

Public Hearing

December 1, 2021

Water Rate Study

Phelan Piñon Hills Community Services District



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Executive Summary

The Phelan Piñon Hills Community Services District (CSD) periodically reviews its water utility to determine if adjustments are required to continue meeting its operational costs, system improvements, and adequate reserve funding based on the adopted reserve policies. The CSD's groundwater supplies are within two separate adjudicated areas known as the Mojave Basin Area (MBA) and the Antelope Valley Adjudicated Area (AVAA). The CSD has 17 wells, with one of them located within the AVAA (Well 14). Through the MBA, the CSD has limits on groundwater production, which are set on an annual basis by the Mojave Water Agency (MWA) as Watermaster of the MBA. The amount of groundwater production allowed by the CSD is known as their Free Production Allowance (FPA). The Mojave Water Agency may periodically reduce the FPA to ensure the sustainability of the MBA. The CSD's FPA has decreased by almost 1,000 acre feet (AF) since Fiscal Year (FY) 2019 and equals 3,003 AF for FY 2022.

The CSD's current water demand is approximately 3,100 AF. However, the CSD also has limitations on the amount of water they can provide daily due to maintenance, which wells are operational, and the daily water demands from its customers that can vary substantially. As such, the CSD also utilizes Well 14 periodically to maintain a healthy amount of available water within its storage facilities throughout the CSD's service area. Water production from Well 14 is from the AVAA, and the CSD incurs purchased water costs equal to \$1,010 per AF paid to the Antelope Valley Water Master (AVWM), which can increase annually. With the use of Well 14 becoming more common to serve total demand and peak use times, the CSD is restructuring rates to account for purchased water costs and ensure full cost recovery of its annual revenue requirements.

The last cost-of-service study was completed in 2020, setting rates for FY 2021 through FY 2026 (2020 Report). However, Well 14 was not commonly used by the CSD at the time of the previous study, and the increased water demand, along with high periodic daily peaking, is a new phenomenon that must be captured through the CSD's rates. The 2020 Report identified annual revenue adjustments of 6% for each of the five fiscal years. The new proposed financial plan requires a 4% adjustment for the remainder of FY 2022, commencing on January 1, 2022, followed by 6% revenue adjustments for FY 2023 through FY 2026.

The rate structure has also been updated to capture the additional water supply costs associated with the AVAA. Each customer class pays a proportionate share of both groundwater supplies (MBA and AVAA). The proposed rates for the Residential customer class incorporate a third tier to capture the higher cost of AVAA groundwater supply.

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The proposed rates derived within this report include five years of rate adjustments, commencing on January 1, 2022, for FY 2022, followed by rate adjustments each July 1st for FY 2023 through FY 2026. With the proposed rates, the utility will generate adequate funding above operating expenses to fully fund its capital projects through a combination of cash and bank loans while building reserves back up to meet the minimum reserve targets by FY 2026¹. The Chromium 6 surcharge will remain at \$9.71 per account and is forecasted to remain constant over the next five years. The recommended rates were incorporated into a Proposition 218 Notice and mailed to each customer. A Public Hearing is scheduled for December 1, 2021 on the proposed rates identified in Table 1 and Table 2.

Table 1: Proposed FY 2022 – FY 2026 Monthly Fixed Charges

Meter Charges (\$/Month)					
Meter Size	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
≤ 3/4"	\$22.80	\$24.17	\$25.63	\$27.17	\$28.81
1"	\$34.50	\$36.57	\$38.77	\$41.10	\$43.57
1 1/2"	\$63.75	\$67.58	\$71.64	\$75.94	\$80.50
2"	\$98.85	\$104.79	\$111.08	\$117.75	\$124.82
3"	\$210.00	\$222.60	\$235.96	\$250.12	\$265.13
4"	\$373.80	\$396.23	\$420.01	\$445.22	\$471.94
6"	\$765.75	\$811.70	\$860.41	\$912.04	\$966.77
8"	\$1,643.25	\$1,741.85	\$1,846.37	\$1,957.16	\$2,074.59

Table 2: Proposed FY 2022 – FY 2026 Variable Charges

Variable Rates (\$/hcf)					
Customer Class	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Residential					
Tier 1	\$2.73	\$2.90	\$3.08	\$3.27	\$3.47
Tier 2	\$3.12	\$3.31	\$3.51	\$3.73	\$3.96
Tier 3	\$7.53	\$7.99	\$8.47	\$8.98	\$9.52
Commercial	\$3.65	\$3.87	\$4.11	\$4.36	\$4.63
Institutional	\$3.96	\$4.20	\$4.46	\$4.73	\$5.02

¹ The Proposed financial plan assumes water usage does not fall below 2,722 AF of demand and future expenses do not exceed the projected costs identified herein.

Overview

CSD Background

The CSD was formed in 2008 and the water service area spans approximately 128 square miles in San Bernardino County. Since its inception, the CSD has made significant improvements to the water system, including:

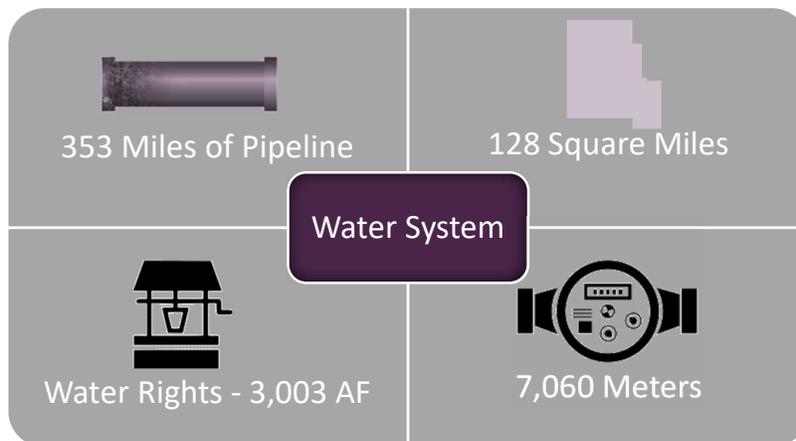
- Addressing necessary repair and replacements
- Acquiring additional water rights
- Implementing a meter replacement program
- Addressing new regulations by the State for Chromium 6 detection to ensure safe, high-quality water is delivered now and in the future.



Water System

The water system includes 353 miles of pipeline that ranges in diameter from 4 inches to 16 inches. Customers are primarily served with groundwater from the local aquifer through wells within the MBA and AVAA. Groundwater is treated locally with chlorine before being discharged into the distribution system. In 2008, additional water rights were acquired through the purchase of Meadowbrook Dairy. The acquisition increased the annual rights within the MBA to approximately 5,000 AF, but with production ramp downs by MWA, the CSD's FPA for FY 2022 is 3,003 AF.

Figure 1: Phelan Pinon Hills CSD Water System



The additional water rights allow the CSD to blend water from its various wells to comply with the new maximum contaminant level (MCL) detection standards of Chromium 6 by the State. The change from ppm to ppb triggered the CSD from being within compliance to out of compliance. Given the higher level of MCLs, the CSD is moving forward with meeting the new regulations through system improvements focused on blending its water supplies versus the more expensive chemical treatment.

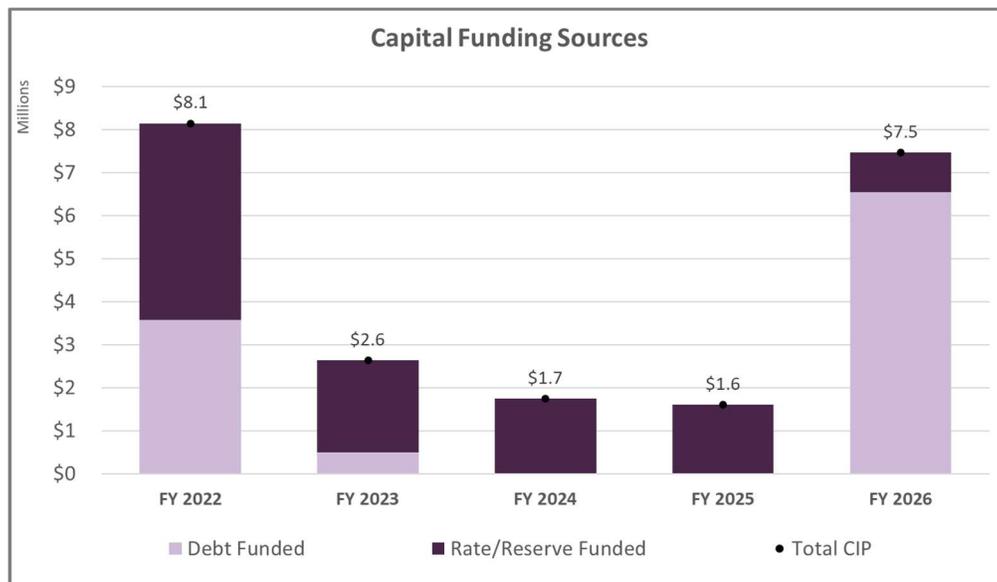
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The CSD has budgeted its system repair and replacement spending based on the annual depreciation value of its water assets in recent years. Based on Board policy, the CSD spends 60% of current year depreciation on capital spending; however, the repairs and replacement needed over the next five years exceed the current targeted spending level and require additional funding to complete planned projects. The CSD's annual depreciation is around \$2M and the capital spending target is only \$1.2M. There are four projects over the Rate Setting Period that make up a majority of the overall system costs which include:

- Chromium 6 mitigation projects – estimated at \$3.1M (includes an additional well)
- Reservoir improvements – estimated at \$6.6M
- Civic Center headquarters – estimated at \$4M
- The CSD's meter replacement program – estimated at approximately \$2.8M remaining

With these significant improvements and ongoing repair and replacements to the water system, average capital spending is approximately \$4.3M per year through FY 2026. Figure 2 shows the CSD's capital plan with current funding sources, which includes anticipated debt financing.

Figure 2: Capital Improvement Plan



Customers

The CSD serves approximately 7,060 accounts, with over 95% of accounts classified as Residential. Table 3 provides a summary of accounts by customer class and meter size.

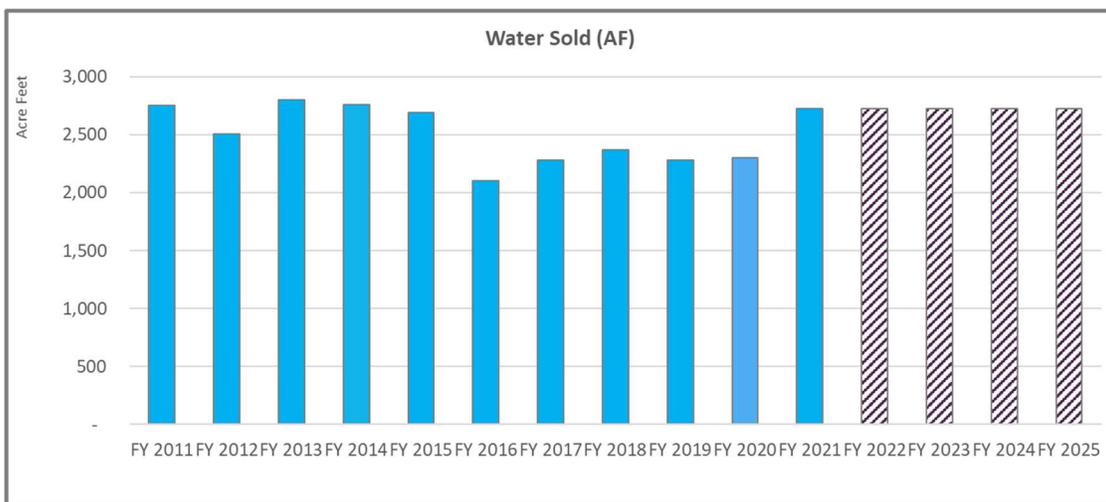
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Table 3: Accounts by Meter Size

Meter Size	Residential	Commercial	Institutional	Total
≤ 3/4"	1,896	17	1	1,914
1"	5,039	22	4	5,065
1 1/2"	29	1	-	30
2"	21	4	23	48
3"	1	-	1	2
4"	-	-	1	1
6"	-	-	-	-
8"	-	-	-	-
Total	6,986	44	30	7,060

Over the last two fiscal years, water sales have increased with significant usage in FY 2021 that required the periodic use of Well 14. Figure 3 shows both historical water sales and projected water sales in AF. FY 2021 water sales were used as the baseline for the Rate Setting Period.

