\$966,000	\$0	\$0	\$0	\$966,000	\$0	\$0	\$0
20	Customer Accounts	\$888,000	\$0	\$0	\$0	\$0	\$886,295	\$0	\$1,705
21	Backflow Prevention	\$74,000	\$27,909	\$34,716	\$11,375	\$0	\$0	\$0	\$0
22	Equipment & Vehicles	\$339,000	\$0	\$0	\$0	\$339,000	\$0	\$0	\$0
23	Buildings & Grounds	\$494,000	\$0	\$0	\$0	\$494,000	\$0	\$0	\$0
24	Engineering	\$1,637,000	\$0	\$0	\$0	\$1,637,000	\$0	\$0	\$0
25	Safety & Reg. Affairs	\$285,000	\$0	\$0	\$0	\$285,000	\$0	\$0	\$0
26	Information Technology	\$1,130,000	\$0	\$0	\$0	\$1,130,000	\$0	\$0	\$0
27	General & Admin. - Net of Conservation in G&A	\$2,567,685	\$0	\$0	\$0	\$2,567,685	\$0	\$0	\$0
28	Conservation in G&A								
29	Salaries & Benefits	\$453,315	\$0	\$0	\$453,315	\$0	\$0	\$0	\$0
30	Materials and Service	\$113,000	\$0	\$0	\$113,000	\$0	\$0	\$0	\$0
31	Total Other Operating Costs	\$12,929,000	\$823,576	\$1,685,874	\$1,916,366	\$7,500,685	\$886,295	\$114,500	\$1,705
32									
33	PERS UAL Funding	\$1,557,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
34	Rate Funded CIP Expenditures	\$7,644,320	\$806,476	\$2,452,298	\$3,151,753	\$925,727	\$0	\$308,831	\$0
35	Gross Revenue Requirement	\$55,073,320	\$11,847,051	\$17,022,172	\$9,289,355	14,046,412	\$886,295	\$423,331	\$1,705
36									
37	Revenue Requirement Offsets								
38	Pumping Charges	(\$415,000)	(\$156,516)	(\$194,693)	(\$63,790)	\$0	\$0	(\$20,750)	\$0
39	Interest	(\$5,000)	(\$1,203)	(\$1,588)	(\$669)	(\$1,430)	(\$97)	(\$12)	(\$0)
40	Other	(\$596,000)	(\$143,447)	(\$189,302)	(\$79,754)	(\$170,473)	(\$11,515)	(\$1,488)	(\$22)
41	Property Tax	(\$1,254,000)	(\$902,880)	(\$351,120)	\$0	\$0	\$0	\$0	\$0
42	RDA Pass-Through	(\$1,200,000)	(\$864,000)	(\$336,000)	\$0	\$0	\$0	\$0	\$0
43	Investment Earnings	(\$466,000)	(\$49,163)	(\$149,493)	(\$192,085)	(\$56,386)	\$0	(\$18,826)	\$0
44	Total Revenue Requirement Offsets	(\$3,936,000)	(\$2,117,209)	(\$1,222,196)	(\$336,298)	(\$228,289)	(\$11,612)	(\$41,077)	(\$22)
45									
46	Net Revenue Requirement Before Change in Cash	\$51,137,320	\$9,729,842	\$15,799,976	\$8,953,056	\$13,818,123	\$874,683	\$382,254	\$1,682
47									
48	Change in Cash Reserves	(\$5,356,320)	(\$1,032,675)	(\$1,502,995)	(\$847,225)	(\$298,858)	(\$76,360)	(\$41,061)	(\$147)
49									
50	Net Allocated Revenue Requirement	\$45,760,250	\$8,697,167	\$14,296,981	\$8,105,785	\$13,519,265	\$798,324	\$341,193	\$1,535
51									
52	Check on Revenue Requirement	\$45,781,000							
53	Difference Due to Rounding	(\$20,750)							

4.1.11. UNIT COST-OF-SERVICE CALCULATION

In order to calculate rates, the total cost-of-service for each commodity and readiness-to-serve rate component is divided by the specific units of service for each customer class. Table 4-11 shows this calculation of the FY 21-22 revenue requirement. The final calculated unit cost-of-service is show in line 17.

