Coachella Valley Water District
Domestic Water Cost of Service Rate Study

REPORT AND RECOMMENDATIONS FOR FISCAL YEARS 2022 TO 2026

FINAL | May 2021

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Abbreviations

ADD	average day demand
AF	acre-foot
AHD	average hour demand
AMD	average month demand
AWWA	American Water Works Association
CAPEX	Capital Expenditures
Carollo	Carollo Engineers
ccf	hundred cubic feet
CIP	capital improvement program
CVWD or District	Coachella Valley Water District
EDU	equivalent dwelling units
ET	evapotranspiration
ft	feet
FYE	fiscal year ending
FY	fiscal year
gpcd	gallons per capita day
gpm	gallons per minute
HVAC	heating, ventilation, and air conditioning
M1 Manual	Manual of Water Supply Practices M1
MDD	maximum day demand
MEU	meter equivalent units
MG	million gallons
mgd	million gallons per day
MHD	max hour demand
OPEX	Operating Expenses
Report	cost of service report
SFR	single-family residence
Study	cost of service rate study

EXECUTIVE SUMMARY

The Coachella Valley Water District (CVWD or District) is a California irrigation district providing retail water and recycled water service in Riverside County, California. CVWD retained Carollo Engineers, Inc. (Carollo), an independent rate consultant, to perform a Cost of Service Rate Study (Study) for the District's Domestic Water rates. This cost of service report (Report) summarizes the recommendations from that analysis.

ES.1 Study Goals

The overall goals of the Study were focused on developing a financial plan and proposed rate structure that meet the District's financial, operational, and capital needs in a manner that equitably distributes costs and maintains the affordability of potable water service. Specific goals included:

1. Develop a rate structure in line with California Proposition 218.
2. Set rates such that operating cash flows (revenues less operating expenses and annual debt service) would remain positive for all fiscal years. This goal intends to avoid the creation of a structural operating deficit within the utility.
3. Set rates such that the Domestic Fund reserves can be maintained at the targeted level while providing funding for necessary capital projects.
4. Utilize unrestricted reserves above the reserve policy target to fund capital projects in order to minimize rate increases.
5. Calculate rates that follow industry best practices and cost of service principles.

ES.2 Study Framework and Methodology

Carollo used a methodology that is first and foremost consistent with California laws and regulations, namely, California Constitution article XIII D, section 6 (commonly referred to as Proposition 218) and its proportionality requirements. Carollo's approach is based on the foundational guidance of this law's language, and from relevant legal precedent. Carollo also developed this analysis with a rate-setting framework, *Principles of Water Rates, Fees, and Charges, Manual of Water Supply Practices M1* (M1 Manual), published by the American Water Works Association (AWWA). Finally, Carollo tailored its rate-setting approach to the policy guidance of the District and its Board of Directors.

ES.2.1 Legal Compliance

The CVWD periodically initiates cost of service analyses to review the alignment of costs with rates and charges. In the State of California, water agencies must establish rates in accordance with the substantive requirements defined by California Constitution article XIII D, section 6. In addition, agencies must harmonize these requirements with article X, section 2, which mandates that water suppliers work to conserve the water resources of the State of California.

The goal of this Report and the underlying analysis is to document the nexus of costs and the corresponding rates and fees charged to customers.

While this document does not establish any legal opinions on behalf of either Carollo or CVWD, the analysis in the Study has been conducted based on a review and interpretation of these stated legal guidelines, as well as relevant case law.

ES.2.2 Industry Standards

Carollo's approach is built upon industry best practices for rate-setting. The AWWA publishes several guidance documents for utilities setting rates and charges, the primary guidance being the M1 Manual. The M1 Manual provides a comprehensive outline of best practices and methods for rate-setting for water and wastewater utilities, utilizing a multi-step approach that has been utilized for this Study.

ES.2.3 Revenue Requirement

The revenue requirement analysis compares CVWD's forecasted revenues to its forecasted operating and capital reserve costs. This determines the adequacy of existing rates to fund CVWD's costs of providing service. If a shortfall exists, or other funding goals are not met, additional funding through either rates or additional bond issuances are reviewed and recommended based on strategic goals and funding availability. Through its annual budgeting process, the District performs a detailed review of its costs, including operations expenditures, capital needs, and funding requirements.

ES.2.4 Cost Allocation

After assessing the revenue requirements of the District, costs are allocated to specific functional categories. The M1 Manual outlines the two most widely used methods for allocation of costs, which are the base-extra capacity and the commodity demand methodologies. Both methods recognize that the cost of service depends not only on the total volume of water used, but also on the rate of use or peak-demand requirements. The cost of service allocation completed in this Study is established on the base-extra capacity method.

This allocation to functional categories is based on several key operating functions, such as water supply, treatment, distribution, and fire protection. This process takes each item in CVWD's budget and organizes the items collectively based on what function is served. Organizing the budget in terms of end function allows direct correlation between the budget item and the appropriate cost component. Cost components include base, maximum day extra capacity, maximum hour extra capacity, and meters and services, and are used to develop the rates. This process results in rates that couple the cost incurred by CVWD, and the benefit delivered to the customer or the demand the customer places on the system and its resources.

ES.2.5 Rate Design

The rate design involves developing a rate structure that proportionately recovers costs between customer classes (e.g., residential/non-residential and private fire protection customers), as well as from customers within their designated customer class. The rate design takes the allocated totals and calculates a unit cost for each customer. This unit cost can be either a fixed bimonthly fee per account, or commodity rate for each unit of water. Where appropriate, tiered rate adjustments are also calculated during this step. The tier recommendations must match CVWD's cost of providing potable water service.

The fundamental structure of this analysis has been built from the approach outlined in the M1 Manual and has been developed with industry best practices in mind.

ES.3 Recommendations

After a series of workshops with the Board of Directors and CVWD management staff, Carollo recommended an approach that best fits CVWD's existing and forecasted cost drivers and customer profile.