Figure 3: Water Sales



The current rate structure consists of a monthly fixed meter charge, a monthly account Chromium 6 surcharge, and a commodity or usage rate. Residential customers are currently on a 2-tiered commodity rate structure, and non-residential customers (Commercial and Institutional) are on a uniform commodity rate structure. Current monthly fixed charges are identified in Table 4, followed by commodity rates shown in Table 5 by customer class and tier.

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Table 4: FY 2022 Monthly Fixed Charges

Existing Meter Charges (\$/Month)		
Meter Size	Base Charge	Chromium 6 Surcharge
≤ 3/4"	\$23.62	\$9.71
1"	\$33.99	\$9.71
1 1/2"	\$59.91	\$9.71
2"	\$91.01	\$9.71
3"	\$189.49	\$9.71
4"	\$334.63	\$9.71

Table 5: FY 2022 Commodity Rates

Variable Rates (\$/hcf)		
Customer Class	Tier Allotment	\$/hcf
Residential		
Tier 1	12 hcf	\$2.80
Tier 2	> 12 hcf	\$4.26
Commercial	N/A	\$3.25
Institutional	N/A	\$3.75

Financial Plan Overview

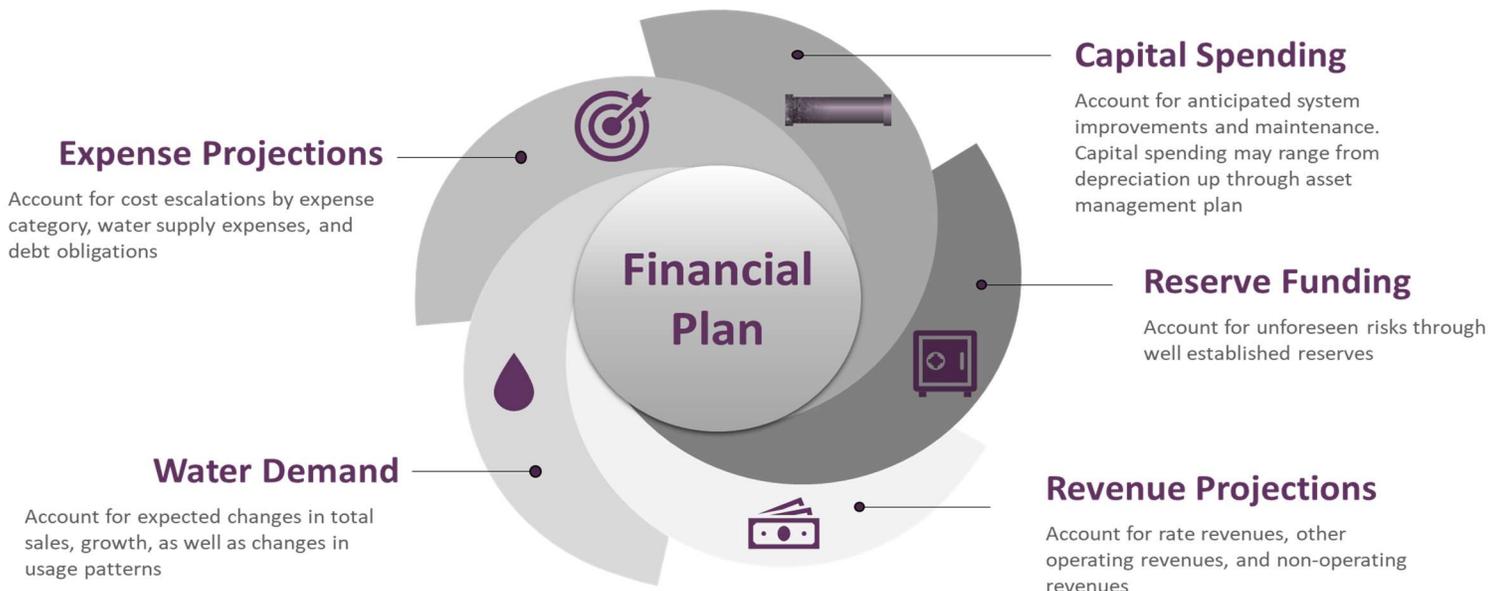
Financial Planning

Financial planning incorporates numerous considerations in addition to projecting operating expenses and forecasting expected costs through various inflationary adjustments. Utilities also need to account for changes in water demand driven by variations in usage due to weather, water availability, State mandates, growth, and economic factors. In addition, system maintenance and reinvestment, reserves, and debt compliance all influence revenues needed in future years. Therefore, a comprehensive financial plan reviews the following:

- 1) Historical water sales and consumption patterns to determine an appropriate baseline usage level for projecting future water use.
- 2) Water supply costs by source.
- 3) Operational costs that may change over the planning period as a result of inflation as well any new expenditures incurred to meet strategic goals, state mandates, water supplies, or changes in operations.
- 4) Multi-year system improvement requirements and scheduling based on priority. This review also considers available funding sources to complete projects such as pay-as-you-go (PAYGO), grants, and debt.
- 5) Reserve funding to meet adopted reserve policies. The goal is to generate adequate cash on hand to mitigate financial risks related to monthly operating cash flow needs, unexpected increases in expenses, shortages in system reinvestment, and mitigating potential system failures.

Figure 4 illustrates the key elements when developing a long-term financial plan.

Figure 4: Financial Plan Key Elements



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Financial Planning Assumptions

Developing a long-term financial plan requires understanding the utility's financial position by evaluating existing revenue streams, ongoing expenses, and how those expenses will change over time, including existing debt requirements and reserves. With these considerations, certain assumptions are required for projecting revenues, expenses, and ending fund balances. Table 6 identifies assumptions used for forecasting revenues, and Table 7 identifies assumptions used to forecast expense increases over the Rate Setting Period.

Table 6: Assumptions for Forecasting Revenues

Key Assumptions	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Revenue Escalation					
Non-Inflated	0%	0%	0%	0%	0%
Non-Rate Revenues	0%	0%	0%	0%	0%
Reserve Interest	1.5%	1.5%	1.5%	1.5%	2%
Account Growth					
Residential	0%	0%	0%	0%	0%
Commercial	0%	0%	0%	0%	0%
Institutional	0%	0%	0%	0%	0%
Demand / Usage Adjustments					
Residential	0%	0%	0%	0%	0%
Commercial	0%	0%	0%	0%	0%
Institutional	0%	0%	0%	0%	0%
Projected Accounts / Water Sales					
Total Accounts	7,060	7,060	7,060	7,060	7,060
Consumption less Construction (hcf)	1,163,060	1,163,060	1,163,060	1,163,060	1,163,060

Table 7: Assumptions for Forecasting Expense Requirements

Key Assumptions	Notes:	FY 2022	FY 2023	FY 2024	FY 2025
Expenditure Escalation					
Benefits		5.0%	5.0%	5.0%	5.0%
CalPers		5.0%	5.0%	5.0%	5.0%
Capital	ENR 20-City 20-Year Average	3.2%	3.2%	3.2%	3.2%
Electricity		5.0%	5.0%	5.0%	5.0%
General Costs	CPI - LA (BLS) 5-Year Average	2.6%	2.6%	2.6%	2.6%
Non-Inflated		0.0%	0.0%	0.0%	0.0%
Retirement		5.0%	5.0%	5.0%	5.0%
Salaries		5.0%	5.0%	5.0%	5.0%
Water Loss					
% of Total Production		14.1%	14.1%	14.1%	14.1%

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Current Financial Position

Revenues

Based on the forecasting assumptions, revenues were calculated using the noticed rates from the 2020 Report, current account data, and projected water sales (less construction) equal to 1,163,060 hundred cubic feet (hcf). Table 8 shows a summary of the calculated revenues for FY 2022 through FY 2026. The detailed calculations can be found in the rate model on file with the CSD. Table 9 summarizes calculated revenues and other non-rate revenues available for FY 2022 through FY 2026, with projected revenues rounded to the thousands.

Table 8: FY 2022 – FY 2026 Calculated Revenues

Revenue Summary	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Water Billings					
Meter Charges	\$2,690,969	\$2,852,535	\$3,024,365	\$3,206,476	\$3,206,476
Water Consumption	\$4,009,314	\$4,253,614	\$4,513,965	\$4,787,032	\$4,787,032
Chromium 6 Surcharge	\$822,631	\$822,631	\$822,631	\$822,631	\$822,631
Subtotal Water Billings	\$7,522,914	\$7,928,781	\$8,360,961	\$8,816,139	\$8,816,139

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Table 9: FY 2022 – FY 2026 Projected Revenues

Revenue	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Water Billings					
Meter Charges	\$2,690,969	\$2,853,000	\$3,024,000	\$3,206,000	\$3,206,000
Water Consumption	\$4,009,314	\$4,254,000	\$4,514,000	\$4,787,000	\$4,787,000
Total Water Billings	\$6,700,283	\$7,107,000	\$7,538,000	\$7,993,000	\$7,993,000
Other Rate Revenues					
Chromium 6 Surcharge	\$822,631	\$823,000	\$823,000	\$823,000	\$823,000
Other Rate Revenues	\$822,631	\$823,000	\$823,000	\$823,000	\$823,000
Meter Installation/Fees/Connections					
Meter Installation	\$248,606	\$249,000	\$249,000	\$249,000	\$249,000
Permits & Inspections	\$9,171	\$9,000	\$9,000	\$9,000	\$9,000
Subtotal Meter Installation/Fees/Connections	\$257,776	\$258,000	\$258,000	\$258,000	\$258,000
Other Operating Income					
Other Service Incomes (Administration)	\$7,153	\$7,000	\$7,000	\$7,000	\$7,000
Other Service Incomes (Customer Accounts/Meters)	\$33,762	\$34,000	\$34,000	\$34,000	\$34,000
Administrative Fees	\$3,102	\$3,000	\$3,000	\$3,000	\$3,000
Administrative Fees (Administration)	\$22,530	\$23,000	\$23,000	\$23,000	\$23,000
Subtotal Other Operating Income	\$66,546	\$67,000	\$67,000	\$67,000	\$67,000
Non-Operating Revenues					
Property Tax Penalties & Others	\$10,549	\$11,000	\$11,000	\$11,000	\$11,000
Special Assessments	\$291,071	\$291,000	\$291,000	\$291,000	\$291,000
Penalties & Other Fees (Administration)	\$106,490	\$106,000	\$106,000	\$106,000	\$106,000
Interest Income	\$87,678	\$103,000	\$102,000	\$108,000	\$114,000
Other Income - Water Other	\$2,303	\$2,000	\$2,000	\$2,000	\$2,000
Pipeline Location Service Charge	\$1,517	\$0	\$0	\$0	\$0
Subtotal Non-Operating Revenues	\$499,608	\$513,000	\$512,000	\$518,000	\$524,000
Total Revenues	\$8,346,845	\$8,768,000	\$9,198,000	\$9,659,000	\$9,665,000

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Expenses

The FY 2022 budget was used to identify the baseline expenses of the utility and adjusted in subsequent years based on the escalation factors shown in Table 7. Table 10 provides projected Operational & Maintenance (O&M) costs through FY 2026. Each expense category includes detailed line-item expenditures that were discussed with staff to determine the appropriate escalation factor to use for forecasting how costs will increase over time. The Inter-Fund Transfers are property tax revenues from the general fund that are scheduled to be phased out by FY 2026. Detailed expenses are within the rate model, incorporated herein by reference, and on file with the CSD.

