



Service Beyond Expectation

Recycled Water Cost of Service Rate Study

For Fiscal Years

2020-2024

Prepared by:
Finance Division

Chad Brantley, CPA
Director of Finance and Technology Services

Agnes Boros, CPA
Finance Manager

Table of Contents

Contents

BACKGROUND..... 2

PURPOSE 2

OVERVIEW..... 2

COST OF SERVICE AND RATE STUDY RESULTS 3

 Recycled Water System Usage and Customer Base 3

 Recycled Water System Expenses..... 4

 Recycled Water System Rates Calculation..... 6

 Fixed Costs 6

 Variable Costs..... 7

 Recycled Water System Revenues..... 8

APPENDIX A – METER SIZES AND CAPACITIES 9

APPENDIX B – RATE DETAIL..... 10

APPENDIX C – PROJECTED CASH RESERVE BALANCES 11

BACKGROUND

The Cucamonga Valley Water District (the “District” or “CVWD”) is an independent special district that operates under the authority of Division 12 of the California Water Code. The District was incorporated on March 25, 1955, and is governed by a five-member, elected Board of Directors. The District provides water, wastewater, and recycled water services to a population of approximately 190,000 within its 46 square mile service area, which is located in the western area of San Bernardino County, California. The District encompasses the majority of the community of Rancho Cucamonga and portions of the cities of Fontana, Ontario, Upland, and some of the unincorporated areas of San Bernardino County.

The District’s recycled water system consists of 7.2 miles of distribution lines, 134 meters of various sizes, and the service lines associated with the meters. The District operates on a fiscal year basis, which starts July 1 continuing through June 30 of the following year.

PURPOSE

The purpose of this report is to summarize findings resulting from the Recycled Water Cost of Service Rate Study performed by the Finance Division of CVWD. As part of this rate study, CVWD first projected revenues and expenses, then developed rates that meet the net revenue requirements. This report summarizes the results of this cost of service and rate study and recommends new recycled water rates.

OVERVIEW

CVWD purchases recycled water from the Inland Empire Utilities Agency (IEUA). Recycled water is treated wastewater that is used for non-drinking purposes such as landscape irrigation and industrial processes. Using recycled water allows CVWD to reduce reliance on imported water. Recycled water costs less for its customers and helps to save potable (drinking) water for home and business uses. Combined with water conservation, recycled water provides a reliable water source to customers during times of drought. Recycled water is reliable, sustainable, and is a renewable resource.

To protect the public's health and safety, the Regional Water Quality Control Board and state and local health departments strictly monitor recycled water. These agencies set precautionary requirements to protect workers and the public. Pipeline systems and valves are color coded purple and cross connections with domestic water supply systems are prevented through strict State specifications.

COST OF SERVICE AND RATE STUDY RESULTS

Recycled Water System Usage and Customer Base

In Fiscal Year (FY) 2018, the District delivered approximately 1,262 acre feet (AF) to approximately 134 customers. The District charged a rate of \$1.73 per hundred cubic feet (HCF) during Fiscal Year 2019.

The following table shows historical and projected recycled water usage and customer base from FY2016 through FY2024:

Table 1
Cost to Purchase Recycled Water From IEUA
Fiscal Year

	Historical			Projected					
	2016	2017	2018	2019	2020	2021	2022	2023	2024
Water Sales (AF)	1,146	1,056	1,262	1,301	1,314	1,327	1,340	1,354	1,367
Customers	119	125	133	134	139	144	149	154	159

Recycled Water System Expenses

In order to provide recycled water, the District incurs costs to purchase the recycled water as well as Operating and Maintenance (O&M) costs. The O&M costs are related to customer service, meter reading, billing, inspection, distribution, and maintenance.