Table 4-11: FY 21-22 Unit Cost-of-Service Calculation

Line	Description	Total	Variable Cost Recovery (Commodity Rates)			Fixed Cost Recovery (Readiness-to-Serve Charge)			Fireline Cost Recovery	
			Tier 1	Tier 2	Tier 3	Meters	IAC	Billing	Inches	Billing
1	Units of Service									
2	Potable Water		2,310,491	2,913,934	954,734					
3	Estimated Fireline Demand		0	0	0					
4	Total Commodity Units of Service		2,310,491	2,913,934	954,734					
5										
6	RTS Units of Service									
7	Equivalent Meters & Bills		0	0	0	350,053	350,053	0	0	0
8	Additional MF Units		0	0	0	53,663	0	0	0	0
9	Total Equivalent Meters & Bills		0	0	0	403,716	350,053	264,690	0	0
10										
11	Fire Units of Service									
12	Inches & Bills		0	0	0	0	0	0	42,575	6,120
13										
14	Total Units of Service		2,310,491	2,913,934	954,734	403,716	350,053	264,690	42,575	6,120
15										
16	Revenue Requirement	\$45,760,250	\$8,697,167	\$14,296,981	\$8,105,785	\$12,035,040	\$1,484,225	\$798,324	\$341,193	\$1,535
17	Unit Cost-of-Service		\$3.77	\$4.91	\$8.50	\$29.81	\$4.24	\$3.02	\$8.01	\$0.25
18										
19	Class Cost-of-Service									
20	Potable Water	\$45,417,521	\$8,697,167	\$14,296,981	\$8,105,785	\$12,035,040	\$1,484,225	\$798,324	\$0	\$0
21	Fire Line	\$342,729	\$0	\$0	\$0	\$0	\$0	\$0	\$341,193	\$1,535
22	Total	\$45,760,250	\$8,697,167	\$14,296,981	\$8,105,785	\$12,035,040	\$1,484,225	\$798,324	\$341,193	\$1,535

4.1.12. FY 21-22 WATER COST-OF-SERVICE SUMMARY

The cost-of-service analysis is a method of allocating the annual revenue requirement from rates developed in the financial plan to customer classes based on the principle of cost causation. The District Staff, in consultation with Raftelis, propose to retain the District's existing commodity rate structure in which customer classes are defined by water meter size (e.g., 5/8", 3/4", 1", etc.). Table 4-12 shows the outcome of the FY 21-22 cost-of-service analysis for each customer class.

Table 4-12: FY 21-22 Cost-of-Service Summary

Line	Class	FY 21-22 Cost-of-Service
1	5/8"	\$21,341,023
2	3/4"	\$1,528,100
3	1"	\$3,283,066
4	1 1/2"	\$4,995,917
5	2"	\$7,303,511
6	3"	\$1,366,187
7	4"	\$791,233
8	6"	\$1,215,362
9	10"	\$135,643
10	Agriculture	\$1,462,154
11	Construction	\$429,779
12	MF Additional Units	\$1,775,143
13	Fireline	\$342,306
14	Vacation Meters (Note 1)	(\$150,000)
15	Total	\$45,819,423
16		
17	Revenue Requirement	\$45,781,000
18	Rounding Difference	\$38,423
19	% Difference (rounding)	0.1%

Note 1: Vacation meters are meters that are temporarily locked due to customer request (i.e., customer on vacation for several months)

5. Rate Design

5.1.1. PASS-THROUGH COSTS

Having completed the cost-of-service process, the determination of commodity rates and readiness-to-serve charges is straight-forward. The first step in the rate design process is the identification of pass-through costs in the FY 21-22 revenue requirement. Pass-through costs are those components of the District's revenue requirement over which it has no direct control. For example, the District has no control over the wholesale water rates charged by SDCWA or OMWD. Similarly, the District has no control over the electricity or natural gas rates charged by San Diego Gas and Electric. Table 5-1 shows the FY 21-22 pass-through cost revenue requirement. Because the District relies on water supplies purchased from third parties, approximately 72% of its FY 21-22 revenue requirement is composed of costs that are pass-through in nature.