Table 10: FY 2022 – FY 2026 Projected O&M Expenses

O&M Expenses	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Water Supply					
MWA Admin. & Bio Fee	\$13,000	\$13,000	\$13,000	\$13,000	\$13,000
MWA Make Up Water	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
AVM Water Purchases	\$518,000	\$518,000	\$518,000	\$518,000	\$518,000
Subtotal Water Supply	\$536,000	\$536,000	\$536,000	\$536,000	\$536,000
Operating Expenses					
Administration	\$1,717,394	\$1,785,000	\$1,855,000	\$1,929,000	\$2,005,000
Chromium 6 Mitigation	\$822,631	\$823,000	\$823,000	\$823,000	\$823,000
Conservation	\$77,578	\$81,000	\$85,000	\$89,000	\$93,000
Customer Accounts/Meters	\$559,550	\$585,000	\$611,000	\$638,000	\$667,000
Distribution/Transmission	\$609,841	\$636,000	\$663,000	\$692,000	\$722,000
Engineering	\$429,678	\$451,000	\$473,000	\$496,000	\$521,000
Operations	\$556,618	\$582,000	\$609,000	\$638,000	\$667,000
Production	\$1,250,019	\$1,308,000	\$1,368,000	\$1,432,000	\$1,498,000
Vehicles and Equipment	\$157,328	\$162,000	\$166,000	\$171,000	\$175,000
Water Quality	\$104,466	\$109,000	\$113,000	\$118,000	\$123,000
Inter-Transfers	(\$208,000)	(\$156,000)	(\$104,000)	(\$52,000)	\$0
Subtotal Operating Expenses	\$6,077,105	\$6,366,000	\$6,662,000	\$6,974,000	\$7,294,000
Debt Service					
Existing Debt	\$897,883	\$897,728	\$897,569	\$884,176	\$870,779
Debt Issuance #1	\$236,551	\$236,551	\$236,551	\$236,551	\$236,551
Debt Issuance #2	\$0	\$0	\$0	\$0	\$380,662
Subtotal Debt Service	\$1,134,434	\$1,134,279	\$1,134,120	\$1,120,727	\$1,487,992
Total Expenses	\$7,747,539	\$8,036,279	\$8,332,120	\$8,630,727	\$9,317,992

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Reserves

Figure 5: Utility Reserves



Established reserves include Operating Reserve, Replacement Reserve, Disaster Reserve, Rate Stabilization Reserve, and a required Debt Service Reserve. These robust reserves help mitigate risks to the utility by ensuring sufficient cash is on hand for daily operations and to fund annual system improvements. In addition, these reserves help smooth rates and mitigate rate spikes due to emergencies or above-average system costs. The most recent adopted reserve policies identify the function of each reserve, the minimum reserve requirements, and the ideal funding targets, as summarized in Table 11.

Table 11: Reserve Requirements and Targets

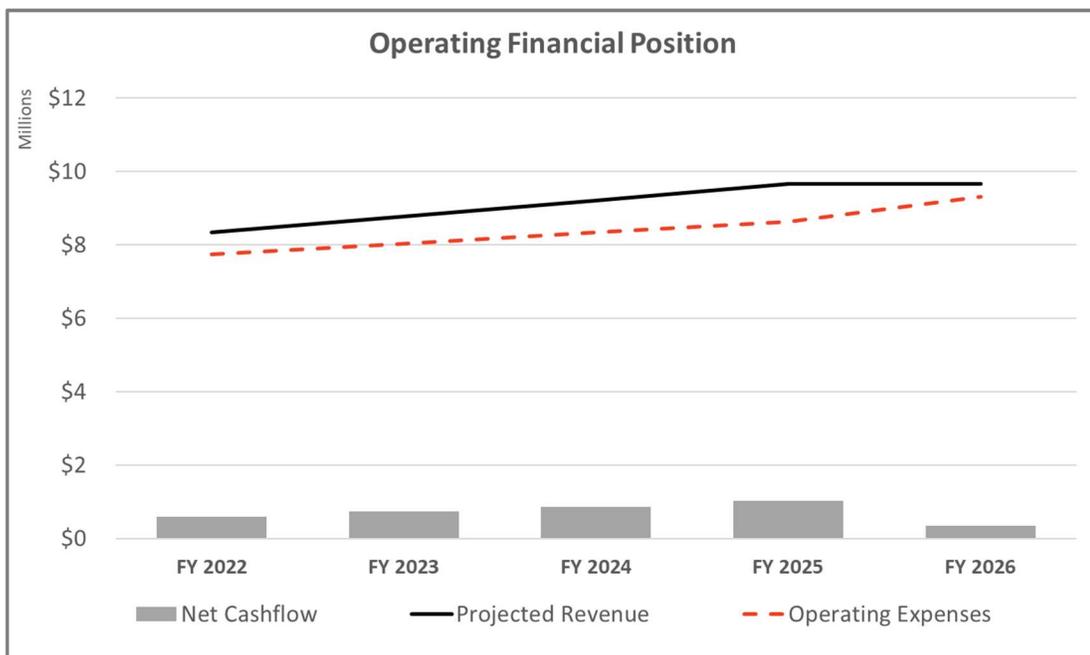
Reserve	Minimum Requirement	Reserve Target
Operating	3 months of operating costs	6 months of operating costs
Replacement	2 years of annual depreciation	2 years of 5-year annual average
Disaster	10% of Asset Value	20% of Asset Value
Rate Stabilization	5% of rate revenue	10% of rate revenue
Debt	Upcoming fiscal year debt payment	

For FY 2022, the reserve balances (as of July 1, 2021) equaled approximately \$10.5M, which is slightly less than the minimum reserve target of \$11.9M. However, reserve funds were previously used as a loan to acquire additional water rights, and the funds are being paid back through annual transfers. The remaining balance of the loan is \$2.24M.

Financial Outlook at Existing Rates

Calculating revenue using current rates and projecting expenses determines the financial health of the utility. Revenues generated from the noticed rates for FY 2022 – FY 2025 are sufficient to fund O&M through FY 2026. However, the increase in water supply costs from the production of AVAA groundwater and capital spending over the Rate Setting Period is driving the need to increase revenue for the remainder of FY 2022 and beyond. Only a portion of the system capital spending needs can be funded with projected net operating income resulting in the use of reserves and debt financing to cover the remaining capital costs. Figure 6 illustrates the operating position of the utility, where O&M expenses are identified with the dashed red trendline, and the horizontal black trendline shows total revenues at current rates. The bars represent the amount of net operating income available for capital spending and reserve funding.

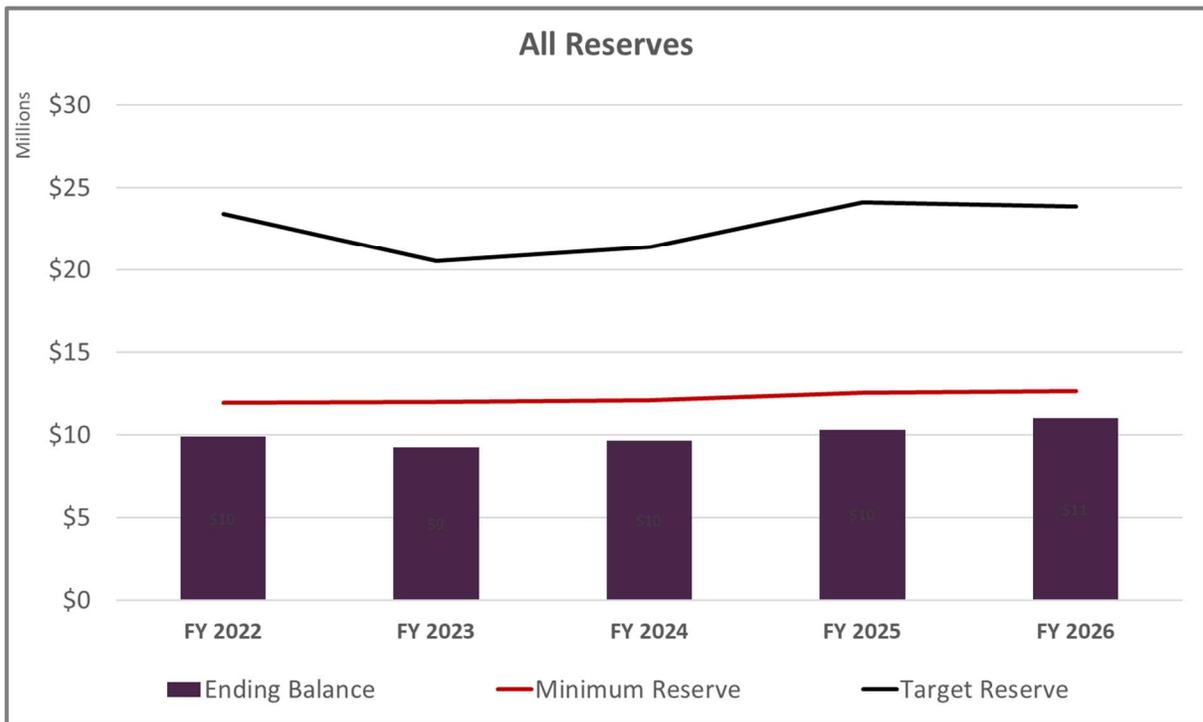
Figure 6: Current Operating Financial Position



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With the capital improvement plan reflecting more than \$21.5M in spending, as shown in Figure 2, debt and reserves will be utilized to cover the remaining capital expenses to ensure necessary projects continue to move forward as scheduled. Figure 7 reflects the projected ending reserve balances after operating and capital projects are funded through FY 2026. For each fiscal year during the planning period, reserves are below the recommended minimum target. A slight increase in rate revenue is necessary to generate additional net income to build up reserves through FY 2026.

Figure 7: Projected Ending Reserves at Noticed Rates



Proposed Financial Plan

From our financial outlook at noticed rates, a proposed financial plan can be developed to adequately fund the multi-year revenue requirements, including satisfying debt covenants. Based on funding the capital plan over the Rate Setting Period and ensuring reserves meet minimum targets within the next five years, Table 12 forecasts the projected revenue of the proposed financial plan. The current fiscal year, FY 2022, requires an additional revenue adjustment in January 2022 of 4% to cover the additional water supply costs of imported water from AVAA. For FY 2023 through FY 2026, 6% revenue adjustments are proposed to generate additional revenue from rates through FY 2026.