ES.3.1 Revenue Requirement

Without additional revenues, CVWD is projected to fall short of its operating income, debt coverage, and reserve fund objectives for the Domestic Fund. A series of revenue increases are recommended to fully fund both operating costs and planned capital expenses, as well as meet bond coverage and maintain sufficient reserve fund balances. Table ES.1 shows the projected revenue requirements with annual 3 percent increases for fiscal year ending (FYE) 2020 through FYE 2022.

Table ES.1 Projected Revenue Requirement

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Proposed Revenue Increase	-	5.0%	5.0%	11.0%	9.0%	7.0%
Baseline Rate Revenue [2]	$77.1	$77.6	$77.2	$77.6	$78.0	$78.4
Proposed Additional Rate Revenue	-	$3.9	$9.9	$20.8	$30.4	$38.3
Other Operating Revenues [2]	$8.4	$8.6	$8.7	$9.0	$9.4	$9.8
Less: Operating Expenses	($83.7)	($87.2)	($93.0)	($99.6)	($107.9)	($114.9)
Less: Non-Operating Expenses / (Offsetting Revenues)	$3.7	($5.1)	($3.1)	($3.8)	($5.6)	($4.5)
Cash Flow	$5.5	($2.3)	($0.2)	$4.0	$4.2	$7.0
Net Operating Income	$1.2	$1.9	$1.0	$5.3	$6.7	$8.0
End of Year Reserves Above / (Below) Target	$5.2	$8.7	$3.6	$2.6	$2.8	$6.6
Debt Coverage Ratio	$3.6	$3.1	$1.7	$3.2	$3.2	$3.3

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) Fixed charge, tiered water revenue, backflow, and private fire. Excludes construction rate revenue.
(3) The proposed revenue increases result in higher reserve balances, which in turn results in additional interest earnings. Those interest earnings are included in this line item.

ES.3.2 Proposed Rates

The CVWD Domestic Water rate structure consists of two primary charges:

- **Monthly Fixed Charge** – Charge that varies by the size of the meter served and the customer class.
- **Commodity Tiered Rate** – Rates imposed for each unit of water used – one unit equals one hundred cubic feet (CCF). All customer classes are billed using the same tiered rates.

ES.3.2.1 Recommended Monthly Fixed Charges

The following tables show the recommended monthly fixed charges by meter size for each class.

Table ES.2 Recommended Single Family Monthly Fixed Charge

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$7.92	$12.65	$13.46	$15.12	$16.58	$17.75
1-inch	$13.18	$15.15	$16.12	$18.11	$19.86	$21.26
1 1/2-inch	$26.36	$21.40	$22.77	$25.60	$28.06	$30.05
2-inch	$42.19	$28.90	$30.75	$34.58	$37.90	$40.59
3-inch	$79.06	$46.40	$49.37	$55.53	$60.86	$65.18
4-inch	$131.77	$71.40	$75.97	$85.46	$93.66	$100.31

Table ES.3 Recommended Multi-Family Monthly Fixed Charge

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$9.05	$12.78	$13.60	$15.28	$16.75	$17.94
1-inch	$15.07	$15.37	$16.35	$18.38	$20.14	$21.58
1 1/2-inch	$30.21	$21.83	$23.24	$26.13	$28.63	$30.68
2-inch	$48.30	$29.59	$31.50	$35.43	$38.81	$41.60
3-inch	$90.56	$47.70	$50.77	$57.13	$62.56	$67.08
4-inch	$150.90	$73.57	$78.30	$88.13	$96.49	$103.48

Table ES.4 Recommended Commercial Monthly Fixed Charge

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$5.68	$12.71	$13.53	$15.19	$16.66	$17.84
1-inch	$9.46	$15.25	$16.24	$18.23	$19.99	$21.41
1 1/2-inch	$18.93	$21.60	$23.00	$25.83	$28.33	$30.35
2-inch	$30.27	$29.22	$31.12	$34.95	$38.33	$41.07
3-inch	$56.70	$47.00	$50.07	$56.23	$61.66	$66.08
4-inch	$94.55	$72.40	$77.14	$86.63	$94.99	$101.81

Table ES.5 Recommended Landscape Monthly Fixed Charge

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$19.63	$16.15	$17.19	$19.30	$21.17	$22.67
1-inch	$32.74	$20.98	$22.34	$25.08	$27.51	$29.46
1 1/2-inch	$65.46	$33.07	$35.20	$39.53	$43.36	$46.45
2-inch	$104.79	$47.57	$50.64	$56.87	$62.38	$66.83
3-inch	$196.46	$81.40	$86.67	$97.33	$106.76	$114.38
4-inch	$327.39	$129.73	$138.14	$155.13	$170.16	$182.31

ES.3.2.2 Recommended Domestic Water Commodity Rates

The recommended commodity rates propose a shift in the District's rate structure based on current and forecasted demands and usage profiles. Table ES.6 shows the recommended tiered rate structure for all classes.

Table ES.6 Proposed Single Family Residential Tier Breakpoints by Meter Size

Class	Breakpoint	FY 2021 (1)	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	Up to indoor water budget (2)	$0.98	$0.94	$1.00	$1.12	$1.23	$1.31
Tier 2	Up to 100% of total budget	$1.37	$1.17	$1.25	$1.40	$1.53	$1.64
Tier 3	Up to 175% of total budget	$2.55	$3.59	$3.83	$4.30	$4.71	$5.04
Tier 4	Up to 300% of total budget	$4.83	$4.21	$4.48	$5.04	$5.52	$5.91
Tier 5	All usage above 300% of total budget	$6.34	$6.44	$6.86	$7.70	$8.44	$9.04

Notes:
(1) Effective July 1, 2019.
(2) Because commercial and landscape customers do not have an indoor budget, they are not charged at Tier 1. Their first unit of water is charged at Tier 2.