Table 5-1: FY 21-22 Pass-Through Costs

Line	Revenue Requirement Component	Total Allocation	Variable Cost Recovery (Commodity Rates)			Fixed Cost Recovery (Readiness-to-Serve Charge)		Fireline Cost Recovery	
			Tier 1	Tier 2	Tier 3	Meters	Billing	Capacity	Billing
1	Pass-Through Costs								
2	Water Purchases	\$32,943,000	\$10,217,000	\$12,884,000	\$4,222,000	\$5,620,000	\$0	\$0	\$0
3	Pumping	\$923,000	\$348,108	\$433,017	\$141,876	\$0	\$0	\$0	\$0
4	Total Pass-Through Costs	\$33,866,000	\$10,565,108	\$13,317,017	\$4,363,876	\$5,620,000	\$0	\$0	\$0
5									
6	Non-Pass-Through Costs	\$11,894,250	(\$1,867,941)	\$979,964	\$3,741,909	\$7,899,265	\$798,324	\$341,193	\$1,535
7	Net Allocation	\$45,760,250	\$8,697,167	\$14,296,981	\$8,105,785	\$13,519,265	\$798,324	\$341,193	\$1,535
8									
9	Revenue Requirement.	\$45,781,000							
10	Difference Due to Rounding	(\$20,750)							
11	% Difference	0.1%							

5.1.2. CONSOLIDATED RATE CALCULATION

Tables 5-2 shows the calculation of FY 21-22 commodity and readiness-to-serve rates without the consideration of pass-through costs. As shown in lines 3, 5, and 6, the tier 1 rate continues to be \$3.77 (i.e., it does not increase). Similarly, as shown in lines 3, 5, and 6, the readiness-to-serve charge increases by \$0.52.

Table 5-2: FY 21-22 Consolidated Rate Calculation

Line	Description	Variable Cost Recovery (Commodity Rates)			Fixed Cost Recovery (Readiness-to-Serve)			Fireline
		Tier 1	Tier 2	Tier 3	Meters	IAC	Billing	
1	Revenue Requirement	\$8,697,167	\$14,296,981	\$8,105,785	\$12,035,040	\$1,484,225	\$798,324	\$342,729
2	Units of Service	2,310,491	2,913,934	954,734	403,716	350,053	264,690	42,575
3	Proposed Rates	\$3.77	\$4.91	\$8.50	\$29.81	\$4.24	\$3.02	\$8.04
4								
5	Current Rates *	\$3.77	\$4.75	\$9.18	\$36.55	*	*	\$7.55
6	Difference	\$0.00	\$0.16	(\$0.68)	\$0.52			\$0.49

* Currently, "IAC" and "Billing" charges are allocated to Meters. The proposed rates separate them into their own components. For comparison purposes, the proposed Meters + IAC + Billing would total \$37.07, thus the difference on line 6 of \$0.52

5.1.3. RATE CALCULATION BY RATE COMPONENT

Tables 5-3 shows the calculation of FY 21-22 commodity and readiness-to-serve rates with pass-through costs explicitly identified.

Table 5-3: FY 21-22 Rate Calculation By Rate Component

Line	Description	Variable Cost Recovery (Commodity Rates)			Fixed Cost Recovery (Readiness-to-Serve)			
		Tier 1	Tier 2	Tier 3	Meters	IAC	Billing	Fireline
1	Pass-Through Components							
2	OMWD	\$0.62	\$0.62	\$0.62				
3	SDCWA	\$2.14	\$2.14	\$2.14				
4	SDCWA - Desal	\$1.66	\$1.66	\$1.66				
5	VWD Internal Costs	\$0.11	\$0.72	\$4.07				
6	VWD Discretionary Offsets	(\$0.77)	(\$0.24)					
7	Total Commodity	\$3.77	\$4.91	\$8.50				
8								
9	SDCWA Fixed Charges				\$10.24			
10	SDCWA IAC					\$4.24		
11	Other Fixed Costs				\$19.57		\$3.02	\$8.04
12	Calculated Rates	\$3.77	\$4.91	\$8.50	\$37.07			
13								
14	Current Rates	\$3.77	\$4.75	\$9.18	\$36.55			\$7.55
15	Difference	\$0.00	\$0.16	(\$0.68)	\$0.52			\$0.49

Note: Due to rounding, totals may be off by \$0.01

5.1.4. READINESS-TO-SERVE CHARGE

The District's readiness-to-serve charge is a monthly fixed charge that increases based on meter size. This increase reflects the fact that larger meters can impose greater instantaneous demands and greater costs on the water utility system. Larger meters and associated capacities also require more resources to maintain. The District performed a Meter Equivalent Analysis (MEA) in order to determine an appropriate number of meter equivalents per meter size. For example, a base meter, ¾" is the equivalent of 1 when a 2" meter is the equivalent of 6.5 base meters in terms of the effort and resources expended to maintain the meter and the system to serve the capacity of that meter. The MEA focused on Gallons Per Minute (GPM) ratings, repair/replacement costs, and meter costs as shown in Table 5-4 and Table 5-5 below. Table 5-6 illustrates the resulting recommendations of the MEA.

