

Western Municipal Water District

Murrieta Service Area Water Cost of Service Study Appendix

Fiscal Year 2022-23 Cost of Service Tables
June 2, 2021 Version



This document serves as an appendix to the Murrieta Service Area Water Cost of Service Study Report (Report). The reader may notice that table headings in this appendix may numerically skip ahead. This appendix is not meant as a stand-alone document, and therefore the table numbers correspond directly to the Report. The summary tables with Fiscal Year (FY) 2022 – FY 2025 information are omitted from this appendix. Only those tables corresponding to unique FY 2022-23 (FY 2023) rate analysis are presented.

Table 4-9: FY 2023 O&M Allocation (%)

Function	Water Supply	Delivery	Max Day	Max Hour	Efficiency	Elevation	Billing & CS	Meters & Service	General	Total
Water Pumping		24.7%	42.0%	33.3%						100.0%
Transmission & Distribution		24.7%	42.0%	33.3%						100.0%
Customer Accounts							100.0%			100.0%
Replacement Reserve		37.1%	32.6%	18.0%				5.9%	6.4%	100.0%
G&A Allocation									100.0%	100.0%
Other Operating Expenses									100.0%	100.0%
Prop Tax Collection									100.0%	100.0%
Purchased Water	100.0%									100.0%
Source of Supply	100.0%									100.0%
Treatment	100.0%									100.0%
Purchased Power						100.0%				100.0%
Water Use Efficiency					100.0%					100.0%
O&M Allocation %	34.1%	13.3%	17.5%	12.6%	0.9%	0.5%	3.5%	1.0%	16.7%	100.0%

Table 4-10: FY 2023 O&M Allocation (\$)

Function	FY 2023 Budget	Water Supply	Delivery	Max Day	Max Hour	Efficiency	Elevation	Billing & CS	Meters & Service	General
Water Pumping	\$240,401		\$59,358	\$100,909	\$80,134					
Transmission & Distribution	\$1,593,500		\$393,457	\$668,877	\$531,167					
Customer Accounts	\$222,114							\$222,114		
Replacement Reserve	\$1,085,007		\$402,440	\$353,352	\$195,394				\$64,534	\$69,286
G&A Allocation	\$839,122									\$839,122
Other Operating Expenses	\$167,154									\$167,154
Prop Tax Collection	\$10									\$10
Purchased Water	\$1,754,943	\$1,754,943								
Source of Supply	\$283,642	\$283,642								
Treatment	\$149,333	\$149,333								
Purchased Power	\$32,526						\$32,526			
Water Use Efficiency	\$54,887					\$54,887				
Total	\$6,422,639	\$2,187,918	\$855,255	\$1,123,138	\$806,695	\$54,887	\$32,526	\$222,114	\$64,534	\$1,075,572
O&M Allocation %	100.0%	34.1%	13.3%	17.5%	12.6%	0.9%	0.5%	3.5%	1.0%	16.7%

Table 4-11: Other Available Revenues

Revenue Source	FY 2023 Revenue (\$)
Property Tax	\$5,000
Interest Income	\$5,700
Delinquent Penalties	\$50,000
Water Availability Charge Revenue	\$131,000
Other	\$7,500
Total	\$199,200

Table 4-12: Adjusted General Costs

Description	\$
General Costs	\$1,075,572
Revenue Offsets	(\$199,200)
Adjusted General Costs	\$876,372

Table 4-13: General Cost Reallocation

Line No.	Cost Causation Components	FY 2023	Applicable	Allocation %	General	Net Revenue
		Requirements	Cost		Requirement	Requirements
		A	B	C = B ÷ B10	D = A9 × C	E = A + D
1	Water Supply	\$2,187,918	N/A		\$0	\$2,187,918
2	Delivery	\$855,255	\$855,255	27.8%	\$244,006	\$1,099,261
3	Max Day	\$1,123,138	\$1,123,138	36.6%	\$320,433	\$1,443,571
4	Max Hour	\$806,695	\$806,695	26.3%	\$230,151	\$1,036,846
5	Efficiency	\$54,887	N/A		\$0	\$54,887
6	Elevation	\$32,526	N/A		\$0	\$32,526
7	Billing & CS	\$222,114	\$222,114	7.2%	\$63,370	\$285,484
8	Meters & Service	\$64,534	\$64,534	2.1%	\$18,412	\$82,946
9	Adjusted General Costs	\$876,372	N/A		\$0	N/A
10	Total	\$6,223,439	\$3,071,736	100.0%	\$876,372	\$6,223,439