Section 1

INTRODUCTION

1.1 Purpose of this Report

Coachella Valley Water District (CVWD or District) retained Carollo Engineers, Inc., (Carollo) to perform a cost of service rate study (Study) of the District's Domestic Water Fund and develop recommended rates for fiscal years (FY) 2022 through 2026. This Report summarizes the analyses performed as part of the Study and the resulting recommendations.

1.1.1 Organization of this Report

The Report is organized into four sections:

- This Introduction outlining the Study's purpose, methodology, and underlying assumptions.
- A Revenue Requirements analysis, which projects the Domestic Fund's operating, capital, and policy expenses over the next five fiscal years and makes recommendations for future revenues to cover these expenses.
- A Cost of Service analysis, which allocates the Revenue Requirements in a step-by-step process first to functional categories based on the nature of the District's expenses, then to rate components, and then to individual customer classes based on system demand profiles. This step of the Study is intended to create a logical and reasonable nexus between the rates assessed to customers by the District and the costs incurred by the District.
- Rate Design and Calculation, outlining the resulting rates based on the Revenue Requirements and Cost of Service analyses.

1.1.2 Intended Use and Users of this Report

This Report was developed to provide a summary and outline of Carollo's assumptions, methodologies, results, and recommendations. District staff and management directed the preparation of this Report. This Report is not a legal document and it does not provide any guarantees or assurances of compliance with any laws. As such, none of the recommendations contained in this Report should be considered legal guidance. This Report was developed solely for the use of the District, and further distribution is at the District's discretion.

1.1.2.1 Basis of Projections

The projections and forecasts of this analysis are based on reasonable expectations of future events. Should factors either within or outside the District's control, such as adopted rates, cost escalation trends, or actual water demand, deviate from the levels forecasted in this Report, the District's financial performance may also deviate from the projections contained in this Report. In such an event, the content and usefulness of this Report may be diminished, and it is recommended that the District revisit these projections and take appropriate action.

Projections of future events have an inherent amount of uncertainty. Revenues, expenses, and other factors may not materialize as projected. The recommendations in this Report are made using the best possible information and analysis but should not be considered to provide any guarantees or assurances of future financial performance.

1.2 Study Approach and Goals

To develop updated user rates, Carollo conducted an in-depth study of the Domestic Fund's revenue needs, customer usage characteristics, capital improvement program (CIP), and additional future drivers of service costs and revenues. This Study documents the methodology and assumptions used to develop the financial plan and cost of service analysis, outlines the policy decisions reached, and summarizes the proposed rates and surcharges.

The overall goals of the Study were focused on developing a financial plan and proposed rate structure that meet the District's financial, operational, and capital needs in a manner that equitably distributes costs and maintains the affordability of potable water service. Specific goals included:

1. Develop a rate structure in line with California Proposition 218.
2. Set rates such that operating cash flows (revenues less operating expenses and annual debt service) would remain positive for all fiscal years. This goal intends to avoid the creation of a structural operating deficit within the utility.
3. Set rates such that the Domestic Fund reserves can be maintained at the targeted level while providing funding for necessary capital projects.
4. Utilize unrestricted reserves above the reserve policy target to fund capital projects in order to minimize rate increases.
5. Calculate rates that follow industry best practices and cost of service principles.

1.2.1 Project Methodology

Carollo's rate-setting methodology is guided by industry best practice, as established by the *Principles of Water Rates, Fees, and Charges M1 Manual* (M1 Manual) published by the American Water Works Association (AWWA), a national industry trade group that makes recommendations on generally accepted rate-making practices within the water industry.

From a high level, the M1 Manual is organized based on a multi-step process starting from a financial forecast and ending with rate adoption. A brief overview of this approach is outlined in Figure 1.1.

1.2.1.1 Revenue Requirement Analysis

The Revenue Requirement analysis compares the forecasted revenues of the Domestic Fund (under existing rates and forecasted water demands) to its forecasted operating and capital costs. It also incorporates policy expenses, such as debt service coverage and reserve policy targets.

This step tests the adequacy of the existing rates to recover the Domestic Fund's forecasted costs and meet policy goals. If there are shortfalls, increases to rate revenue are recommended until the tests are passed.

1.2.1.2 Cost of Service Analysis

The Cost of Service analysis builds a link between the Domestic Fund's costs of providing service with the proposed rates for each customer. After determining the Revenue Requirement, the Cost of Service step outlines the costs to deliver each unit of water and to serve each customer.

This process takes each item in the Domestic Fund's budget and allocates the items based on what function is served. For example, some cost items support the ability to deliver water, while other costs are incurred to provide customer service or to fund capital replacement. Organizing the budget in terms of end function allows the creation of a nexus between the budget item and the rate. This organization bridges the costs incurred by the Domestic Fund and the unique and varied benefits delivered to each customer.

Water utilities in California must comply with California Constitution Article XIII D, Section 6, otherwise known as Proposition 218. Proposition 218 outlines several requirements that utilities must follow, including a requirement that property-related fees cannot exceed the proportional cost of providing the associated service. The Cost of Service process in this report is intended to calculate rates in a manner that fairly and proportionally recovers the cost of District resources used.

1.2.1.3 Rate Design and Calculation

The Rate Design and Calculation involves developing a rate structure that equitably and proportionately recovers costs from customers. This rate equity is built upon each customer's relative use of the system. The rate structure must be tailored to the District's unique operation and customers.

The Rate Calculation is intended to quantify the nexus between the Revenue Requirements and the final rates that customers are charged. This process connects planned expenditures to the designed rates by establishing rates to match the estimated revenue generation with expenditures.

1.2.1.4 Rate Adoption

In addition to the proportionality requirements outlined previously, Proposition 218 requires public agencies in California to meet procedural requirements for adoption of new or increased rates for property-related fees. The District must hold a public hearing to consider the proposed rate increases and must provide written notice at least 45 days in advance of said hearing to all customers subject to the proposed new or increased rates. Any property owner or tenant that is directly liable to the public agency for payment of the property-related fees may submit a written protest against the new or increased rates at any time until the close of the public hearing. The Board may not adopt the proposed new or increased rates if property owners or tenants directly liable for payment submit written protests on behalf of more than 50 percent of the properties upon which the proposed rates will be imposed.