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Table 12: Proposed Financial Plan

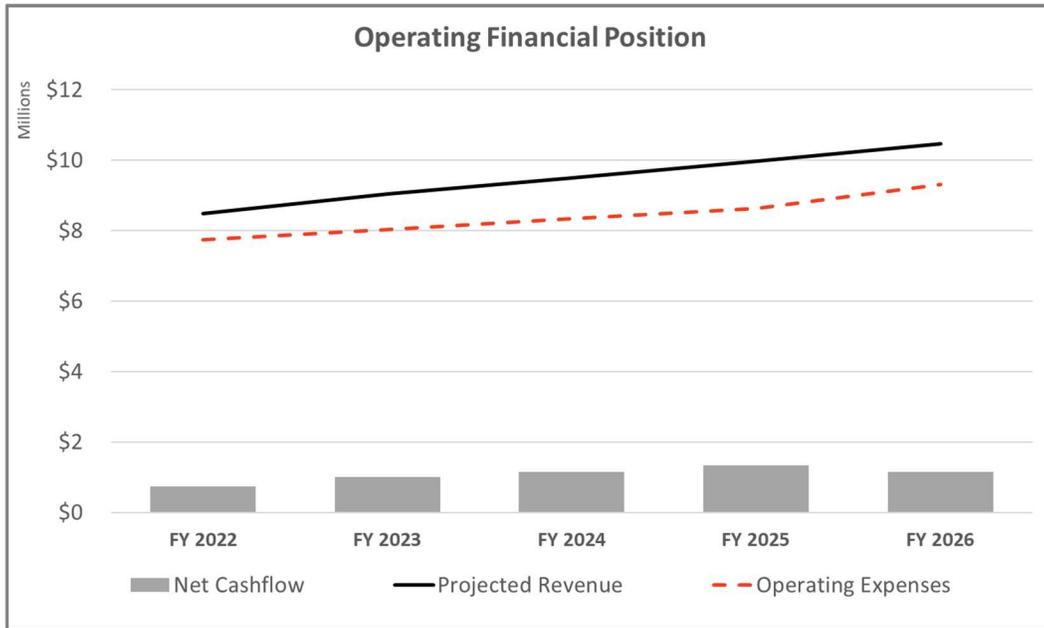
Revenue	2022	2023	2024	2025	2026
Water Billings					
Meter Charges	\$2,690,969	\$2,691,000	\$2,691,000	\$2,691,000	\$2,691,000
Water Consumption	\$4,009,314	\$4,009,000	\$4,009,000	\$4,009,000	\$4,009,000
Total Water Billings	\$6,700,283	\$6,700,000	\$6,700,000	\$6,700,000	\$6,700,000
	Fiscal Year	Revenue Adjustment	Effective Month		
	FY 2022	4.0%	January	\$134,000	\$268,000
	FY 2023	6.0%	July		\$418,000
	FY 2024	6.0%	July		\$443,000
	FY 2025	6.0%	July		\$470,000
	FY 2026	6.0%	July		\$498,000
Total Additional Revenue	\$134,000	\$686,000	\$1,129,000	\$1,599,000	\$2,097,000
Other Rate Revenues					
Chromium 6 Surcharge	\$822,631	\$823,000	\$823,000	\$823,000	\$823,000
Projected Water Billings	\$7,656,914	\$8,209,000	\$8,652,000	\$9,122,000	\$9,620,000
Meter Installation/Fees/Connections	\$257,776	\$258,000	\$258,000	\$258,000	\$258,000
Other Operating Income	\$66,546	\$67,000	\$67,000	\$67,000	\$67,000
Non-Operating Revenues	\$499,608	\$513,000	\$512,000	\$518,000	\$524,000
Total Revenues	\$8,480,845	\$9,047,000	\$9,489,000	\$9,965,000	\$10,469,000
O&M Expenses	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Water Supply					
MWA Admin. & Bio Fee	\$13,000	\$13,000	\$13,000	\$13,000	\$13,000
MWA Make Up Water	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
AVM Water Purchases	\$518,000	\$518,000	\$518,000	\$518,000	\$518,000
Subtotal Water Supply	\$536,000	\$536,000	\$536,000	\$536,000	\$536,000
Operating Expenses					
Administration	\$1,717,394	\$1,785,000	\$1,855,000	\$1,929,000	\$2,005,000
Chromium 6 Mitigation	\$822,631	\$823,000	\$823,000	\$823,000	\$823,000
Conservation	\$77,578	\$81,000	\$85,000	\$89,000	\$93,000
Customer Accounts/Meters	\$559,550	\$585,000	\$611,000	\$638,000	\$667,000
Distribution/Transmission	\$609,841	\$636,000	\$663,000	\$692,000	\$722,000
Engineering	\$429,678	\$451,000	\$473,000	\$496,000	\$521,000
Operations	\$556,618	\$582,000	\$609,000	\$638,000	\$667,000
Production	\$1,250,019	\$1,308,000	\$1,368,000	\$1,432,000	\$1,498,000
Vehicles and Equipment	\$157,328	\$162,000	\$166,000	\$171,000	\$175,000
Water Quality	\$104,466	\$109,000	\$113,000	\$118,000	\$123,000
Inter-Transfers	(\$208,000)	(\$156,000)	(\$104,000)	(\$52,000)	\$0
Subtotal Operating Expenses	\$6,077,105	\$6,366,000	\$6,662,000	\$6,974,000	\$7,294,000
Debt Service					
Existing Debt	\$897,883	\$897,728	\$897,569	\$884,176	\$870,779
Debt Issuance #1	\$236,551	\$236,551	\$236,551	\$236,551	\$236,551
Debt Issuance #2	\$0	\$0	\$0	\$0	\$380,662
Subtotal Debt Service	\$1,134,434	\$1,134,279	\$1,134,120	\$1,120,727	\$1,487,992
Total Expenses	\$7,747,539	\$8,036,279	\$8,332,120	\$8,630,727	\$9,317,992
Net Cashflow	\$733,306	\$1,010,721	\$1,156,880	\$1,334,273	\$1,151,008

The proposed financial plan also includes debt financing through low-interest loans for funding the Civic Center project and Reservoir improvements. The first loan is expected in FY 2022 for the Civic Center at a 4% interest rate over 30 years, followed by the Reservoir loan in FY 2026 at a 4% interest rate over 30 years. These debt instruments offer a means to finance system improvements over the useful life of the assets while providing inter-generational equity between existing customers and future customers that will benefit from these improvements.

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Over the Rate Setting Period, the proposed financial plan reduces the reliance on property tax transfers from the general fund. It pays back a portion of the water rights acquisition loans from reserves. Property tax transfers from the general fund are reduced annually by \$52k per year, with no further transfers needed by FY 2026. Figure 8 identifies the operating position based on the proposed financial plan, and Figure 9 and Figure 10 identify the capital plan with funding sources and ending reserve balances, respectively.

Figure 8: Proposed Operating Position for FY 2022 – FY 2026



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Figure 9: Capital Improvement Plan with Funding Sources

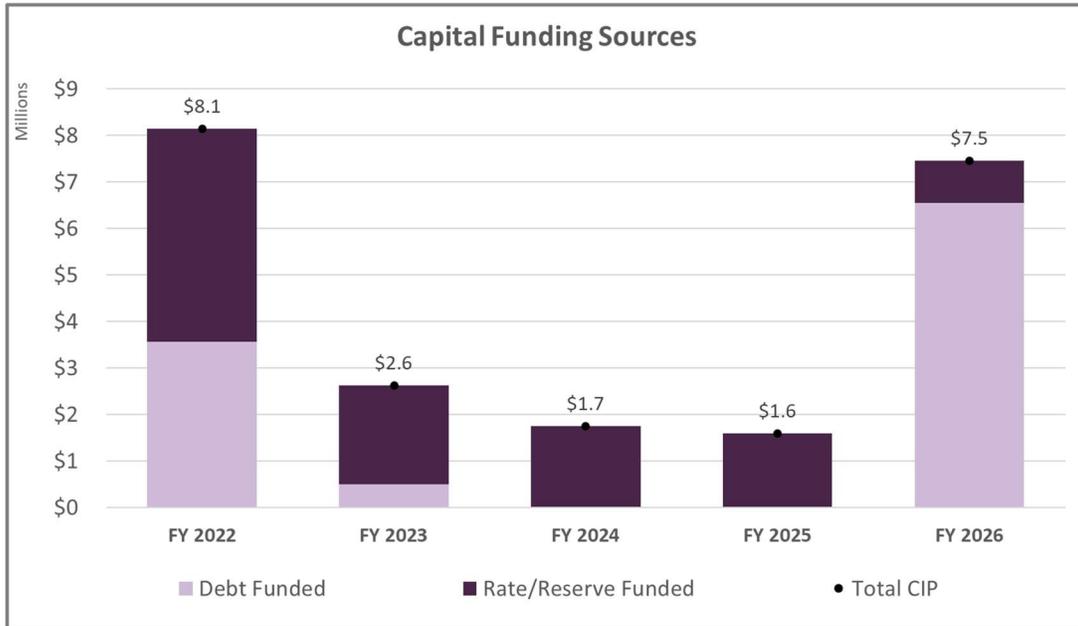
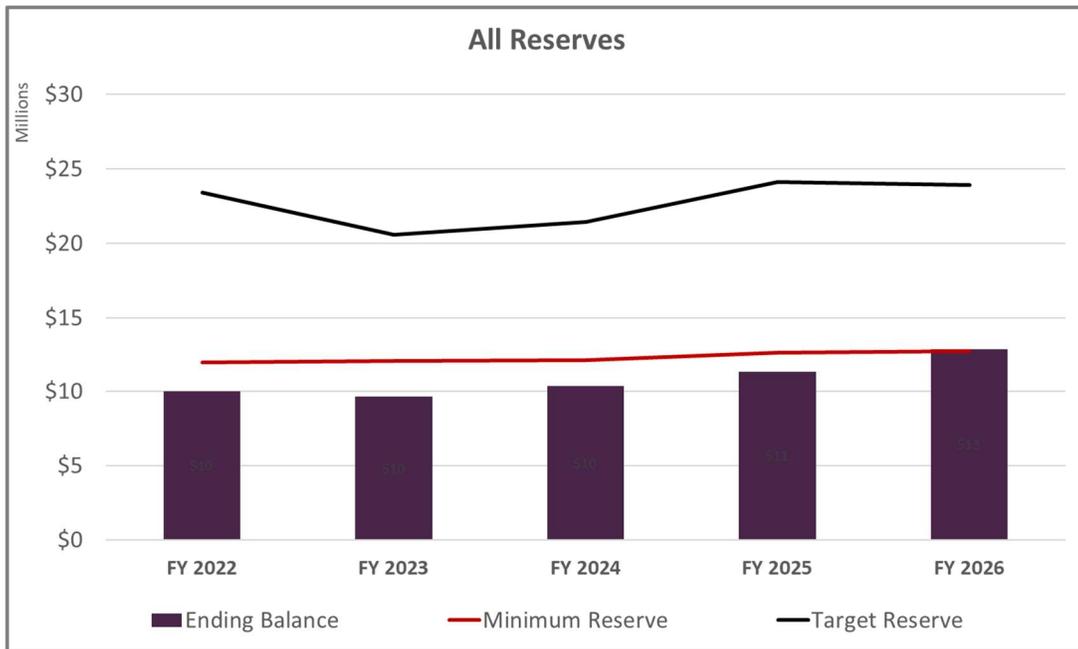