Table 4-14: Fire Flow Demand

Line No.	Description	Connection Size	Fire	# of	Fire Demand	% of Total
		(inches)	Demand	Connections	Units	
		A	B = A ^{2.63}	C	D = B × C	E = D / D16
1	Public Hydrants					
2	2-inch	2.00	6.19	0	0	
3	4-inch	4.00	38.32	6	230	
4	6-inch	6.00	111.31	690	76,804	
5	8-inch	8.00	237.21	2	474	
6	Total Public			698	77,508	76%
7						
8	Private Fire					
9	3-inch	3.00	17.98	0	0	
10	4-inch	4.00	38.32	5	192	
11	6-inch	6.00	111.31	26	2,894	
12	8-inch	8.00	237.21	78	18,502	
13	10-inch	10.00	426.58	6	2,559	
14	12-inch	12.00	689.04	1	689	
15	Total Private			116	24,837	24%
16	Total				102,345	100%

Table 4-15: Fire Capacity Costs

Line No.	Fire Capacity Costs	Units A	% Fire B	Max Day C	Max Hour D	Total E = C + D
1	Allocated Costs			\$1,123,138	\$806,695	
2	Extra Capacity Demand	hcf / day		5,144	4,085	
3	Unit Cost of Service	per hcf		\$218.34	\$197.48	
4						
5	Fire Capacity Demand	hcf		401	4,412	
6	Fire Capacity Costs			\$87,569	\$871,238	\$958,807
7	Public Fire Protection		75.7%	\$66,318	\$659,810	\$726,128
8	Private Fire Protection		24.3%	\$21,251	\$211,428	\$232,679

Table 4-16: Reallocation of Public Fire Protection

Line No.	Cost Causation Components	FY 2023 Requirements A	Applicable Cost B	Public Fire Allocation % C = B ÷ B10	Public Fire Reallocation D = \$726,128 x C	Less Public Fire Capacity Costs E	Subtotal F = A + D + E
1	Water Supply	\$2,187,918	N/A				\$2,187,918
2	Delivery	\$1,099,261	\$1,099,261	27.8%	\$202,174		\$1,301,435
3	Max Day	\$1,443,571	\$1,443,571	36.6%	\$265,499	(\$66,318)	\$1,642,752
4	Max Hour	\$1,036,846	\$1,036,846	26.3%	\$190,695	(\$659,810)	\$567,731
5	Efficiency	\$54,887	N/A				\$54,887
6	Elevation	\$32,526	N/A				\$32,526
7	Billing & CS	\$285,484	\$285,484	7.2%	\$52,506		\$337,989
8	Meters & Service	\$82,946	\$82,946	2.1%	\$15,255		\$98,201
9	Total	\$6,223,439	\$3,948,108	100.0%	\$726,128	(\$726,128)	\$6,223,439

Table 4-17: Reallocation of Private Fire

Line No.	Cost Causation Components	Adjusted FY 2023 Requirements A	Private Fire Capacity Cost Adjustment B	Subtotal C = A + B
1	Water Supply	\$2,187,918		\$2,187,918
2	Delivery	\$1,301,435		\$1,301,435
3	Max Day	\$1,642,752	(\$21,251)	\$1,621,501
4	Max Hour	\$567,731	(\$211,428)	\$356,303
5	Efficiency	\$54,887		\$54,887
6	Elevation	\$32,526		\$32,526
7	Billing & CS	\$337,989		\$337,989
8	Meters & Service	\$98,201		\$98,201
9	Private Fire		\$232,679	\$232,679
10	Total	\$6,223,439	\$0	\$6,223,439

Table 4-19: Reallocation of Extra Capacity

Cost Categories	FY 2023 Revenue Requirements A	VARIABLE CHARGE COMPONENTS				FIXED CHARGE COMPONENTS			
		Water Supply B	Delivery C	Efficiency D	Elevation E	Billing & CS F	Meters & Service G	Capacity H	Private Fire I
Water Supply	\$2,187,918	\$2,187,918							
Delivery	\$1,301,435		\$1,301,435						
Extra Capacity	\$1,977,804		\$395,561					\$1,582,243	
Efficiency	\$54,887			\$54,887					
Elevation	\$32,526				\$32,526				
Billing & CS	\$337,989					\$337,989			
Meters & Service	\$98,201						\$98,201		
Private Fire	\$232,679								\$232,679
Total	\$6,223,439	\$2,187,918	\$1,696,996	\$54,887	\$32,526	\$337,989	\$98,201	\$1,582,243	\$232,679

Table 4-20: Summary of Revenue Requirements by Cost Components

Cost Categories	FY 2023 Revenue Requirement	Variable	Fixed
Water Supply	\$2,187,918	✓	
Delivery	\$1,696,996	✓	
Extra Capacity (Max Day + Max Hour)	\$1,582,243		✓
Efficiency	\$54,887	✓	
Elevation	\$32,526	✓	
Billing & CS	\$337,989		✓
Meters & Service	\$98,201		✓
Private Fire	\$232,679		✓
Total	\$6,223,439	\$3,972,327	\$2,251,112
Variable / Fixed Split		64%	36%