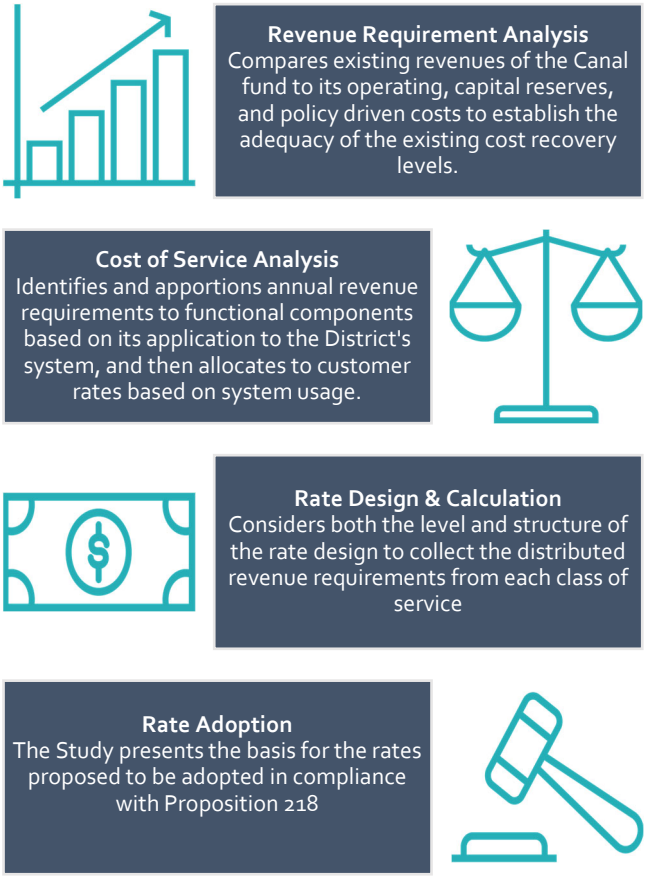


Figure 1.1 Conceptual Overview of the Rate-Setting Process

1.2.2 Data and Information Sources

Carollo collected, reviewed, and used a number of data sources provided by CVWD staff. Primary sources and files include but are not limited to:

- Domestic Fund budget model.
- Five-year Capital Improvement Plan for Domestic Fund.
- Forecasted debt service.
- Long-range Motorpool Capital Improvement Plan for all District Funds.
- Prior and recently updated Domestic Fund reserve policies.
- Water usage and billing data for FY 2016 – FY 2020.

1.3 Current Rate Structure

The District bills customers on a monthly basis, with each bill consisting of two primary components:

- A monthly fixed service charge based on the size of the customer's meter and the customer's land use type.
- A consumption charge based on the units of water metered.

1.3.1 Fixed Charges

The current fixed monthly service charges are outlined in Table 1.1.

Table 1.1 Current Domestic Monthly Fixed Service Charges

Meter Size	Single Family	Multi-Family	Commercial	Landscape
3/4-inch	$7.92	$9.05	$5.68	$19.63
1-inch	$13.18	$15.07	$9.46	$32.74
1 1/2-inch	$26.36	$30.21	$18.93	$65.46
2-inch	$42.19	$48.30	$30.27	$104.79
3-inch	$79.06	$90.56	$56.70	$196.46
4-inch	$131.77	$150.90	$94.55	$327.39

Note:
(1) Effective July 1, 2019.

1.3.2 Consumption Charges

1.3.2.1 Water Budgets

The District uses a budget-based increasing tier rate structure for its consumption charges. Each customer has an individualized "water budget." While some agencies may characterize water budgets as centered conservation or efficiency, the true purpose of a water budget is to align individual customer water demands with the District's total cost to develop incremental water supply and distribution over long timespans.

The District undertakes significant effort to plan, design, and construct water production, treatment, and distribution facilities. These efforts are shaped by forecasting customer demands in both the near-term (this month), the mid-term (the next three to five years), and the long-term (beyond five years). Developing accurate forecasts can be challenging. Therefore, the water budgets and tiered rates associated with them are methods of communicating those forecasts to customers and tying the cost of system capacity to the rates.

For instance, the District's current Tier 1 allocation for residential customers is based on assumed household usage of 50 gallons per person per day (gpcd) for a household of four persons (200 gallons per household per day). The District has built base level facilities to meet this assumed demand and provides the Tier 1 rate for customers that stay within this tier.

As customers use more water and move out of their budget, they are charged an increasing rate. These increased rates reflect the increased cost the District must eventually incur to build new facilities and expand existing ones. As customers move out of their budget, they are signaling to the District that additional facilities will be needed, and the higher rates pay for the significant investment needed.

If the District used a uniform rate structure, over time, high-volume users would no longer contribute to the cost needed for additional capacity, causing low-volume users to subsidize new or expanded facilities. Customer bills would cease to be tied to the cost of service for the system.

Customer budgets are determined based on customer class. Residential customers receive a daily indoor budget of 50 gpcd for an assumed four-person household. This equates to approximately 8 hundred cubic feet (ccf) of water for a typical month. Customers can request a variance if the household size is larger than four persons.

The equation for the indoor budget is as follows:

$$Indoor\ Budget = 50\ gallons \times Household\ Size \times Days\ Billed$$

Residential customers, as well as irrigation customers, receive an outdoor water budget allocation. Outdoor budgets are based on the following inputs:

- Irrigated area per parcel, gathered from the District's geospatial information system.
- The estimated volume of irrigation per square foot needed to sustain climate-appropriate landscaping. This is calculated using historical evapotranspiration (ET) data and an ET adjustment factor to account for irrigation efficiency and variances in plant needs throughout the year.[1]

These factors are combined in the following formula to arrive at the residential outdoor budget:

$$Outdoor\ Budget = Irrigated\ Area\ (ft^2) \times ET\ \times ET\ Adjustment\ Coefficient$$

Like the indoor budgets, customers may submit a request for a variance if they have additional outdoor water needs.