Figure 10: Proposed Ending Reserves for FY 2022 – FY 2026

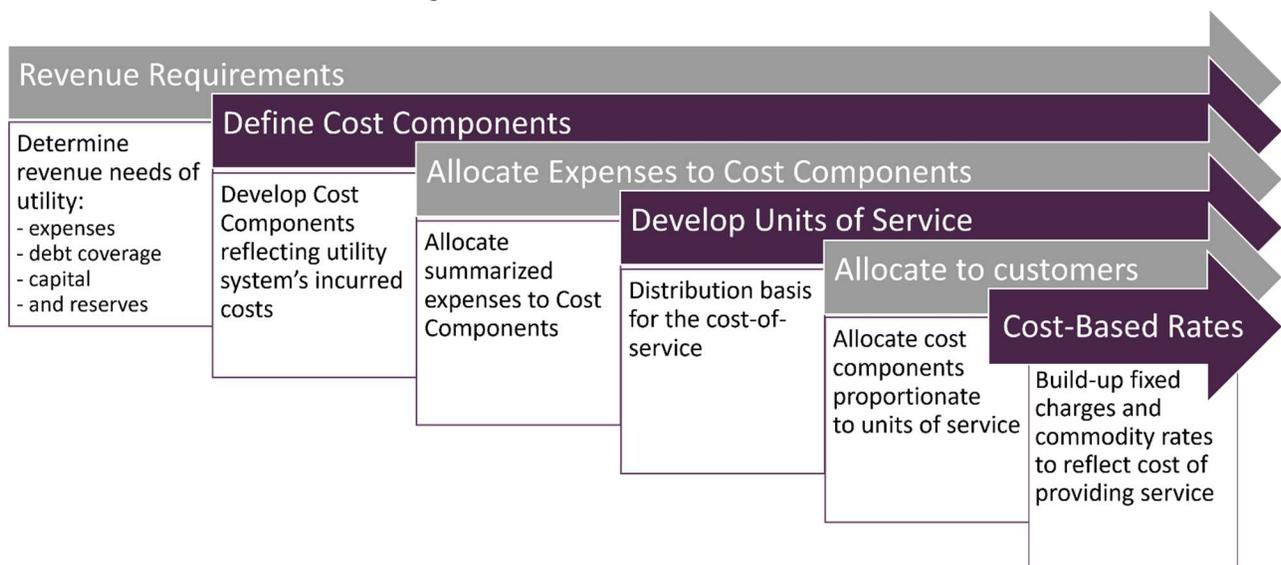


Cost of Service Analysis

Cost of Service Process

Based on the proposed financial plan results, the next step in developing rates is to perform a cost-of-service analysis. It is important to understand **how** costs are incurred to determine the most appropriate way to recover them. The following graphic summarizes the cost-of-service process. Through this process, costs incurred are allocated to customer classes and tiers based on their proportional share. As a result, proposed rates are cost-based and reflect costs incurred by the utility to provide service to each customer class and corresponding account.

Figure 11: Cost of Service Process



Revenue Requirements

With FY 2022 as the first year of the proposed updated rate schedule, revenue requirements are determined for FY 2022 and used for the cost-of-service. Revenue requirements include O&M expenses, debt service, available offsets from non-rate revenues, annual net income, and any mid-year adjustments if rates are implemented after the start of the fiscal year. Funding the capital plan and replenishing reserves to meet or exceed the minimum reserve requirement is achieved over the Rate Setting Period. The proposed revenue adjustments and corresponding rates collectively accumulate the necessary funding over the Rate Setting Period to fund the CSD's total revenue requirements. The results of the financial plan analysis are summarized in Table 13 and represent the revenue required from rates for FY 2022.

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Table 13: FY 2022 Revenue Requirements

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Revenue Requirements	Total	Total	Total	Total	Total
Water Supply					
MWA Admin. & Bio Fee	\$13,000	\$13,000	\$13,000	\$13,000	\$13,000
MWA Make Up Water	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
AVM Water Purchases	\$518,000	\$518,000	\$518,000	\$518,000	\$518,000
Total Water Supply	\$536,000	\$536,000	\$536,000	\$536,000	\$536,000
District O&M					
Administration	\$1,717,394	\$1,785,000	\$1,855,000	\$1,929,000	\$2,005,000
Chromium 6 Mitigation	\$822,631	\$823,000	\$823,000	\$823,000	\$823,000
Conservation	\$77,578	\$81,000	\$85,000	\$89,000	\$93,000
Customer Accounts/Meters	\$559,550	\$585,000	\$611,000	\$638,000	\$667,000
Distribution/Transmission	\$609,841	\$636,000	\$663,000	\$692,000	\$722,000
Engineering	\$429,678	\$451,000	\$473,000	\$496,000	\$521,000
Operations	\$556,618	\$582,000	\$609,000	\$638,000	\$667,000
Production	\$1,250,019	\$1,308,000	\$1,368,000	\$1,432,000	\$1,498,000
Vehicles and Equipment	\$157,328	\$162,000	\$166,000	\$171,000	\$175,000
Water Quality	\$104,466	\$109,000	\$113,000	\$118,000	\$123,000
Inter-Transfers	(\$208,000)	(\$156,000)	(\$104,000)	(\$52,000)	\$0
Total District O&M	\$6,077,105	\$6,366,000	\$6,662,000	\$6,974,000	\$7,294,000
Debt Service					
Existing Debt	\$897,883	\$897,728	\$897,569	\$884,176	\$870,779
Debt Issuance #1	\$236,551	\$236,551	\$236,551	\$236,551	\$236,551
Debt Issuance #2	\$0	\$0	\$0	\$0	\$380,662
Total Debt Service	\$1,134,434	\$1,134,279	\$1,134,120	\$1,120,727	\$1,487,992
Total Operating Expenses	\$7,747,539	\$8,036,279	\$8,332,120	\$8,630,727	\$9,317,992
Revenue Offsets					
Misc Fees	(\$257,776)	(\$258,000)	(\$258,000)	(\$258,000)	(\$258,000)
Other Operating Income	(\$66,546)	(\$67,000)	(\$67,000)	(\$67,000)	(\$67,000)
Non-Operating Revenues	(\$499,608)	(\$513,000)	(\$512,000)	(\$518,000)	(\$524,000)
Total Revenue Offsets	(\$823,931)	(\$838,000)	(\$837,000)	(\$843,000)	(\$849,000)
Adjustments					
Net Income	\$733,306	\$1,010,721	\$1,156,880	\$1,334,273	\$1,151,008
Mid-Year Increase	\$134,000	\$0	\$0	\$0	\$0
Total Adjustments	\$867,306	\$1,010,721	\$1,156,880	\$1,334,273	\$1,151,008
Revenue Requirements	\$7,790,914	\$8,209,000	\$8,652,000	\$9,122,000	\$9,620,000

Define Cost Components

The utility incurs costs to accommodate total water demand, peak demands that vary throughout the year, days, and hours. Therefore, to determine the most appropriate way to recover the utility's expenses, cost components are identified to allocate expenses based on how they are incurred. With our review of the revenue requirements and understanding of the utility system, it is appropriate and reasonable to utilize the base-extra capacity methodology outlined in the American Water Works Association M1 Manual. This methodology accounts for the utility's costs to meet both total volume and peak use demands. For example, if a utility's average use and peak use were equivalent, the utility system could be sized solely to accommodate the average demand on the system. However, customer water usage peaks at various times, such as the morning when everyone wakes up, evenings when customers are home from work / school, and other times of the year as outdoor water needs fluctuate based on the weather. The cost components shown in Figure 12 reflect the cost components used within this study.

Figure 12: Cost Components



Chromium 6 Surcharge – Specific expenses associated with Chromium 6 Mitigation that will remain constant over the 5-year planning period.

Account Services – Fixed expenses that do not necessarily fluctuate based on usage nor are a function of meter size. These expenses include customer call center, billing, and other expenses incurred based on an account.

Meter Capacity – Expenses associated with capital and administration of the system.

Water Supplies – Groundwater supply costs that are separated between MBA and AVAA.

Delivery – Operating and capital expenses of the water system associated with serving customers at a constant average use or average daily demand. These costs tend to vary with the total water used.

Peaking – Expenses incurred to meet customer peak demands above average daily usage.

Water Efficiency – Expenses associated with the CSD programs for efficient water use and rebates.

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The Chromium 6 Surcharge will remain in place as capital projects associated with the Chromium 6 Mitigation are part of the current five-year capital plan. Therefore, a distinct Cost Component for Chromium 6 is included to derive a separate fixed surcharge.

The analysis herein establishes cost components for developing monthly fixed charges and utilizes the base-extra capacity method for developing consumption-based charges. Total volume and usage patterns of customers within each customer class and tier are analyzed to proportionately allocate expenses based on total usage and peak demands. Peak demand is a function of Max Day Demand (Max Day) and Max Hour Demand (Max Hour) placed on the system in comparison to average Day Demand (Avg Day). The system is configured with various distribution and transmission lines ranging from 4" diameter to 16" diameter. The system's configuration accounts for peak water demands generated by how customers use water in excess of Avg Day and fire flow demand inherent to a utility system. Max Day is the maximum amount of water used in a single day of a calendar year and Max Hour reflects the peak hourly use on the system compared to Avg Day.

Allocate Expenses to Cost Components

Utilizing these cost components allows us to distribute the total revenue requirements to the various customer classes reflecting the cost of providing service. This approach provides a nexus between the costs incurred and the proposed rates by meter size and customer class. When allocating expenses to the defined costs components it is important to have a sound basis as to why an expense was allocated to a certain fixed cost component versus a variable cost component or split between fixed and variable. The allocation of expenses to the cost components should be straightforward to ensure the method of apportionment is **understandable** and easily **correlates to how expenses are incurred**. A description of each expense category is identified on the next page.

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Expense Categories:

Water Supply – Fixed and variable costs associated with groundwater supplies from MBA and AVAA.

Administration – General and overhead costs, including the Board, legal services, personnel, and supplies.

Chromium 6 Mitigation – Costs associated with Chromium 6 improvements, including planning, design, construction, and ongoing maintenance.

Conservation – Costs associated with conservation programs, including personnel, advertising, and supplies.

Customer Accounts/Meters – Costs associated with customer service and billing.

Distribution/Transmission – Costs associated with system maintenance, personnel, supplies, and tools.

Engineering – Costs associated with the engineering department, including personnel, supplies, training, software, and travel.

Operations – Costs associated with the daily operations of the utility, including personnel, repairs, supplies, software, insurance, and taxes.

Production – Costs associated with groundwater production, including electricity, personnel, supplies, and insurance. Solar credits are also included as part of production.

Supply – Costs associated with MWA/AVWM water transfers.

Vehicles and Equipment – Costs associated with rentals, vehicles, insurance, maintenance, and fuel.

Water Quality – Costs associated with testing, including personnel, equipment, and laboratory analysis.