The District has annual debt service payments related to the recycled water utility fund. A low interest loan was received through IEUA from the State of California Revolving Fund for the purpose of constructing recycled water infrastructure. The District’s potable water utility fund provided initial funding and start-up costs to pay for capital assets of the recycled water fund through an inter-fund loan. The recycled water utility fund has reimbursed the potable water utility fund in full. Prudent financial planning requires that the recycled water fund build and maintain various minimum financial reserves ensure ongoing operations. Since the water fund has been repaid for the initial startup costs, the recycled water fund will begin to set aside small reserves each year with the goal of meeting minimum reserve levels at the end of the five-year time period ending in 2024 (see CVWD Administrative Policy No. 1.3 – Reserve and Financial Benchmark).

The following table shows recycled water expenses budgeted for 2019, estimated actual for 2019, and projected from FY2020 through FY2024:

Table 2
Recycled Water Expenses
Fiscal Year

	Budgeted		Est. Actual		Projected			
	2019	2019	2020	2021	2022	2023	2024	
Operating Expenses								
Source of Supply	\$ 619,200	\$ 515,040	\$ 651,210	\$ 690,840	\$ 733,200	\$ 778,272	\$ 825,240	
Transmission/Distribution	10,000	8,334	10,200	10,506	10,821	11,146	11,480	
Customer Accounts	77,081	79,631	79,520	82,215	85,001	87,880	90,861	
General and Administrative	271,669	191,936	280,910	290,704	300,846	311,341	322,203	
Total Operating Expenses	977,950	794,941	1,021,840	1,074,265	1,129,868	1,188,639	1,249,784	
Nonoperating Expenses								
Debt Principal and Interest	34,358	34,358	34,793	34,793	34,794	34,793	34,793	
Capital and Liquidity Reserves	200,000	200,000	200,000	200,000	200,000	200,000	200,000	
Capital Investment/Reserve	150,000	150,000	150,000	150,000	150,000	150,000	150,000	
Total Nonoperating Expenses	384,358	384,358	384,793	384,793	384,794	384,793	384,793	
Total Expenses	\$ 1,362,308	\$ 1,179,299	\$ 1,406,633	\$ 1,459,058	\$ 1,514,662	\$ 1,573,432	\$ 1,634,577	

Cucamonga Valley Water District

Recycled Water Cost of Service and Rate Study FY2020-2024

The Source of Supply line item in Table 2 represents the total cost of the recycled water that is purchased from IEUA for each given fiscal year. IEUA sets their recycled water rates on a fiscal year basis and charges the District by the acre foot. The cost per acre foot used in the calculation for fiscal year 2020 has been adopted by IEUA and will be effective July 1, 2019. The amounts used in the projections for 2021 through 2024 are based upon the expected year-over-year increases. This cost of purchased recycled water is the most significant operating expense of the recycled water utility and is expected to continue to increase in future years. The following table shows the historical, adopted and projected cost per acre foot of recycled water:

Table 3
Cost to Purchase Recycled Water From IEUA
Fiscal Year

	Historical			Adopted	Projected			
	2017	2018	2019	2020	2021	2022	2023	2024
Cost per AF	\$ 410	\$ 470	\$ 480	\$ 490	\$ 505	\$ 520	\$ 536	\$ 552
Year over year % Increase	41%	15%	2%	2%	3%	3%	3%	3%

The IEUA has begun a cost of service study to set recycled water rates for the fiscal years 2021 through 2025. However, the study will not be completed by the time CVWD will need to set recycled water rates. In order to avoid the impact of over-estimating the rate at which IEUA will raise the price of recycled water, CVWD will assume that the rate of inflation of their rate will be 3% per year. This rate of inflation is consistent with the estimate for other costs of the fund. If the IEUA determines that it is necessary to raise the price of recycled water greater than 3% per year, CVWD will charge a pass-through rate to cover the incremental cost difference. This pass-through rate (IEUA Surcharge Rate) will never exceed \$1.00 per HCF in any one year, during this five year rate period. This pass-through rate will be enacted in accordance with the provisions of AB3030. In no event shall such rates be increased as a result of a pass-through adjustment by more than the cost of providing service.