Commercial customers' budgets are developed based on the number of equivalent dwelling units (EDU). EDUs are a common benchmark for measuring the demands from commercial and other non-residential customers. The EDU puts water demands in terms of demand from a single-family residence (SFR). One EDU is equal to 8 ccf per month based on the residential indoor budget. CVWD's Development Services Department gathers data on potential water demands and determines the number of EDUs for each commercial customer at the time the business establishes service.

[1] Evapotranspiration is the amount of water that plants naturally lose due to evaporation and plant transpiration. The California Irrigation Management Information System gathers ET data across the state, using a turfgrass lawn as a benchmark.

1.3.2.2 Tiered Rates

The District's tiered rates are assessed based on how much of the month's budget a customer uses. The tier-to-budget allocations for each class are shown below in Table 1.2.

Table 1.2 Current Domestic Tiered Consumption Rates

Tier	Breakpoint	Rate [1]
Tier 1	Up to indoor water budget [2]	$0.98
Tier 2	Up to 100% of total budget	$1.37
Tier 3	Up to 175% of total budget	$2.55
Tier 4	Up to 300% of total budget	$4.83
Tier 5	All usage above 300% of total budget	$6.34

Notes:
(1) Effective July 1, 2019.
(2) Because commercial and landscape customers do not have an indoor budget, they are not charged at Tier 1. Their first unit of water is charged at Tier 2 instead.

Section 2

REVENUE REQUIREMENTS ANALYSIS

2.1 Purpose and Methodology

The Revenue Requirement analysis sets the basis for short- and long-term rate planning. The analysis serves as a means to test the Domestic Fund's fiscal health and adequacy of existing rates. If revenue projections under existing rates do not meet forecasted requirements, rates need to be adjusted. Most importantly, it establishes the cost of providing Domestic Water service, a fundamental step in the cost of service requirements of Proposition 218. Without defining the total systemwide cost of service, the District would not be able to define an individual customer's cost of service.

Typically, there are three tests used to define the annual revenues necessary to provide sufficient (1) operating income, (2) debt coverage, and (3) reserves. These sufficiency tests are commonly used to determine the amount of annual revenue that must be generated from an agency's rates.

The operating income test identifies projected annual revenue requirements to cover operating expenses and annual debt service. Shortfalls are then used to calculate needed rate revenue increases.

The debt coverage test measures the ability of a utility to meet legal and policy-driven revenue obligations. Debt issuances typically include covenants that stipulate a level of coverage that the utility must satisfy. This coverage is typically expressed as a percentage of the annual debt service. To comply with the coverage requirement, the utility must generate revenues at least equal to operating expenses, annual debt service, and a percentage of annual debt service.

The reserve sufficiency test measures the ability of the rates to meet the District's target reserve balance based on the reserve policies adopted by the Board of Directors. Based on those policies, the year-end total unrestricted reserve balance should meet or exceed the total of all targets in each year. If actual reserves are projected to fall below the target level, the District must show that reserves will reach the target level within five years.

Revenues should be sufficient to satisfy all applicable tests. If revenues do not satisfy more than one of the tests, then the greater deficiency (shortfall) drives the minimum modeled rate revenue increase.

2.2 Baseline Revenues

The District collects operating revenues from several sources including:

- Rate revenues through water sales and fixed monthly service charges.
- Other rate revenues from special Domestic water services, specifically private fire protection meters, construction meters, and the District's backflow control program for commercial customers.
- Other revenues from property taxes, interest earnings on reserves, availability charges, and other miscellaneous revenues for District services.

2.2.1 Projected Rate Revenue

Water sales are the largest source of operating revenue for the District, followed by monthly fixed service charges paid by customers with each bill. Water sales are also one of the largest drivers of the District's variable costs. As discussed further in this section, the District produces its water supply through groundwater pumping and must also purchase replenishment water. Therefore, it is important to accurately project the volume of water sold each year and the number of bills that are delivered to customers, as these projections directly drive both revenues and expenses.

2.2.1.1 Projected Fixed Charge Revenue

Meter Equivalent Units

The District's current rate structure uses different fixed charges based on customer class and meter size. The different rates for different meter sizes are intended to reflect the increased cost of reserved capacity for larger meters. Meter size is directly proportional with the instantaneous volumes of water that the meter can provide. To accommodate for larger meters, the District must create and maintain capacity for the peak instantaneous flow that each meter is capable of delivering.

The rates reflect this based on meter equivalent units (MEUs). MEUs are a measure of each connection's capacity requirement. Meter ratios are calculated based on the relative maximum flow of a given meter compared with the maximum flow of a typical SFR meter. These maximum flow figures are based on rated flow capacities in gallons per minute (gpm) published by the AWWA.[2]

For the District, SFR connections are typically outfitted with a 3/4-inch meter. The rated capacities for each meter and the associated MEU for each meter are shown below in Table 2.1.

Table 2.1 Meter Sizes and MEU Ratios

Meter Size	Rate Flow Capacity (gpm)	MEU Ratio
3/4-inch	30	1.00
1-inch	50	1.67
1 1/2-inch	100	3.30
2-inch	160	5.33
3-inch	300	10.00
4-inch	500	16.70
6-inch	1,000	33.30
8-inch	1,600	53.30

Customer Class Bill and MEU Projections

The different rates for different customer classes are intended to capture the increased local distribution costs for classes that exhibit high "peaking" behavior. The cost of service behind peaking behavior will be discussed in greater detail in later sections of the Report.