Table 5-4: Meter Ratings in Gallons Per Minute

Line	Meter	GPM Rating		Factor		
		Mid	High	Mid	High	Average
1	iPerl 5/8"	12.6	25.0	0.72	0.71	0.71
2	iPerl 3/4"	17.6	35.0	1.00	1.00	1.00
3	iPerl 1"	27.7	55.0	1.58	1.57	1.57
4	Omni 1 1/2"	80.8	160.0	4.60	4.57	4.59
5	Omni 2"	100.8	200.0	5.74	5.71	5.73
6	Omni 3"	251.3	500.0	14.32	14.29	14.30
7	Omni 4"	501.5	1,000.0	28.58	28.57	28.57
8	Omni 6"	1,002.0	2,000.0	57.09	57.14	57.12
9	Omni 10"	2,765.5	5,500.0	157.58	157.14	157.36

Table 5-5: Meter Repair/Replacement Cost Comparison

Line	Description	Provision for Replacement								Factor Based on Meter Cost
		Meter		Register/Calibration		MXU		Total Annual		
		Cost	Life	Cost	Life	Cost	Life	Cost	Factor	
1	iPerl 5/8"	\$132.77	20	\$82.77	10	\$168.11	10	\$31.73	1.26	0.79
2	iPerl 3/4"	\$167.47	20	-	10	\$168.11	10	\$25.18	1.00	1.00
3	iPerl 1"	\$255.62	20	-	10	\$168.11	10	\$29.59	1.18	1.53
4	Omni 1 1/2"	\$975.10	20	-	10	\$168.11	10	\$65.57	2.60	5.82
5	Omni 2"	\$1,156.72	20	\$811.63	10	\$168.11	10	\$155.81	6.19	6.91
6	Omni 3"	\$1,397.94	20	\$1,084.00	10	\$168.11	10	\$195.11	7.75	8.35
7	Omni 4"	\$2,829.41	20	\$1,084.00	10	\$168.11	10	\$266.68	10.59	16.90
8	Omni 6"	\$5,051.63	20	\$1,720.53	10	\$168.11	10	\$441.45	17.53	30.16
9	Omni 10"	\$9,558.47	20	\$1,720.53	10	\$168.11	10	\$666.79	26.48	57.08

Table 5-6: Recommended Meter Equivalents

Line	Meter	Based on GPM Rating		Based on Cost		
		Previous	Current	Replacement	Meter	Recommended
1	5/8"	0.7	0.7	1.3	0.8	1.0
2	3/4"	1.0	1.0	1.0	1.0	1.0
3	1"	1.6	1.6	1.2	1.5	1.5
4	1 1/2"	4.6	4.6	2.6	5.8	4.0
5	2"	5.7	5.7	6.2	6.9	6.5
6	3"	14.3	14.3	7.7	8.3	10.0
7	4"	28.6	28.6	10.6	16.9	15.0
8	6"	57.1	57.1	17.5	30.2	30.0
9	10"	228.7	157.4	26.5	57.1	70.0

Table 5-7 provides a detail of the FY 21-22 readiness-to-serve charges based on each relevant rate component.