Transfers – Property tax transfers from the general fund, determined by the Board, to offset expense.

Debt – Existing and proposed debt payments to fund capital assets, including water rights.

System peaking factors are used to allocate costs to Avg Day (Delivery) and Max Day / Max Hour (collectively, Peaking). Avg Day is assigned a value of 1.0, signifying no peaking. The Max Day and Max Hour factors shown in Table 14 were based on the Water Master Plan. A Max Day factor of 2.0 means that the system delivers approximately 2.0 times the average daily demand during a peak day. Therefore, the Avg Day factor of 1.0 makes up 50% of Max Day ($1.0 / 2.0 = 0.5$). The Max Hour factor of 1.7 times the Max Day, generates 3.4 times the average daily hourly demand ($1.7 \times 2.0 = 3.4$). With Max Hour, the Avg Day factor of 1.0 makes up 29% of Max Hour ($1.0 / 3.4 = 0.29$), with the increment related to Max Day making up another 29%. These peaking factors and corresponding allocations provide a means to spread costs incurred as a function of serving Max Day and Max Hour proportionately between Delivery and Peaking.

Table 14: System Peaking Factors and Distribution Basis

System Peak	Factor	Avg Day [A]	Max Day [B]	Max Hour [C]	Delivery [D] = [A]	Peaking [E] = [B+C]
Avg Day	1.00	100.0%	0.0%	0.0%	100.0%	0.0%
Max Day	2.00	50.0%	50.0%	0.0%	50.0%	50.0%
Max Hour	3.40	29.4%	29.4%	41.2%	29.4%	70.6%

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Table 15 identifies costs associated with water supplies, including Chromium 6 mitigation expenses. Each expense line item within was allocated 100% to either Water Supply or Chromium 6 cost components.

Table 15: Water Supply Expense Allocation to Cost Components (%)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
MWA Admin. & Bio Fee	Water Supply	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
MWA Make Up Water	Water Supply	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
AVM Water Purchases	Water Supply	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
Water Purchases - Other	Water Supply	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
Chromium 6 Mitigation	Chromium 6	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Production	Water Supply	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%

The percent allocations listed in Table 17 are used to allocate expenses to each cost component shown in Table 18.

Table 16: Water Supply Expense Allocation to Cost Components (\$)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
MWA Admin. & Bio Fee	Water Supply	\$0	\$0	\$0	\$13,000	\$0	\$0	\$0	\$13,000
MWA Make Up Water	Water Supply	\$0	\$0	\$0	\$5,000	\$0	\$0	\$0	\$5,000
AVM Water Purchases	Water Supply	\$0	\$0	\$0	\$518,000	\$0	\$0	\$0	\$518,000
Water Purchases - Other	Water Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Chromium 6 Mitigation	Chromium 6	\$822,631	\$0	\$0	\$0	\$0	\$0	\$0	\$822,631
Production	Water Supply	\$0	\$0	\$0	\$1,250,019	\$0	\$0	\$0	\$1,250,019
Specific Allocation (\$)		\$822,631	\$0	\$0	\$1,786,019	\$0	\$0	\$0	\$2,608,651

Table 17 summarizes the allocation of operating expenses to the cost components, and Table 18 reflects the cost in dollars allocated to each cost component.

Table 17: O&M Expense Allocation to Cost Components (%)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
Administration	Specific	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Conservation	Specific	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
Customer Accounts/Meters	Specific	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Distribution/Transmission	Max Hour	0.0%	0.0%	0.0%	0.0%	29.4%	70.6%	0.0%	100.0%
Engineering	Max Day	0.0%	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%	100.0%
Operations	Max Hour	0.0%	0.0%	0.0%	0.0%	29.4%	70.6%	0.0%	100.0%
Vehicles and Equipment	Specific	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Water Quality	Specific	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Transfers	Average Demand	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%

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Table 18: O&M Expense Allocation to Cost Components (\$)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
Administration	Specific	\$0	\$0	\$1,717,394	\$0	\$0	\$0	\$0	\$1,717,394
Conservation	Specific	\$0	\$0	\$0	\$0	\$0	\$0	\$77,578	\$77,578
Customer Accounts/Meters	Specific	\$0	\$559,550	\$0	\$0	\$0	\$0	\$0	\$559,550
Distribution/Transmission	Max Hour	\$0	\$0	\$0	\$0	\$179,365	\$430,476	\$0	\$609,841
Engineering	Max Day	\$0	\$0	\$0	\$0	\$214,839	\$214,839	\$0	\$429,678
Operations	Max Hour	\$0	\$0	\$0	\$0	\$163,711	\$392,907	\$0	\$556,618
Vehicles and Equipment	Specific	\$0	\$0	\$157,328	\$0	\$0	\$0	\$0	\$157,328
Water Quality	Specific	\$0	\$0	\$104,466	\$0	\$0	\$0	\$0	\$104,466
Transfers	Average Demand	\$0	\$0	\$0	\$0	(\$208,000)	\$0	\$0	(\$208,000)
O&M Allocation (\$)		\$0	\$559,550	\$1,979,189	\$0	\$349,915	\$1,038,222	\$77,578	\$4,004,454
O&M Allocation (%)		0.0%	14.0%	49.4%	0.0%	8.7%	25.9%	1.9%	100.0%

For the Debt Revenue Requirement, 50% is allocated to meter capacity to ensure half of the annual debt payments are recovered through fixed charges. The other 50% is allocated to Delivery, which will recover the remaining debt over each water unit. Table 19 summarizes the allocation of existing indebtedness and proposed debt. Table 20 provides the cost in dollars allocated to each cost component.

Table 19: Debt Expense Allocation to Cost Components (%)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
Existing Debt	Specific	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
Pending Debt	Specific	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
Debt Issuance #1	Specific	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
Debt Issuance #2	Specific	0.0%	0.0%	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%

Table 20: Debt Expense Allocation to Cost Components (\$)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
Existing Debt	Specific	\$0	\$0	\$448,942	\$0	\$448,942	\$0	\$0	\$897,883
Pending Debt	Specific	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debt Issuance #1	Specific	\$0	\$0	\$118,276	\$0	\$118,276	\$0	\$0	\$236,551
Debt Issuance #2	Specific	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Debt Service Allocation (\$)		\$0	\$0	\$567,217	\$0	\$567,217	\$0	\$0	\$1,134,434

Other Funding includes other operating revenues, non-operating revenues, and net income with the proposed mid-year adjustment. Other operating revenues and non-operating revenues are allocated to each cost component based on the O&M percentage identified in Table 18 to offset expenses proportionately. The mid-year adjustment and net income contribute to capital spending and reserves for future capital needs. Therefore, these expenses are allocated to the cost components based on the current configuration of the water system using existing asset values. Over time, the entire system will be replaced and allocating current asset values by system function to the cost components is an equitable means for allocating net income used

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for system repair and replacement. Table 21 identifies the system asset allocations to Cost Components and the corresponding percent of the total value.

Table 22 summarizes the allocation of existing indebtedness and proposed debt, and Table 23 provides the cost in dollars allocated to each cost component.

Table 21: System Functional Asset Values to Cost Components

Functionalized Assets	Methodology / Allocation Basis	Cost Components			Total
		Meter Capacity	Delivery	Peaking	
Buildings	Specific	100.0%	0.0%	0.0%	100.0%
Equipment & Other	Specific	0.0%	100.0%	0.0%	100.0%
Land	Specific	100.0%	0.0%	0.0%	100.0%
Meters	Specific	100.0%	0.0%	0.0%	100.0%
Pumping	Average Demand	0.0%	100.0%	0.0%	100.0%
Storage	Max Day	0.0%	50.0%	50.0%	100.0%
Transmission and Distribution	Max Hour	0.0%	29.4%	70.6%	100.0%
Water Rights	Average Demand	0.0%	100.0%	0.0%	100.0%
Wells	Max Day	0.0%	50.0%	50.0%	100.0%
Buildings	Specific	\$4,906,162	\$0	\$0	\$4,906,162
Equipment & Other	Specific	\$0	\$3,372,479	\$0	\$3,372,479
Land	Specific	\$1,719,295	\$0	\$0	\$1,719,295
Meters	Specific	\$172,196	\$0	\$0	\$172,196
Pumping	Average Demand	\$0	\$1,947,038	\$0	\$1,947,038
Storage	Max Day	\$0	\$1,860,857	\$1,860,857	\$3,721,714
Transmission and Distribution	Max Hour	\$0	\$2,450,349	\$5,880,838	\$8,331,187
Water Rights	Average Demand	\$0	\$18,789,582	\$0	\$18,789,582
Wells	Max Day	\$0	\$2,060,913	\$2,060,913	\$4,121,827
Capital Allocation (\$)		\$6,797,653	\$30,481,218	\$9,802,608	\$47,081,480
Capital Allocation (%)		14.4%	64.7%	20.8%	100.0%

Table 22: Other Funding Allocation to Cost Components (%)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
Misc Fees	O&M	0.0%	14.0%	49.4%	0.0%	8.7%	25.9%	1.9%	100.0%
Other Operating Income	O&M	0.0%	14.0%	49.4%	0.0%	8.7%	25.9%	1.9%	100.0%
Non-Operating Revenues	O&M	0.0%	14.0%	49.4%	0.0%	8.7%	25.9%	1.9%	100.0%
Net Income	Capital	0.0%	0.0%	14.4%	0.0%	64.7%	20.8%	0.0%	100.0%
Mid-Year Increase	Capital	0.0%	0.0%	14.4%	0.0%	64.7%	20.8%	0.0%	100.0%

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Table 23: Other Funding Allocation to Cost Components (\$)

Functionalized Expenses	Methodology / Allocation Basis	Cost Components							Total
		Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking	Water Efficiency	
Misc Fees	O&M	\$0	(\$36,020)	(\$127,405)	\$0	(\$22,525)	(\$66,833)	(\$4,994)	(\$257,776)
Other Operating Income	O&M	\$0	(\$9,299)	(\$32,890)	\$0	(\$5,815)	(\$17,253)	(\$1,289)	(\$66,546)
Non-Operating Revenues	O&M	\$0	(\$69,811)	(\$246,930)	\$0	(\$43,657)	(\$129,532)	(\$9,679)	(\$499,608)
Net Income	Capital	\$0	\$0	\$105,875	\$0	\$474,753	\$152,678	\$0	\$733,306
Mid-Year Increase	Capital	\$0	\$0	\$19,347	\$0	\$86,754	\$27,899	\$0	\$134,000
Other Funding (\$)		\$0	(\$115,129)	(\$282,003)	\$0	\$489,510	(\$33,040)	(\$15,962)	\$43,375

Table 24 summarizes the total revenue requirements derived in Table 13 by cost component.