[2] "Appendix B: Equivalent Meter Ratios," in *AWWA Manual M1: Principles of Water Rates, Fees, and Charges, 7th ed.* (Denver, 2017), 383-387.

The projected number of bills for each customer class is shown in Table 2.2 below. The projected figures are based on an assumed growth rate of 0.5 percent annually, starting from the FY 2020 billing data provided by the District. The District provided this growth rate assumption based on recent trends in development within the District's service area, estimating that each year, the District's customer base has grown by approximately 0.5 percent.

Table 2.2 Current and Projected Annual Bills

Class	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Single Family	1,124	1,130	1,135	1,141	1,147	1,153	1,158
Multi-Family	41	42	42	42	42	42	43
Commercial	56	57	57	57	58	58	58
Landscape	58	59	59	59	60	60	60
Total Bills	1,280	1,287	1,293	1,300	1,306	1,313	1,319

Notes:
(1) All figures shown in thousands.
(2) Detailed baseline and projected figures for each meter size within each class are contained within the appendix of this Report.

Using the same growth assumption, this analysis projected annual MEU for each customer class. For each bill that was generated, by meter size, the corresponding MEU ratio from Table 2.1 was added to the projection. For instance, for a 1-inch meter that received a bill each month of the year, resulted in a total of 20 annual MEU (1.67 MEU multiplied by 12 bills per year).

Table 2.3 Current and Projected Annual MEU

Class	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Single Family	1,166	1,172	1,178	1,184	1,190	1,195	1,201
Multi-Family	89	89	90	90	90	91	91
Commercial	120	121	122	122	123	123	124
Landscape	135	135	136	137	138	138	139
Total Bills	1,510	1,517	1,525	1,533	1,540	1,548	1,556

Notes:
(1) All figures shown in thousands.
(2) Detailed baseline and projected figures for each meter size within each class are contained within the appendix of this Report.

To project future fixed service charge revenue, the projected bills for each customer class and meter size were multiplied by the corresponding service charge shown in Table 1.1. The projected revenue is shown in Table 2.4.

Table 2.4 Current and Projected Fixed Charge Revenue

Class	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Single Family	$9.3	$9.3	$9.4	$9.4	$9.5	$9.5
Multi-Family	$0.8	$0.8	$0.8	$0.8	$0.8	$0.8
Commercial	$0.7	$0.7	$0.7	$0.7	$0.7	$0.7
Landscape	$2.7	$2.7	$2.7	$2.7	$2.7	$2.7
Total	$13.4	$13.5	$13.6	$13.6	$13.7	$13.8

Note:
(1) All figures shown in millions of dollars.

2.2.2 Projected Water Sales Revenue

The District currently uses an increasing tiered rate structure for potable retail water sales. The rate structure is the same across all customer classes. The historical and projected usage by tier is shown below in Table 2.5.

The Study started with the District's FY 2020 billed usage and forecasted FY 2021 billed usage assuming a 1 percent increase in total water sold. This is based on a combination of rate assumed for new connections made to the system (assumed to be 0.5 percent as discussed above), as well as a one-time adjustment in per customer usage of 1.0 percent. This one-time adjustment was made because FY 2020 was one of the lower demand years for the District in recent history. While several factors could be at play, the business disruptions and other economic impact from the COVID-19 pandemic is likely depressing tourism in the region and causing lower water usage than expected. With an increase in economic activity, water usage is likely to pick up in FY 2021. A one-time adjustment brought the FY 2021 projection closer in line with the average usage profile over the last few years.

In FY 2022 through 2026, total water sales are assumed to increase at 0.5 percent, reflecting new system connections.

Table 2.5 Historical and Projected Water Sales Volumes by Tier

Tier	Historical					Projected					
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	10.4	9.2	9.2	9.0	9.1	9.2	9.3	9.3	9.4	9.4	9.5
Tier 2	19.7	20.2	20.8	19.7	19.3	19.5	19.6	19.7	19.8	19.9	20.0
Tier 3	1.4	4.7	5.8	5.2	5.3	5.4	5.5	5.5	5.5	5.5	5.6
Tier 4	0.7	1.3	1.7	1.5	1.6	1.6	1.6	1.6	1.6	1.7	1.7
Tier 5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Total	32.7	35.8	38.1	36.0	35.8	36.4	36.6	36.7	36.9	37.1	37.3

Note:
(1) All figures shown in millions of units sold. One unit of water equals one hundred cubic feet (CCF).

The Study projected the total water sales revenue by multiplying the volume of water projected at each tier by the corresponding rate in Table 1.2. The results are shown in Table 2.6.

Table 2.6 Projected Water Sales Revenue by Tier

Tier	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	$9.0	$9.1	$9.1	$9.2	$9.2	$9.3
Tier 2	$26.8	$26.9	$27.0	$27.2	$27.3	$27.4
Tier 3	$13.8	$13.9	$14.0	$14.0	$14.1	$14.2
Tier 4	$7.8	$7.9	$7.9	$8.0	$8.0	$8.0
Tier 5	$3.6	$3.7	$3.7	$3.7	$3.7	$3.7
Total	$61.1	$61.4	$61.7	$62.0	$62.4	$62.7

Note:
(1) All figures shown in millions of dollars.

2.2.3 Other Rate Revenues

The District provides several other services that generate rate revenue. These include the installation and service of meters related to construction and private fire protection, and the management of the District's backflow and cross-connection program for commercial customers.

The projected revenues from these programs are shown below in Table 2.7. Rate calculation for these services was not part of the scope of the Study but because these revenues cannot offset the Domestic revenue requirement, the Study still calculated the estimated cost of service for these items. The FY 2022 figure shown in the table below reflects the original budget, while the FY 2023 and beyond figures represent the realignment of these revenues.