Table 5-7: FY 21-22 Readiness-to-Serve Charge Rate Components

Meter Size	Meter Flow Equiv.	Annual Bills/Units	Equiv. Meters	SDCWA Fixed Charge	SDCWA IAC	Meter Charge	Billing Charge	Total Proposed RTS	Current RTS	\$ Diff.	% Diff.
5/8"	1.00	193,641	193,641	\$10.24	\$4.24	\$19.57	\$3.02	\$37.07	\$36.55	\$0.52	1.42%
3/4"	1.00	41,222	41,222	\$10.24	\$4.24	\$19.57	\$3.02	\$37.07	\$36.55	\$0.52	1.42%
1"	1.50	13,021	19,532	\$15.36	\$6.36	\$29.36	\$3.02	\$54.10	\$53.31	\$0.79	1.48%
1 1/2"	4.00	9,121	36,484	\$40.96	\$16.96	\$78.28	\$3.02	\$139.22	\$137.11	\$2.11	1.54%
2"	6.50	6,593	42,855	\$66.56	\$27.56	\$127.21	\$3.02	\$224.35	\$220.91	\$3.44	1.56%
3"	10.00	384	3,840	\$102.40	\$42.40	\$195.70	\$3.02	\$343.52	\$338.23	\$5.29	1.56%
4"	15.00	216	3,240	\$153.60	\$63.60	\$293.55	\$3.02	\$513.77	\$505.83	\$7.94	1.57%
6"	30.00	180	5,400	\$307.20	\$127.20	\$587.10	\$3.02	\$1,024.52	\$1,008.63	\$15.89	1.58%
10"	70.00	12	840	\$716.80	\$296.80	\$1,369.90	\$3.02	\$2,386.52	\$2,349.43	\$37.09	1.58%
1C	1.50	0	0	\$15.36	\$6.36	\$29.36	\$3.02	\$54.10	\$53.31	\$0.79	1.48%
2C	6.50	0	0	\$66.56	\$27.56	\$127.21	\$3.02	\$224.35	\$220.91	\$3.44	1.56%
3C	10.00	300	3,000	\$102.40	\$42.40	\$195.70	\$3.02	\$343.52	\$338.23	\$5.29	1.56%
MF - Add'l	0.33	177,692	59,509	\$3.43	\$0.00	\$6.56	\$0.00	\$9.99	\$10.06	(\$0.07)	-0.70%

5.1.5. PROPOSED WATER RATES

The sole modification to the District's existing rate structure is the proposed implementation of new tier consumption thresholds with customers who are served by meters 3" and greater in size. Table 5-8 shows the proposed change in tier consumption thresholds (lines 5 - 8). The first tier limit is equal to the average minimum monthly use within each meter size class as calculated from the District billing data from FY 2015-16 through FY 2018-19. The second tier limit is equal to the average maximum monthly use from the same data. A consumptive use model (database of actual District bills with formulas to isolate use within hypothetical tiers) is used to calculate demand within each tier. Tier 1 demand is usage up to the Tier 1 limit (average minimum use). Tier 2 demand is usage up to the Tier 2 limit (average maximum use). Tier 3 demand is usage beyond the Tier 2 limit (average maximum use).

Table 5-8: Proposed Change in Tier Consumption Thresholds

Line	Existing Tier Consumption Thresholds				Proposed Tier Consumption Thresholds			
	Meter Size	Tier 1	Tier 2	Tier 3	Meter Size	Tier 1	Tier 2	Tier 3
1	5/8"	6	21	>21	5/8"	6	21	>21
2	1"	16	78	>78	1"	16	78	>78
3	1 1/2"	43	196	>196	1 1/2"	43	196	>196
4	2"	85	335	>335	2"	85	335	>335
5	3"	430	1,190	>1,190	3"	342	977	>977
6	4"	430	1,190	>1,190	4"	342	977	>977
7	6"	430	1,190	>1,190	6"	722	1,955	>1955
8	10"	430	1,190	>1,190	10"	722	1,955	>1955
9	Agriculture	All Usage			Agriculture	All Usage		
10	Construction	All Usage			Construction	All Usage		

Table 5-9 shows a summary comparison of the District's existing rates and the proposed FY 21-22 rates.

Table 5-9: Comparison of Existing and Proposed FY 21-22 Rates

Line		Existing	Proposed FY 21-22	\$ Difference	% Difference
1	Commodity Rate				
2	Tier 1 (All Meter Sizes)	\$3.77	\$3.77	\$0.00	0.00%
3	Tier 2 (All Meter Sizes)	\$4.75	\$4.91	\$0.16	3.37%
4	Tier 3 (All Meter Sizes)	\$9.18	\$8.50	(\$0.68)	-7.41%
5					
6	Readiness-to-Serve				
7	5/8"	\$36.55	\$37.07	\$0.52	1.42%
8	3/4"	\$36.55	\$37.07	\$0.52	1.42%
9	1"	\$53.31	\$54.10	\$0.79	1.48%
10	1 1/2"	\$137.11	\$139.22	\$2.11	1.54%
11	2"	\$220.91	\$224.35	\$3.44	1.56%
12	3"	\$338.23	\$343.52	\$5.29	1.56%
13	4"	\$505.83	\$513.77	\$7.94	1.57%
14	6"	\$1,008.63	\$1,024.52	\$15.89	1.58%
15	10"	\$2,349.43	\$2,386.52	\$37.09	1.58%
16	MF Additional Units	\$10.06	\$9.99	(\$0.07)	-0.70%
17	Fire Line (per Inch Diameter)	\$7.55	\$8.04	\$0.49	6.49%