The Operating Expenses other than Source of Supply in Table 2 consist of various costs associated with the maintenance and administration of the system as well as its operations. The transmission and distribution line item represents expenses that relate to maintenance of the recycled water pipelines. These transmission and distribution expense projections are based on historical cost data associated with maintaining pipelines and include a 3% annual inflation factor. The customer accounts line item represents expenses related to billing, payment processing and customer service functions. These customer account expense projections are based on a prorated share of District costs associated with billing and customer service and include a 3% annual inflation factor. The general and administrative line item is for salaries and benefits of District staff who monitor, inspect, and maintain the operation of the recycled water system. These general and administrative account expense projections are based on historical data and include a 3.5% annual inflation factor.

Recycled Water System Rates Calculation

The District utilizes the cost of service approach to setting rates. This cost of service approach includes the cost of providing recycled water only to those customers receiving that service. Conservative and prudent management practices require that the recycled water system generate revenues that will cover the cost of service. There are two primary components to the cost of service: fixed costs and variable costs. District management believes that fixed costs should be covered by fixed rates and variable costs should be covered by variable rates.

Management also believes that rate changes to either fixed or variable charges should be smoothed over several years to avoid large fluctuations in the rates for any given year. This smoothing of rates benefits recycled water rate payers by making bills more predictable.

Fixed Costs

The fixed costs of the recycled water system include the debt service payments and contributions to the fund reserves. The fixed rates that should cover these costs are the flat meter charges. Flat meter charges are calculated based on a ratio that is determined by the meters hydraulic capacity. Larger meters have higher flow capacity ratio and the monthly charge for the meter is increased by the same ratio. The American Water Works Association (AWWA) developed the standard meter ratios. See the table in appendix A for the meter sizes and flow capacity ratios.

The following table shows the projected fixed customer service costs, debt service costs, reserve funding, and the projected fixed meter charges.

	Budgeted	Est. Actual	Projected				
	2019	2019	2020	2021	2022	2023	2024
Customer Service	\$ 77,081	\$ 79,631	\$ 79,520	\$ 82,215	\$ 85,001	\$ 87,880	\$ 90,861
Debt Service	34,358	34,358	34,793	34,793	34,794	34,793	34,793
Reserve Funding	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Less:							
Meter Charges	151,633	150,664	159,856	168,456	177,428	186,787	196,548
Difference	\$ 159,806	\$ 163,325	\$ 154,457	\$ 148,552	\$ 142,367	\$ 135,886	\$ 129,106

As shown in Table 4, management’s philosophy of small and equal meter charge rate changes will reduce the difference between the total meter charges and the fixed costs. The remaining difference must be provided by the commodity charges (see Table 5). For more detail on the meter rates for each meter size, see appendix B.

Cucamonga Valley Water District
Recycled Water Cost of Service and Rate Study FY2020-2024

Variable Costs

The variable costs of the recycled water system include the cost of purchasing wholesale recycled water from IEUA, other operating costs (e.g. inspection, operations and maintenance, and other related costs), and capital replacement costs. The recycled water commodity charge is designed to recover these variable costs of providing service only to those customers receiving that service.

The following table shows the projected net revenue requirement consisting of variable costs and the remaining fixed costs of the recycled water system and the related consumption. This is then used to calculate the necessary commodity charges in each fiscal year.