Table 2.7 Projected Other Rate Revenue

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Construction	$1.0	$1.1	$1.3	$1.5	$1.7	$2.0
Fire Protection	$1.1	$1.2	$0.7	$0.7	$0.7	$0.7
Backflow	$1.5	$1.5	$1.2	$1.2	$1.2	$1.2
Total	$3.6	$3.8	$3.2	$3.4	$3.7	$3.9

2.2.4 Total Projected Revenues

Table 2.8 compiles the projected rate revenues in Table 2.4, Table 2.6, and Table 2.7, also including the District's other operating revenues such as property taxes and interest earnings.[3]

Table 2.8 Projected Revenues

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Water Sales [(2)]	$61.1	$61.4	$61.7	$62.0	$62.4	$62.7
Service Charges [(3)]	$13.4	$13.5	$13.6	$13.6	$13.7	$13.8
Other Rate Revenue [(4)]	$3.6	$3.8	$3.2	$3.4	$3.7	$3.9
Availability Charges	$0.6	$0.6	$0.6	$0.6	$0.6	$0.6
Property Taxes	$2.2	$2.3	$2.3	$2.4	$2.4	$2.4
Charges for Services	$3.3	$3.3	$3.3	$3.3	$3.3	$3.3
Investment Income	$1.2	$1.3	$1.1	$0.9	$0.5	$0.0
Other Revenue	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Total Revenues	$85.5	$86.2	$85.9	$86.3	$86.6	$86.8

Notes:
(1) All figures shown in millions of dollars.
(2) From Table 2.6.
(3) From Table 2.4.
(4) From Table 2.7.

[3] Interest earnings are calculated assuming a 2.3 percent return on the District's cash balance at the end of the prior fiscal year. This end of year balance is shown in Table 2.18.

2.3 Expenses

The District's expenses are categorized into two categories:

- Operating Expenses (OPEX), which cover routine operations and maintenance expenses of the District's Domestic water system. This includes salaries, supplies, water production and purchases, and utilities.
- Non-Operating Expenses and Offsetting Revenues include CIP; funding sources for CIP such as grants and loans; repayment of loans through annual debt service; and other non-operating expenses not directly associated with system operations.

The District provided its baseline budget for FY 2021 and projected expenses for FY 2022 through FY 2026. The projected expenses are outlined in the following sections.

2.3.1 Operating Expenses

The District's OPEX include the following categories:

- Salaries & Benefits.
- Supplies and Services.
- Utilities.
- Replenishment Charges.
- Capital Outlay.

The District provided forecasted expenses for all of these categories, with the exception of Replenishment Charges, based on anticipated expenditure changes over the next five years.

2.3.1.1 Replenishment Water Costs

The District's primary source of Domestic water supply is groundwater from the District's local groundwater production wells. The expenses associated with this pumping are captured in the District's OPEX budget.

As part of the District's groundwater management program, it also performs groundwater recharge and replenishment within three areas of benefit. Many groundwater users in the District's region pay the District for its replenishment activities, with the Domestic Fund being one of the largest contributors to pay for its share of groundwater recharge.

Concurrent with this Study, the District also engaged Carollo to perform a rate study for the District's three Replenishment Funds: West Whitewater, Mission Creek, and East Whitewater. This Domestic Study incorporated the resulting rates and recommendations from the Replenishment Study as part of the OPEX forecast. The Domestic Fund purchases water from each of these three areas of benefit based on well location and availability. The rates differ for each area of benefit and are charged to the Domestic Fund based on where the water is pumped. The projected replenishment volumes purchased by Domestic, rates per acre-foot (AF), and total replenishment cost are shown in Table 2.9.

Table 2.9 Projected Replenishment Costs

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
West Whitewater						
Acre Feet Purchased	72,118	67,000	67,335	67,672	68,010	68,350
Rate per Acre Foot	$143.80	$165.37	$198.44	$238.13	$285.76	$342.91
Total Cost	$10.4m	$11.1m	$13.4m	$16.1m	$19.4m	$23.4m
Mission Creek						
Acre Feet Purchased	3,000	3,000	3,015	3,030	3,045	3,060
Rate per Acre Foot	$135.52	$135.52	$135.52	$135.52	$135.52	$135.52
Total Cost	$0.4m	$0.4m	$0.4m	$0.4m	$0.4m	$0.4m
East Whitewater						
Acre Feet Purchased	26,330	27,000	27,135	27,271	27,407	27,544
Rate per Acre Foot	$66.00	$72.27	$79.14	$81.51	$83.96	$86.47
Total Cost	$1.7m	$2.0m	$2.1m	$2.2m	$2.3m	$2.4m
Total Replenishment Water Cost	**$12.5m**	**$13.4m**	**$15.9m**	**$18.7m**	**$22.1m**	**$26.2m**

2.3.1.2 Projected Operating Expenses

The budgeted OPEX for FY 2021 and the projected OPEX for FY 2022 to FY 2026 are shown in Table 2.10. All figures, including the starting baseline expenses for FY 2021 and the projected expenses through FY 2026 were provided by CVWD staff and reflect the best available estimates from their annual budgeting process.

Table 2.10 Projected Operating Costs

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Salaries & Benefits	$38.0	$39.9	$42.2	$45.1	$49.1	$51.0
Supplies & Services	$22.9	$23.3	$23.9	$24.5	$25.1	$25.7
Utilities	$10.1	$10.4	$10.7	$11.0	$11.4	$11.7
Replenishment Charges	$12.5	$13.4	$15.9	$18.7	$22.1	$26.2
Capital Outlay	$0.2	$0.2	$0.2	$0.2	$0.2	$0.2
Total Expenses	$83.7	$87.2	$93.0	$99.6	$107.9	$114.9

Note:
(1) All figures shown in millions of dollars.

2.3.2 Non-Operating Expenses and Offsetting Revenues

The District's non-operating expenses and offsetting revenues include the following categories:

- Rate-funded, or "pay-as-you-go" capital, often called "PAYGO".
- Capital projects funded through other sources such as grants, loans, and restricted reserves. The Water System Backup Facilities Charge fund is the District's restricted reserves fund and is used for some capital investment funding.
- Capital projects that are not fully allocated to one of the District's enterprises, called "General District".