Table 5-10 presents, by major rate component, projected \$/HCF commodity rates for the period FY 21-22 - FY 25-26. The FY 21-22 rates shown in Table 5-10 are based on the cost-of-service study discussed in this report. The projected rates for FY 22-23 - FY 25-26 are ***preliminary in nature and offered solely for information purposes***. Those costs labeled "VWD Internal Costs" increase each year by the rate revenue percentage increases developed in the financial plan. Those costs labeled as "Pass Through" in Table 5-10 are estimates of the costs that will be charged by the District's water suppliers. The projected water supply pass-through costs shown in Table 5-10 may differ from actual experience. For this reason, the projected FY 22-23 - FY 25-26 rates shown in Table 5-10 are preliminary in nature. Note that pass-through costs, as well as VWD internal costs, must be approved by the Board each year.

Table 5-10: Proposed FY 21-22 - FY 25-26 Commodity Rates (\$/HCF)

Line	Tier	Rate Component	Current	Calculated FY 21-22	Projected Commodity Rates Presented for informational purposes only. The exact \$/HCF commodity rate will be dependent on purchased water costs + VWD internal costs			
					FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	Tier 1	OMWD Pass Through		\$0.62	\$0.65	\$0.70	\$0.74	\$0.79
2		SDCWA Pass-Through		\$2.14	\$2.27	\$2.43	\$2.59	\$2.76
3		Desal Pass-Through		\$1.66	\$1.76	\$1.88	\$2.01	\$2.14
4		VWD Internal Costs		\$0.11	\$0.11	\$0.12	\$0.12	\$0.13
5		VWD Discretionary Offsets		(\$0.77)	(\$0.77)	(\$0.77)	(\$0.77)	(\$0.77)
6		Total Commodity Rate	\$3.77	\$3.77	\$4.03	\$4.35	\$4.70	\$5.06
7								
8	Tier 2	OMWD Pass Through		\$0.62	\$0.65	\$0.70	\$0.74	\$0.79
9		SDCWA Pass-Through		\$2.14	\$2.27	\$2.43	\$2.59	\$2.76
10		Desal Pass-Through		\$1.66	\$1.76	\$1.88	\$2.01	\$2.14
11		VWD Internal Costs		\$0.72	\$0.75	\$0.78	\$0.81	\$0.84
12		VWD Discretionary Offsets		(\$0.24)	(\$0.24)	(\$0.24)	(\$0.24)	(\$0.24)
13		Total Commodity	\$4.75	\$4.91	\$5.20	\$5.55	\$5.91	\$6.31
14								
15	Tier 3	OMWD Pass Through		\$0.62	\$0.65	\$0.70	\$0.74	\$0.79
16		SDCWA Pass-Through		\$2.14	\$2.27	\$2.43	\$2.59	\$2.76
17		Desal Pass-Through		\$1.66	\$1.76	\$1.88	\$2.01	\$2.14
18		VWD Internal Costs		\$4.07	\$4.23	\$4.40	\$4.58	\$4.76
19		VWD Discretionary Offsets		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
20		Total Commodity	\$9.18	\$8.50	\$8.92	\$9.40	\$9.92	\$10.46

Note: Due to rounding, totals may be off by \$0.01

Table 5-11 presents the proposed FY 21-22 - FY 25-26 readiness-to-serve (RTS) charges and fire line charges. Similar to the commodity rates shown in Table 5-10, the projected RTS charges shown for FY 22-23 - FY 25-26 as shown Table 5-11 are ***preliminary in nature and offered solely for information purposes***.