Table 4-21: Billing & Customer Service Cost Component – Units of Service

Meter Size	Number of Accounts A	# of Billing Periods B	Units of Service (# of Bills) C = A x B
5/8"	378	12	4,536
3/4"	2,161	12	25,932
1"	173	12	2,076
1.5"	78	12	936
2"	165	12	1,980
3"	5	12	60
4"	4	12	48
6"	0	12	0
8"	0	12	0
10"	0	12	0
Total	2,964	120	35,568

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

Table 4-22: Billing & Customer Service Costs Component

Billing and Customer Service Component	
Billing & CS Revenue Requirements	\$337,989
÷ # of Bills	35,568
Monthly Unit Rate	\$9.503

Table 4-23: Meter and Service Costs Component - Units of Service

Line No.	Meter Size	Meter Replacement Cost	Meter Cost Ratio	# of Bills C	Units of Service (EMUs)
		A	B = A ÷ A2		D = B x C
1	5/8"	\$280.15	0.93	4,536	4,218
2	3/4"	\$299.65	1.00	25,932	25,932
3	1"	\$366.24	1.22	2,076	2,533
4	1.5"	\$593.76	1.98	936	1,853
5	2"	\$815.72	2.72	1,980	5,386
6	3"	\$1,592.60	5.31	60	319
7	4"	\$1,792.37	5.98	48	287
8	6"	\$3,189.64	10.64	0	0
9	8"	\$4,640.18	15.49	0	0
10	10"	\$7,160.59	23.90	0	0
11	Total			35,568	40,528

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

Table 4-24: Meters & Service Costs Component - Unit Rate

Meter & Service Component	
Meters & Service Revenue Requirements	\$98,201
÷ Meter Cost EMUs	40,528
Monthly Unit Rate	\$2.423

Table 4-25: Extra Capacity Costs Component - Units of Service

Line No.	Meter Size	Meter Type	AWWA Standards	AWWA Ratio	# of Bills	Units of Service
			(gpm) A	B = A ÷ A2	C	(EMUs) D = B x C
1	5/8"	C713-15 Fluidic-Oscillator Type	20	0.67	4,536	3,024
2	3/4"	C701-12 Turbine Type, Class I, Vertical Shaft Type	30	1.00	24,540	24,540
3	1"	C701-12 Turbine Type, Class I, Vertical Shaft Type	50	1.67	2,076	3,460
4	1.5"	C701-12 Turbine Type, Class I, Vertical Shaft Type	100	3.33	936	3,120
5	2"	C704-15 Propeller Type	120	4.00	1,980	7,920
6	3"	C704-15 Propeller Type	300	10.00	60	600
7	4"	C704-15 Propeller Type	600	20.00	48	960
8	6"	C704-15 Propeller Type	1,350	45.00	0	0
9	8"	C704-15 Propeller Type	1,800	60.00	0	0
10	10"	C704-15 Propeller Type	2,400	80.00	0	0
11	Total				34,176	43,624

Note: The total number of bills in Table 4-25 does not include private fire accounts.

Table 4-26: Extra Capacity Costs Component - Unit Rate

Peaking/Capacity Component	
Extra Capacity Revenue Requirement	\$1,582,243
÷ Capacity EMUs	43,624
Monthly Unit Rate	\$36.270

Table 4-27: Private Fire Extra Capacity Charges

Line No.	Private Fire Service Charges	Peaking
1	Revenue Requirements	\$232,679
2	Fire Demand Units	24,837
3	Annual Fire Demand Units ([2] x 12)	298,039
4	Monthly Unit Cost of Service ([1] / [3])	\$0.781

Table 4-28: Water Supply Sources - Quantity and Effective Rate

Water Source	Available for Purchase (AF)	Available Supply (AF) After 5% Water Loss	Unit Cost (\$/AF)	Available Supply (HCF)	Effective Unit Cost (\$/AF)	Effective Unit Cost (\$/HCF)
	A	B = A x (1-5%)	C	D = B * 435.6	E = A x C ÷ B	F = E ÷ 435.6
Wells	1,452	1,379	\$298.20	600,867	\$313.89	\$0.721
Eastern MWD	1,217	1,156	\$1,442.14	503,578	\$1,518.04	\$3.485

Table 4-29: Allocation of Water Supplies & Unit Rate (\$/HCF)