Table 24: FY 2022 Cost of Service Requirements

Revenue Requirement	Fixed			Variable			Total	
	Chromium 6	Account Services	Meter Capacity	Water Supply	Delivery	Peaking		Water Efficiency
Specific	\$822,631	\$0	\$0	\$1,786,019	\$0	\$0	\$0	\$2,608,651
O&M	\$0	\$559,550	\$1,979,189	\$0	\$349,915	\$1,038,222	\$77,578	\$4,004,454
Debt Service	\$0	\$0	\$567,217	\$0	\$567,217	\$0	\$0	\$1,134,434
Other Funding	\$0	(\$115,129)	(\$282,003)	\$0	\$489,510	(\$33,040)	(\$15,962)	\$43,375
COS Requirement	\$822,631	\$444,420	\$2,264,403	\$1,786,019	\$1,406,642	\$1,005,182	\$61,616	\$7,790,914

Rate Design

Develop Units of Service

Unit rates for the cost components are derived by identifying the units of service for each cost component (distribution basis). This approach provides a clear connection between costs incurred and the proportionate share attributable to the various customer classes. When designing rates, the most critical component is connecting the proposed rates to the costs incurred, resulting in a cost-based rate structure in compliance with Proposition 218. The next step in designing rates is to apportion the total amount of each cost component to customers in relation to their use of the system and facilities. The method of apportionment considers each customer class's proportionate share of system costs through the updated units of service. The distribution basis varies by cost component and includes total accounts, Meter Equivalents (MEs), total water sales by customer class and tier, and peaking weighted by usage. Table 25 and Table 26 provide the units of service separated between account-based units of service (Table 25) and usage-based units of service (Table 26).

Table 25: Accounts and Meter Equivalents

Line #	Meter Size	AWWA Capacity (gpm)	Capacity Factor [A]	Total Accounts [B]	Total Meter Equivalents [C] = A x B
1	≤ 3/4"	30	1.00	1,914	1,914
2	1"	50	1.67	5,065	8,442
3	1 1/2"	100	3.33	30	100
4	2"	160	5.33	48	256
5	3"	350	11.67	2	23
6	4"	630	21.00	1	21
7	6"	1,300	43.33	-	-
8	8"	2,800	93.33	-	-
9	Total			7,060	10,756
10	Annual Units of Service (Line 9 x 12)			84,720	129,072

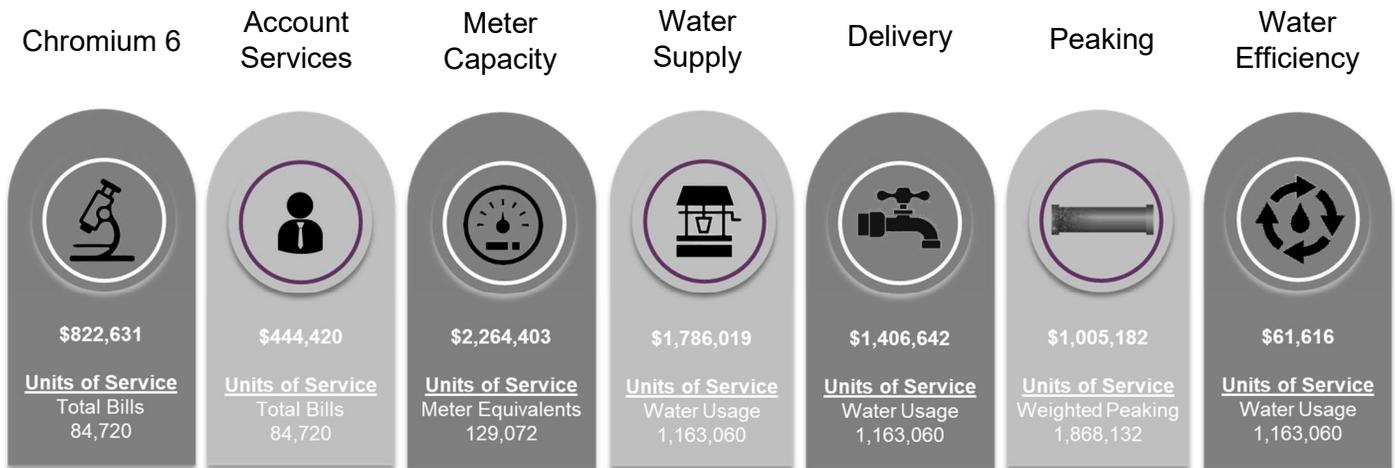
Table 26: Customer Class Usage and Weighted Peaking Factor

Allocation to Customer Class	Projected Usage (hcf) [A]	Peaking Factor [B]	Weighted Peaking [C] = A x B
Residential	1,044,777	1.55	1,622,025
Commercial	9,775	1.55	15,114
Institutional	108,508	2.13	230,994
Annual Units of Service	1,163,060		1,868,132

With the units of service shown in Table 25 and Table 26, the distribution basis can be identified for each cost component. Figure 13 identifies the total revenue requirements by cost component from Table 24 and the corresponding service units.

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Figure 13: Distribution Basis and Units of Service by Cost Component



Allocation to Customer Class

With the FY 2022 revenue requirements allocated to components, the cost-of-service allocates expenses to each customer class and corresponding account based on the service demands that each place on the system (cost causation). Unit rates were rounded up to the nearest penny for the following unit rate computations of each cost component.

Fixed Cost Recovery

Chromium 6 Surcharge

The Chromium 6 Surcharge will continue at the current cost recovery. Therefore, the revenue requirement for Chromium 6 is apportioned based on total bills to determine the monthly unit cost-of-service shown in Table 27.

Table 27: FY 2022 Chromium 6 Surcharge Cost of Service Monthly Unit Rate

Customer Class	Total Bills	% Allocation	Revenue Requirement	Monthly Unit Rate
Residential	83,832	99.0%	\$814,009	\$9.71
Commercial	528	0.6%	\$5,127	\$9.71
Institutional	360	0.4%	\$3,496	\$9.71
Total	84,720	100.0%	\$822,631	

Account Services

Account Service costs are incurred at the same level regardless of the type of land use, meter size, or total amount of water used in a month. Therefore, the revenue requirement for Account Services is apportioned based on the total bills to determine the monthly unit cost-of-service shown in Table 28.

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Table 28: FY 2022 Account Services Cost of Service Monthly Unit Rate

Customer Class	Total Bills	% Allocation	Revenue Requirement	Monthly Unit Rate
Residential	83,832	99.0%	\$439,762	\$5.25
Commercial	528	0.6%	\$2,770	\$5.25
Institutional	360	0.4%	\$1,888	\$5.25
Total	84,720	100.0%	\$444,420	

Meter Capacity

The Meter Capacity Component includes system-wide costs and a portion of the debt. The revenue requirement for Meter Capacity is apportioned based on meter size. Larger-sized meters can generate a greater demand on the system from the amount of potential water flow that may pass through the meter in gallons per minute (gpm). Meter equivalents were used to create parity among the various meter sizes ranging from 3/4" to 4". In Table 25, each meter size was assigned an equivalency factor determined by the flow characteristics of a 3/4" meter based on the safe maximum operating flow capacity by meter type, as identified in the AWWA M1 Manual, 6th Edition, Table B-2. Each meter's safe maximum operating flow capacity was divided by the base meter's safe operating flow capacity of 30 gpm to determine the equivalent meter ratio. The Capacity Factors in Table 25 represent the potential flow through each meter size compared to the flow through a 3/4" meter to establish parity between meter sizes. Total MEs are determined by multiplying the number of meters by the Capacity Factors and multiplying the result by 12 billing periods (Table 25, Line 11). The revenue requirement for Meter Capacity is then apportioned based on meter size as represented by total MEs and summarized in Table 29.

Table 29: FY 2022 Meter Capacity Cost of Service Monthly Unit Rate

Customer Class	Meter Equivalents	% Allocation	Revenue Requirement	Monthly Unit Rate Per ME
Residential	126,176	97.8%	\$2,213,596	\$17.55
Commercial	940	0.7%	\$16,491	\$17.55
Institutional	1,956	1.5%	\$34,316	\$17.55
Total	129,072	100.0%	\$2,264,403	

Variable Cost Recovery

Water Supply

The CSD's water supplies are solely groundwater, with most of its groundwater production from the MBA. Through the MBA, the CSD has limits on groundwater production, which is set on an annual basis by the Mojave Water Agency as Watermaster of the MBA. The CSD's FPA has decreased by almost 1,000 AF since FY 2019 and equals 3,003 AF for FY 2022.

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The CSD's current water demand is approximately 3,100 AF. However, the CSD's also has limitations on the amount of water they can provide daily due to maintenance, which wells are online, and the daily peaking that occurs from its customers. As such, the CSD also utilizes Well 14 periodically to maintain a healthy amount of available water within its storage facilities. Water production from Well 14 is from the AVAA, and the CSD incurs purchased water costs equal to \$1,010 per AF paid to the Antelope Valley Water Master (AVWM).

Table 30 calculates the unit rate for each groundwater basin (MBA and AVAA) based on the revenue requirement, including production costs and the corresponding units of service. For MBA groundwater, the CSD does not intend to use their entire FPA each year to maintain a healthy amount of banked water within the MBA for water sustainability in future years. Therefore, MBA groundwater production will cover the annual amount of water needed to serve a typical residential property equal to 0.8 AF² (0.8 AF = 29 hcf), with non-residential customers receiving an equivalent proportional share of MBA groundwater based on total water demand. As such, MBA groundwater can support approximately 84% of total water demand and the remaining 16% will be covered by the supplemental water from Well 14.

Table 30: Water Source Unit Rates

Water Supply	Production (AF)		% of Supply [B] = A as %	Units of Service (hcf)		Direct Costs [D]	Production (\$) [E]	Revenue Requirement [F] = D + E	Unit Rate \$/hcf [G] = F ÷ C
	[A]	Water Loss		[C] = Usage x B					
MBA Groundwater	2,595	14.1%	83.5%	971,156	\$18,000	\$1,043,768	\$1,061,768	\$1.09	
AVAA Groundwater	513	14.1%	16.5%	191,904	\$518,000	\$206,252	\$724,252	\$3.77	
Total	3,108		100.0%	1,163,060	\$536,000	\$1,250,019	\$1,786,019		

With the two separate water sources of groundwater to serve current water demand, a water supply unit rate must be determined for each customer class and tier. Table 31 summarizes the proportionate share of MBA groundwater available to each customer class based on the percent of total usage with AVAA groundwater covering the remaining water demand.

For Residential, their share of MBA groundwater is further apportioned between tiers. Residential tiers were adjusted from a two-tiered rate structure to a three-tiered rate structure. The three-tiered rate structure allows the lower-cost MBA groundwater to be used first, followed by AVAA groundwater. The proposed tiers connect to the 0.8 AF of annual water needed to serve a residential account, with the total allotment of the first two tiers equals 29 hcf. Tier 1 now reflects indoor water efficiency of 55 gallons per capita per day (gpcd) times the average people per household (pph) over a 30-day billing period. This recommended adjustment aligns with State AB 1668 and SB 6060 indoor water efficiency targets to achieve 55 gpcd by 2023. The 55 gpcd equates to 9 hcf per month ($[55\text{gpcd} \times 4\text{pph} \times 30\text{days}] \div 748.05 \text{ gallons} = 8.8 \text{ hcf}$; or 9 hcf rounded up to the next hcf). The Tier 2 allotment equals the difference between 29 hcf and 9 hcf (20 hcf) that may be covered by MBA groundwater, and Tier 3 captures all usage over Tier 2.

As shown in Table 31, Tier 1 and Tier 2 water usage can be served by MBA groundwater, with Tier 3 supported by AVAA groundwater. Commercial and Institutional remain as uniform rates and their water supply rate per hcf is a blend of the two water supplies with approximately 84% of their demand covered by MBA groundwater. The water supply unit rates are rounded up to the penny.