Table 5-11: Proposed FY 21-22 - FY 25-26 Readiness-to-Serve Charges (\$/Month)

Line	Meter Size	Rate Component	Current FY 20-21	COS Calculated FY 21-22	Projected RTS Charges Presented for informational purposes only. The exact RTS charge will be dependent on purchased water costs + VWD internal costs			
					FY 22-23	FY 23-24	FY 24-25	FY 25-26
1	5/8"	VWD Internal Costs		\$22.59	\$23.49	\$24.43	\$25.41	\$26.43
2		Pass-Through Costs:						
3		SDCWA Fixed Charges		\$10.24	\$10.85	\$11.58	\$12.36	\$13.19
4		SDCWA Infrastructure Access Charge		\$4.24	\$4.49	\$4.80	\$5.12	\$5.46
5		Total	\$36.55	\$37.07	\$38.84	\$40.81	\$42.89	\$45.08
6								
7	3/4"	VWD Internal Costs		\$22.59	\$23.49	\$24.43	\$25.41	\$26.43
8		Pass-Through Costs:						
9		SDCWA Fixed Charges		\$10.24	\$10.85	\$11.58	\$12.36	\$13.19
10		SDCWA Infrastructure Access Charge		\$4.24	\$4.49	\$4.80	\$5.12	\$5.46
11		Total	\$36.55	\$37.07	\$38.84	\$40.81	\$42.89	\$45.08
12								
13	1"	VWD Internal Costs		\$32.38	\$33.68	\$35.02	\$36.42	\$37.88
14		Pass-Through Costs:						
15		SDCWA Fixed Charges		\$15.36	\$16.28	\$17.38	\$18.54	\$19.79
16		SDCWA Infrastructure Access Charge		\$6.36	\$6.74	\$7.19	\$7.68	\$8.19
17		Total	\$53.31	\$54.10	\$56.70	\$59.59	\$62.64	\$65.86
18								
19	1 1/2"	VWD Internal Costs		\$81.30	\$84.55	\$87.93	\$91.45	\$95.11
20		Pass-Through Costs:						
21		SDCWA Fixed Charges		\$40.96	\$43.42	\$46.34	\$49.45	\$52.77
22		SDCWA Infrastructure Access Charge		\$16.96	\$17.98	\$19.19	\$20.47	\$21.85
23		Total	\$137.11	\$139.22	\$145.95	\$153.46	\$161.38	\$169.73
24								
25	2"	VWD Internal Costs		\$130.23	\$135.44	\$140.86	\$146.49	\$152.35
26		Pass-Through Costs:						
27		SDCWA Fixed Charges		\$66.56	\$70.55	\$75.29	\$80.35	\$85.75
28		SDCWA Infrastructure Access Charge		\$27.56	\$29.21	\$31.18	\$33.27	\$35.51
29		Total	\$220.91	\$224.35	\$235.21	\$247.33	\$260.12	\$273.61
30								
31	3"	VWD Internal Costs		\$198.72	\$206.67	\$214.94	\$223.53	\$232.47
32		Pass-Through Costs:						
33		SDCWA Fixed Charges		\$102.40	\$108.54	\$115.84	\$123.62	\$131.93
34		SDCWA Infrastructure Access Charge		\$42.40	\$44.94	\$47.96	\$51.19	\$54.63
35		Total	\$338.23	\$343.52	\$360.16	\$378.74	\$398.34	\$419.03
36								
37	4"	VWD Internal Costs		\$296.57	\$308.43	\$320.77	\$333.60	\$346.94
38		Pass-Through Costs:						
39		SDCWA Fixed Charges		\$153.60	\$162.82	\$173.76	\$185.43	\$197.89
40		SDCWA Infrastructure Access Charge		\$63.60	\$67.42	\$71.95	\$76.78	\$81.94
41		Total	\$505.83	\$513.77	\$538.66	\$566.47	\$595.82	\$626.78
42								
43	6"	VWD Internal Costs		\$590.12	\$613.72	\$638.27	\$663.80	\$690.36
44		Pass-Through Costs:						
45		SDCWA Fixed Charges		\$307.20	\$325.63	\$347.51	\$370.87	\$395.79
46		SDCWA Infrastructure Access Charge		\$127.20	\$134.83	\$143.89	\$153.56	\$163.88
47		Total	\$1,008.63	\$1,024.52	\$1,074.19	\$1,129.68	\$1,188.23	\$1,250.03
48								
49	10"	VWD Internal Costs		\$1,372.92	\$1,427.84	\$1,484.95	\$1,544.35	\$1,606.12
50		Pass-Through Costs:						
51		SDCWA Fixed Charges		\$716.80	\$759.81	\$810.87	\$865.36	\$923.51
52		SDCWA Infrastructure Access Charge		\$296.80	\$314.61	\$335.75	\$358.31	\$382.39
53		Total	\$2,349.43	\$2,386.52	\$2,502.25	\$2,631.57	\$2,768.02	\$2,912.02
54								
55	MF Add. Units	VWD Internal Costs		\$6.56	\$6.82	\$7.10	\$7.38	\$7.67
56		Pass-Through Costs:						
57		SDCWA Fixed Charges		\$3.43	\$3.64	\$3.88	\$4.14	\$4.42
58		SDCWA Infrastructure Access Charge		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
59		Total	\$10.06	\$9.99	\$10.46	\$10.98	\$11.52	\$12.09
60								
61	Fireline	VWD Internal Costs	\$7.55	\$8.04	\$8.36	\$8.70	\$9.04	\$9.41