Table 5
 Commodity Charge Revenue Requirement Calculation
 Fiscal Year

	Budgeted	Est. Actual	Projected				
	2019	2019	2020	2021	2022	2023	2024
Operating Expenses	\$ 900,869	\$ 715,310	\$ 942,320	\$ 992,050	\$ 1,044,867	\$ 1,100,759	\$ 1,158,923
Fixed Cost Difference (Table 4)	159,806	163,325	154,457	148,552	142,367	135,886	129,106
Capital Investment	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Developer Fees	(29,592)	(153,878)	(153,878)	(153,878)	(153,878)	(153,878)	(153,878)
Construction Water and Misc	(20,300)	(35,144)	(20,300)	(20,300)	(20,300)	(20,300)	(20,300)
Net Allocation of Operating Reserve	(189,183)	(31,448)	(42,466)	(25,583)	(8,790)	14,370	38,873
Revenue Requirement	\$ 971,600	\$ 808,165	\$ 1,030,133	\$ 1,090,841	\$ 1,154,266	\$ 1,226,837	\$ 1,302,724
Units of water consumption (HCF)	561,870	467,399	578,726	596,088	613,971	632,390	651,362
Recycled Water Commodity Charge per unit (HCF)	\$ 1.73	\$ 1.73	\$ 1.78	\$ 1.83	\$ 1.88	\$ 1.94	\$ 2.00

As shown in Table 5, recycled water commodity charges must be increased in order to provide for the increases in the projected revenue requirement. However, by smoothing rate changes over the 5 year period from FY2020 – FY2024, the District will be able to keep the rate increases at a low 3.0% per year. The allocation of the operating reserves will be utilized to stabilize rates over the 5 year period. The remaining fixed costs that are not covered by meter charges are included (see Table 4). The capital investment will be used to fund major repairs or replacements of the recycled water system without the need to drastically raise rates in future years. If the excess operating income is generated or if capital improvement funds are not needed, they will be allocated to reserves.

Recycled Water System Revenues

The District charges recycled water customer’s two types of fees for service. The meter service charge is a flat fee on each monthly bill and is based upon the size of the meter. The volumetric charge is based upon the water consumption and measured in hundreds of cubic feet (HCF).

Based on the number of customers and their water usage in Table 1 and charges in Tables 4 and 5, the District is able to calculate projected total revenues for the Water Sales and the Meter Charges during each fiscal year. The Developer Fees are based on the assumption that the District will add two new 1” meters, one new 1½” meter and two new 2” meter to the system each year. The following table shows recycled water revenues budgeted for FY2019, estimated actual for FY2019, and projected from FY2020 through FY2024:

Table 6
Recycled Water Revenue
Fiscal Year

Revenue	Budgeted	Est. Actual	Projected				
	2019	2019	2020	2021	2022	2023	2024
Water Sales	\$972,035	\$808,600	\$1,030,132	\$1,090,841	\$1,154,265	\$1,226,837	\$1,302,724
Meter Charges	151,633	150,664	159,856	168,456	177,428	186,787	196,548
Construction Use	20,000	35,000	20,000	20,000	20,000	20,000	20,000
Developer Fees	29,592	153,878	153,878	153,878	153,878	153,878	153,878
Misc Services	300	144	300	300	300	300	300
Total Revenues	\$1,173,560	\$1,148,286	\$1,364,167	\$1,433,475	\$1,505,872	\$1,587,802	\$1,673,450

APPENDIX A – METER SIZES AND CAPACITIES

The following table shows the American Water Works Association standard meter ratios that are derived from the safe maximum flow for each meter size:

Table A
American Water Works Association Standard Meter Ratios

Meter Size	Safe Maximum Operating Capacity (gpm)	AWWA Meter Ratio
3/4 inch	30	1.00
1 inch	50	1.67
1 1/2 inch	100	3.33
2 inch	160	5.33
3 inch	300	10.00
4 inch	500	16.67
6 inch	1,000	33.33
8 inch	1,600	53.33
10 inch	2,400	80.00

Note: According to American Water Works Association Manual of Water Supply Practices M1, customer-related costs for meters and services may be properly distributed among customer classes by recognizing factors that are generally responsible for those costs being incurred. One method for distributing meter service costs to customer classes is in proportion to the investment in meters and services installed, based on the number of equivalent meters. Distribution of customer costs by equivalent meter and service ratios recognizes that meter and service costs vary, depending on considerations such as size and capacity of the meter.