Line No.	Tier	Projected Sales (HCF)	Wells (HCF)	EMWD (HCF)	Total Tier Use (HCF)	Unit Rate (\$/HCF)
1	Tier 1 (Essential Use)	434,866	434,866	0	434,866	\$0.721
2	Tier 2 (Efficient Use)	573,114	166,001	407,113	573,114	\$2.684
3	Tier 3 (Inefficient Use)	50,447	0	50,447	50,447	\$3.485
4	Tier 4 (Unsustainable Use)	46,018	0	46,018	46,018	\$3.485
5	Total	1,104,445	600,867	503,578	1,104,445	
6	Total Available Supply	1,104,445	600,867	503,578	1,104,445	

Table 4-30: Projected Water Supply Costs

Line No.	Tier	Projected Sales (HCF)	Water Supply Unit Rate (\$/HCF)	Revenue Requirements
		A	B	C = (A ÷ A5) x Delivery RR from Table 4-20
1	Tier 1 (Essential Use)	434,866	\$0.721	\$668,177
2	Tier 2 (Efficient Use)	573,114	\$2.684	\$880,599
3	Tier 3 (Inefficient Use)	50,447	\$3.485	\$77,512
4	Tier 4 (Unsustainable Use)	46,018	\$3.485	\$70,708
5	Total	1,104,445		\$1,696,996

Table 4-31: Delivery Component - Unit Rates

Delivery Component	
Delivery Revenue Requirement	\$1,696,996
÷ Projected Sales	1,104,445
Monthly Unit Rate	\$1.537

Table 4-32: Efficiency Component - Unit Rates

Line No.	Tier	Projected Use	Unit Rate (\$/HCF)
1	Tier 1 (Essential Use)	434,866	
2	Tier 2 (Efficient Use)	573,114	
3	Tier 3 (Inefficient Use)	50,447	\$0.34
4	Tier 4 (Unsustainable Use)	46,018	\$0.82

Table 4-33: Pumping Charge - Unit Rate (\$/HCF)

Pumping Charge	
Pumping Charge Revenue Requirement	\$32,526
÷ Projected Sales	146,118
Monthly Unit Rate	\$0.223

Table 4-34: FY 2023 Rates for Fixed System Charge (\$/Meter Size)

Meter Size	Meter Cost Ratio A	AWWA Ratio B	Billing & Customer Service C	Meters & Service D = \$2.42 x A	Extra Capacity E = \$36.27 x B	Total Fixed System Charge F = C + D + E
5/8"	0.93	0.67	\$9.50	\$2.25	\$24.18	\$35.94
3/4"	1.00	1.00	\$9.50	\$2.42	\$36.27	\$48.20
1"	1.22	1.67	\$9.50	\$2.96	\$60.45	\$72.91
1.5"	1.98	3.33	\$9.50	\$4.80	\$120.90	\$135.20
2"	2.72	4.00	\$9.50	\$6.59	\$145.08	\$161.17
3"	5.31	10.00	\$9.50	\$12.87	\$362.70	\$385.07
4"	5.98	20.00	\$9.50	\$14.49	\$725.40	\$749.39
6"	10.64	45.00	\$9.50	\$25.78	\$1,632.15	\$1,667.43
8"	15.49	60.00	\$9.50	\$37.53	\$2,176.20	\$2,223.24
10"	23.90	80.00	\$9.50	\$57.91	\$2,901.60	\$2,969.01

Table 4-36: FY 2023 Rates for Private Fire Fixed System Charges (\$/Meter Size)

Meter Size	No of Meters A	Fire Demand Ratio B	Billing & CS C = \$9.50	Meter Service D = \$2.42	Peaking E = \$0.781 x B	Monthly FSC F = C + D + E
3"	0	17.98	\$9.50	\$2.42	\$14.04	\$25.96
4"	5	38.32	\$9.50	\$2.42	\$29.93	\$41.85
6"	26	111.31	\$9.50	\$2.42	\$86.93	\$98.85
8"	78	237.21	\$9.50	\$2.42	\$185.26	\$197.18
10"	6	426.58	\$9.50	\$2.42	\$333.16	\$345.08
12"	1	689.04	\$9.50	\$2.42	\$538.14	\$550.06

Table 4-38: Proposed FY 2023 Commodity Rates (\$/HCF)

Tiers	Water			Total FY 2023
	Supply	Delivery	Efficiency	Rate
Tier 1 (Essential Use)	\$0.72	\$1.54	\$0.00	\$2.258
Tier 2 (Efficient Use)	\$2.68	\$1.54	\$0.00	\$4.221
Tier 3 (Inefficient Use)	\$3.49	\$1.54	\$0.34	\$5.362
Tier 4 (Unsustainable Use)	\$3.49	\$1.54	\$0.82	\$5.842