² 0.8 AF is the annual amount of water needed to serve a Residential property within the CSD's service area based on the CSD's Urban Water Management Plan and Rules and Regulations.

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Table 31: FY 2022 Water Supply Unit Rates by Customer Class and Tier

Unit Cost (\$/hcf)	Projected Usage [A]	Total Usage (%)	Groundwater [B] \$1.09	Purchased Water [C] \$3.77	Supply Cost [D]	Water Supply Unit Rate (hcf) [E] = D ÷ A
Available Supply (hcf)			971,156	191,904		
Residential	<u>1,044,777</u>	89.8%	<u>872,390</u>	<u>172,387</u>	<u>\$1,604,382</u>	
Tier 1	534,997		534,997	0	\$584,914	\$1.10
Tier 2	337,393		337,393	0	\$368,872	\$1.10
Tier 3	172,387		0	172,387	\$650,596	\$3.78
Commercial	9,775	0.8%	8,162	1,613	\$15,011	\$1.54
Institutional	108,508	9.3%	90,604	17,904	\$166,627	\$1.54
Total	1,163,060	100%	971,156	191,904	\$1,786,019	

Because AVAA groundwater is used periodically as daily demand varies, revenue recovery associated with AVAA groundwater will be tracked separately and used to offset actual costs incurred. Any remaining funds will be held in a separate account and used for supplemental water supplies, including acquiring additional water rights of the MBA, when and if available. Additional water rights to the MBA will allow the CSD to avoid the higher cost of AVAA groundwater.

Delivery

Delivery costs are incurred based on the total volume of water produced and delivered to customers at a constant average demand throughout the year. Therefore, the revenue requirement for Delivery is apportioned based on projected usage identified in Table 26 to determine the unit cost-of-service irrespective of customer class or tier. The proportionate share of revenue requirement responsibility for each customer class is shown in Table 32.

Table 32: FY 2022 Delivery Cost of Service Unit Rate by Customer Class

Customer Class	All Usage [A]	% Allocation	Revenue Requirement [B]	Unit Rate (hcf) [C] = B ÷ A
Residential	1,044,777	89.8%	\$1,263,587	\$1.21
Commercial	9,775	0.8%	\$11,822	\$1.21
Institutional	108,508	9.3%	\$131,233	\$1.21
Total	1,163,060	100.0%	\$1,406,642	

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Peaking

Peaking costs are incurred not only based on the total volume of water produced and delivered but also on the peaking characteristics of customers and tiers. Therefore, the revenue requirement for Peaking is apportioned by weighting each customer class's peaking factor by total usage. The proportionate share of revenue requirement responsibility for each customer class is shown in Table 33.

Table 33: FY 2022 Peaking Revenue Requirement by Customer Class

Allocation to Customer Class	All Usage [A]	Peaking Factor [B]	Weighted Usage [C] = A x B	% Allocation [D] = C as %	Revenue Requirement (RR) [E] = D x RR	Unit Rate (hcf) [F] = E ÷ A
Residential	1,044,777	1.55	1,622,025	86.8%	\$872,759	<i>further allocated to tiers</i>
Commercial	9,775	1.55	15,114	0.8%	\$8,132	\$0.84
Institutional	108,508	2.13	230,994	12.4%	\$124,290	\$1.15
	1,163,060		1,868,132	100.0%	\$1,005,182	

Tiered Usage and Peaking for Apportioning Variable Revenue Requirements

For the peaking unit rate between Residential tiers, the revenue requirement assigned to Residential in Table 33 is further apportioned to the three tiers based on the peaking characteristics exhibited by each tier. As part of the consumption analysis, Residential accounts were grouped between accounts that remained in Tier 1, Tier 2, and Tier 3. Through this grouping of accounts, we can identify the amount of total usage within each tier from "Tier 1 Customers", "Tier 2 Customers", and Tier 3 Customers" as well as the corresponding peaking characteristic of Tier 2 and Tier 3 customers when compared to the Tier 1 Allotment of 9 hcf. This detailed usage analysis provides a nexus for allocating cost between tiers by weighting the tier peaking factors by the usage within each tier. Table 34 provides the usage characteristics by Residential Tier and the corresponding peaking factors. The unit rate per tier and customer class is then determined by taking the revenue requirement divided by usage.

Table 34: FY 2022 Peaking Unit Rate by Customer Class and Tier

Customer Class and Tier	Projected Usage [A]	Peaking Factor [B]	Weighted Peak [C] = A x B	% Allocation [D] = C as %	Revenue Requirement (RR) [E] = D x RR	Unit Rate (hcf) [F] = E ÷ A
Residential						
Tier 1	534,997	1.00	534,997	25.2%	\$220,123	\$0.42
Tier 2	337,393	1.70	572,103	27.0%	\$235,390	\$0.70
Tier 3	172,387	5.88	1,014,096	47.8%	\$417,247	\$2.43
Subtotal Residential	1,044,777		2,121,196	100%	\$872,759	
Commercial	9,775	1.55	15,114	100%	\$8,132	\$0.84
Institutional	108,508	2.13	230,994	100%	\$124,290	\$1.15
Total	1,163,060		2,367,304		\$1,005,182	

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Water Efficiency

Water Efficiency revenue requirements are first apportioned to each customer class based on usage, as shown in Table 35. Commercial and Institutional unit rates were determined by spreading the allocated requirement over the projected usage.

Table 35: FY 2022 Water Efficiency Revenue Requirement by Customer Class

Allocation to Customer Class	All Usage [A]	% Allocation [B] = A as %	Revenue Requirement [C] = B x RR	Revenue Requirement [D] = C ÷ A
Residential	1,044,777	89.83%	\$55,350	<i>further allocated to tiers</i>
Commercial	9,775	0.84%	\$518	\$0.06
Institutional	108,508	9.33%	\$5,749	\$0.06
	1,163,060	100.00%	\$61,616	

The revenue requirement allocated to Residential was further apportioned between tiers. Table 36 identifies how the Residential Water Efficiency revenue requirement is recovered over the tiers. The entire revenue requirement is recovered proportionately over Tiers 2 and 3 as conservation programs and rebates aim to mitigate outdoor water usage (usage over Tier 1).

Table 36: FY 2022 Water Efficiency Revenue Requirement by Customer Class and Tier

Customer Class and Tier	Projected Usage [A]	Allocation Factor [B]	Weighted Usage [C] = A x B	% Allocation [D] = C as %	Revenue Requirement (RR) [E] = D x RR	Unit Rate (hcf) [F] = E ÷ A
Residential						
Tier 1	534,997	0.00	-	0.0%	\$0	\$0.00
Tier 2	337,393	1.00	337,393	66.2%	\$36,633	\$0.11
Tier 3	172,387	1.00	172,387	33.8%	\$18,717	\$0.11
Subtotal Residential	1,044,777		509,780	100%	\$55,350	
Commercial	9,775		9,775	100%	\$518	\$0.06
Institutional	108,508		108,508	100%	\$5,749	\$0.06
Total	1,163,060		628,063		\$61,616	

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Cost-Based Rates

Proposed Monthly Fixed Charges

The proposed monthly fixed charges for FY 2022, commencing on January 1, 2022, are shown in Table 37, reflecting the combined charges of Account Services and Meter Capacity. The Meter Capacity fixed charge component increases with the size of the meter by taking the unit rate per ME (3/4" meter capacity charge = \$17.55) multiplied by the Capacity Factor for each meter size. Table 38 and Table 39 provide the 5-year fixed charge schedule through FY 2026, with Chromium 6 Surcharge remaining constant through the Rate Setting Period. For FY 2023 through FY 2026, the revenue adjustments of 6% are applied across the board to the cost-of-service rates derived for FY 2022 as account growth and usage characteristics are projected to remain constant for financial planning.

Table 37: FY 2022 Monthly Fixed Charges

Meter Size	Account Services [A]	Capacity Factor [B]	Meter Capacity [C]	FY 2022 Fixed Charges [D] = A + C
≤ 3/4"	\$5.25	1.00	\$17.55	\$22.80
1"	\$5.25	1.67	\$29.25	\$34.50
1 1/2"	\$5.25	3.33	\$58.50	\$63.75
2"	\$5.25	5.33	\$93.60	\$98.85
3"	\$5.25	11.67	\$204.75	\$210.00
4"	\$5.25	21.00	\$368.55	\$373.80

Table 38: FY 2022 through FY 2026 Monthly Chromium 6 Surcharges

Chromium 6 Surcharge (\$/Month)					
Meter Size	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
≤ 3/4"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71
1"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71
1 1/2"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71
2"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71
3"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71
4"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71
6"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71
8"	\$9.71	\$9.71	\$9.71	\$9.71	\$9.71

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Table 39: FY 2022 through FY 2026 Monthly Fixed Charges

Meter Charges (\$/Month)					
Meter Size	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
≤ 3/4"	\$22.80	\$24.17	\$25.63	\$27.17	\$28.81
1"	\$34.50	\$36.57	\$38.77	\$41.10	\$43.57
1 1/2"	\$63.75	\$67.58	\$71.64	\$75.94	\$80.50
2"	\$98.85	\$104.79	\$111.08	\$117.75	\$124.82
3"	\$210.00	\$222.60	\$235.96	\$250.12	\$265.13
4"	\$373.80	\$396.23	\$420.01	\$445.22	\$471.94
6"	\$765.75	\$811.70	\$860.41	\$912.04	\$966.77
8"	\$1,643.25	\$1,741.85	\$1,846.37	\$1,957.16	\$2,074.59

Proposed Variable Charges by Customer Class and Tier

The proposed variable rates for FY 2022, commencing on January 1, 2022, are shown in Table 40, reflecting the combined rates of Water Supply, Delivery, Peaking, and Water Efficiency. Table 41 provides the 5-year variable rate schedule through FY 2026. For FY 2023 through FY 2026, the revenue adjustments of 6% are applied across the board to the cost-of-service rates derived for FY 2022 as account growth and usage characteristics are projected to remain constant for financial planning.

Table 40: FY 2022 Variable Rates by Customer Class and Tier

Customer Class	Tier Width	Water				FY 2022	
		Supply [A]	Delivery [B]	Peaking [C]	Efficiency [D]	Proposed Rate (\$/hcf) [E] = A+B+C+D	
Residential							
	Tier 1	9	\$1.10	\$1.21	\$0.42	\$0.00	\$2.73
	Tier 2	9 - 29	\$1.10	\$1.21	\$0.70	\$0.11	\$3.12
	Tier 3	> 29	\$3.78	\$1.21	\$2.43	\$0.11	\$7.53
Commercial							
			\$1.54	\$1.21	\$0.84	\$0.06	\$3.65
Institutional							
			\$1.54	\$1.21	\$1.15	\$0.06	\$3.96

Table 41: FY 2022 through FY 2026 Variable Rates by Customer Class and Tier

Variable Rates (\$/hcf)						
Customer Class	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	
Residential						
	Tier 1	\$2.73	\$2.90	\$3.08	\$3.27	\$3.47
	Tier 2	\$3.12	\$3.31	\$3.51	\$3.73	\$3.96
	Tier 3	\$7.53	\$7.99	\$8.47	\$8.98	\$9.52
Commercial						
		\$3.65	\$3.87	\$4.11	\$4.36	\$4.63
Institutional						
		\$3.96	\$4.20	\$4.46	\$4.73	\$5.02