APPENDIX B – RATE DETAIL

The following table shows historical and projected recycled water meter rates and commodity charges from FY2017 through FY2024:

Table B
 Recycled Water Meter Charges and Commodity Rates
 Rate Effective Date

Meter Size	Historical			Proposed				
	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021	7/1/2022	7/1/2023
3/4 inch	\$ 15.67	\$ 16.45	\$ 17.28	\$ 17.76	\$ 18.29	\$ 18.84	\$ 19.40	\$ 19.99
1 inch	26.12	27.42	28.80	29.66	30.55	31.47	32.41	33.38
1 1/2 inch	52.08	54.69	57.42	59.14	60.92	62.74	64.63	66.57
2 inch	83.36	87.53	91.90	94.66	97.50	100.43	103.44	106.54
3 inch	156.40	164.22	172.43	177.60	182.93	188.42	194.07	199.90
4 inch	260.72	273.76	287.45	296.07	304.95	314.10	323.53	333.23
6 inch	521.29	547.35	574.72	591.96	609.72	628.01	646.85	666.26
8 inch	834.10	875.80	919.59	947.18	975.59	1,004.86	1,035.01	1,066.06
10 inch	1,251.22	1,313.78	1,379.47	1,420.86	1,463.48	1,507.39	1,552.61	1,599.19
Commodity	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021	7/1/2022	7/1/2023
per HCF	\$ 1.63	\$ 1.68	\$ 1.73	\$ 1.78	\$ 1.83	\$ 1.88	\$ 1.94	\$ 2.00
IEUA Surcharge	7/1/2016	7/1/2017	7/1/2018	7/1/2019	7/1/2020	7/1/2021	7/1/2022	7/1/2023
per HCF	\$ -	\$ -	\$ -	\$ -	TBD	TBD	TBD	TBD

APPENDIX C – PROJECTED CASH RESERVE BALANCES

The following table shows projected recycled water utility fund cash reserve balances from FY2019 through FY2024:

Table C
Projected Cash Reserve Balances
Fiscal Year

	2019	2020	2021	2022	2023	2024
Beginning Cash Reserves						
Capital Emergency Reserve	\$ -	\$ -	\$ -	\$ 10,000	\$ 30,000	\$ 50,000
Capital Equipment Reserve	-	-	-	-	-	20,000
Developer Fee Reserve*	297,790	451,668	605,546	759,424	913,302	1,067,180
Operating Reserve	-	14,674	18,330	28,869	46,202	66,694
Total Beginning Balance	297,790	466,342	623,876	798,293	989,504	1,203,874
Cash Sources (Uses)						
Operating Revenues	1,148,286	1,364,167	1,433,475	1,505,872	1,587,802	1,673,450
Operating Expenses	(794,941)	(1,021,840)	(1,074,265)	(1,129,868)	(1,188,639)	(1,249,784)
Debt Service	(34,793)	(34,793)	(34,793)	(34,793)	(34,793)	(34,793)
Capital Improvements	(150,000)	(150,000)	(150,000)	(150,000)	(150,000)	(150,000)
Capital Emergency Reserve	-	-	(10,000)	(20,000)	(20,000)	(20,000)
Capital Equipment Reserve	-	-	-	-	(20,000)	(50,000)
Developer Fee Reserve	(153,878)	(153,878)	(153,878)	(153,878)	(153,878)	(153,878)
Operating Reserve	(14,674)	(3,656)	(10,539)	(17,333)	(20,492)	(14,995)
Net Sources (Uses)	-	-	-	-	-	-
Ending Cash Reserves						
Capital Emergency Reserve	-	-	10,000	30,000	50,000	70,000
Capital Equipment Reserve	-	-	-	-	20,000	70,000
Developer Fee Reserve	451,668	605,546	759,424	913,302	1,067,180	1,221,058
Operating Reserve	14,674	18,330	28,869	46,202	66,694	81,689
Total Ending Cash Balance	\$ 466,342	\$ 623,876	\$ 798,293	\$ 989,504	\$ 1,203,874	\$ 1,442,747

* Developer Fee Reserves are are restricted in accordance with law.