5.1.6. PROPOSED DROUGHT RATES

The District recovers a portion of its fixed costs through the commodity rate. In the event of drought conditions or mandated water cutbacks, the District continues to incur fixed costs while receiving reduced revenues. The District’s Board of Directors approved Ordinance 219 on November 17, 2021. Ordinance 219 implements the District’s Water Shortage Contingency Plan. Within Ordinance 219, Drought Rates for the commodity charge then in effect would be adjusted as necessary to achieve full cost recovery of the District’s revenue requirement. District Staff, in consultation with Raftelis, developed proposed drought rates to comply with Ordinance 219 shown in Table 5-12. These maximum drought rates will remain unchanged through FY 25-26.

Table 5-12: Proposed FY 21-22 - FY 25-26 Drought Rates (\$/HCF)

Line	Drought Level	Demand % Cutback	Demand Units (HCF)	Revenue Loss	Expense Savings	Net Budget Impact	Add'l Rate Per Unit (HCF)*
1	1	10%	5,591,291	\$ (3,621,719)	\$ (2,161,970)	\$ (1,459,749)	\$0.26
2	2	20%	5,007,197	(7,112,887)	(4,667,960)	(2,444,927)	0.49
3	3	30%	4,423,010	(10,464,439)	(7,018,935)	(3,445,504)	0.78
4	4	40%	3,838,757	(13,669,994)	(9,381,240)	(4,288,754)	1.12
5	5	50%	3,254,466	(16,717,037)	(11,727,585)	(4,989,452)	1.53
6	6	60%	2,670,177	(19,590,875)	(14,073,930)	(5,516,945)	2.07

* Drought rates are calculated by taking the “Net Budget Impact” and dividing it by the new “Demand Units”. For example, line 1 shows a “Net Budget Impact” of \$1,459,749 and “Demand Units” of 5,591,291. Dividing the two numbers (\$1,459,749/5,591,291) results in a Drought Rate of \$0.26 per unit of water

5.1.7. SINGLE FAMILY RESIDENTIAL CUSTOMER BILL IMPACTS

Table 5-13 shows the bill impact calculation for residential customers served by a 5/8" or 3/4" water meter. Under the proposed CY 2022 rates, a customer with 4 HCF monthly usage will pay \$0.52 more per month (+1.0%). The average residential customer with a 5/8" meter using 13 HCF will pay \$1.64 more per month (+1.8%) and a customer with 30 HCF monthly usage will pay \$3.20 less per month (-1.5%)

Table 5-13: Estimated CY 2022 Single Family Bill Impacts

Metric	Proposed and Existing Rates				Customer Bills		
	Tier 1	Tier 2	Tier 3	RTS	4 HCF	13 HCF	30 HCF
Proposed Rates	\$3.77	\$4.91	\$8.50	\$37.07	\$52.15	\$94.06	\$209.84
Current Rates	\$3.77	\$4.75	\$9.18	\$36.55	\$51.63	\$92.42	\$213.04
\$ Change	\$0.00	\$0.16	(\$0.68)	\$0.52	\$0.52	\$1.64	(\$3.20)
% Change	0.0%	3.4%	-7.4%	1.4%	1.0%	1.8%	-1.5%