- Vehicle repair and replacement, called "Motorpool."
- Debt service.
- Outflows for repayment of and inflows of and funds from interfund loans.

2.3.2.1 Capital Improvement Plan

Table 2.11 Projected Capital Improvement Costs and Funding Sources

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Capital Improvement	$24.2	$15.7	$29.8	$25.9	$20.2	$14.8
General District [2]	$2.4	$3.4	$2.6	$1.1	$1.1	$0.9
Motorpool [2]	$1.2	$1.4	$1.6	$1.1	$1.0	$1.0
WSBFC Funding	($9.8)	($10.1)	($5.6)	($5.3)	($3.2)	($2.7)
Grant Funding	($5.0)	($0.4)	($2.8)	($2.6)	($0.7)	$0.0
Loan Funding	($6.7)	($2.6)	($21.1)	($17.8)	($14.7)	($11.9)
Total **PAYGO** Capital	$6.2	$7.4	$4.4	$2.4	$3.7	$2.2

Notes:
(1) All figures shown in millions of dollars.
(2) General District and Motorpool line items are only related to the share of these capital costs allocated to the Domestic Fund.

2.3.2.2 Debt Service and Interfund Loans

Table 2.12 Projected Debt Service and Interfund Loans

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Interfund Loans / (Repayments)	($10.5)	($3.3)	($3.3)	($1.2)	($1.2)	($1.2)
Debt Service	$0.6	$1.0	$1.8	$2.5	$3.1	$3.5
Total	($9.9)	($2.3)	($1.5)	$1.3	$1.9	$2.3

Note:
(1) All figures shown in millions of dollars.

2.3.2.3 Projected Non-Operating Expenses and Offsetting Revenues

Table 2.13 Projected Total Non-Operating Expenses / (Offsetting Revenues)

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
PAYGO	$6.2	$7.4	$4.4	$2.4	$3.7	$2.2
Other Expenses / (Revenues)	($9.9)	($2.3)	($1.5)	$1.3	$1.9	$2.3
Total	($3.7)	$5.1	$2.9	$3.8	$5.6	$4.5

Note:
(1) All figures shown in millions of dollars.

2.4 Revenue Requirements Tests

2.4.1 Operating Income

The District is projected to fall short of meeting Net Operating Income at existing rate levels in all of the next five years.

Table 2.14 Projected Operating Income before Revenue Adjustments

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Rate Revenue	$78.2	$78.7	$78.5	$79.1	$79.7	$80.4
Other Operating Revenues	$7.3	$7.5	$7.4	$7.2	$6.9	$6.4
Less: Operating Expenses	($83.7)	($87.2)	($93.0)	($99.6)	($107.9)	($114.9)
Less: Non-Operating Expenses / (Offsetting Revenues)	$3.7	($5.1)	($3.1)	($3.8)	($5.6)	($4.5)
Cash Flow	$5.5	($6.2)	($10.2)	($17.0)	($27.0)	($32.6)
Net Operating Income	$1.2	($2.0)	($8.9)	($15.8)	($24.4)	($31.7)

Notes:
(1) All figures shown in millions of dollars.
(2) Net Operating Income = Total Operating Revenues, less Total Operating Expenses and Annual Debt Service.

2.4.2 Debt Coverage

At existing rate levels, the District is projected to fall short of its bond coverage obligations in all of the next five years. The bond coverage test requires that District revenues exceed operating expenses, debt service, and an additional 50 percent of annual debt service. The results of this test are summarized in Table 2.15.

Table 2.15 Projected Debt Coverage Ratio before Revenue Adjustments

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Total Revenues [2]	$85.5	$86.2	$85.9	$86.3	$86.6	$86.8
Operating Expenses [3]	$83.5	$87.0	$92.8	$99.3	$107.7	$114.7
Debt Service	$0.6	$1.0	$1.8	$2.5	$3.1	$3.5
Coverage Target	$0.3	$0.5	$0.9	$1.3	$1.5	$1.8
Surplus / (Deficit)	$1.2	($2.3)	($9.6)	($16.9)	($25.8)	($33.2)
Debt Coverage Ratio	3.63 x	-0.85 x	-3.76 x	-5.14 x	-6.83 x	-7.90 x

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 2.8.
(3) From Table 2.10. Excludes Capital Outlay.

2.4.3 Reserves

2.4.3.1 Reserve Policies

The District maintains several reserve funds to target several different funding purposes. These funds allow smooth cash flow to support operations and capital projects. Furthermore, these funds bridge the gap in funding that can often occur between when funds are needed for a capital project and when reimbursement from grants and loans are actually issued. This can often result in a float of a year or longer. For funds such as the rate stabilization reserve fund, reserves can also be used to smooth rate increases. Reserve policies are set by the District's Board of Directors and follow industry best practice for water utilities. Table 2.16 outlines the policy targets for each fund and Table 2.17 shows the forecasted target.

Table 2.16 Projected Reserve Balance Targets

Fund	Target
Operating Reserve	90 days (25%) of OPEX (excluding depreciation and capital outlay)
Rate Stabilization	The greater of: 10% of current year budgeted water sales revenue; or 10% of total budgeted OPEX (excluding depreciation, capital outlay, and State Water Project costs)
Capital Improvement	25% of the average annual PAGO for the next five years
Emergency	1% of net capital assets
Vehicle Replacement	Average of five-year CIP for Motorpool
Debt Service	Annual debt service

Table 2.17 Projected Reserve Balance Targets

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Operating Reserve	$20.9	$21.8	$23.2	$24.8	$26.9	$28.7
Rate Stabilization	$8.3	$8.7	$9.3	$9.9	$10.8	$11.5
Capital Improvement	$13.5	$5.7	$7.5	$9.5	$9.7	$9.7
Emergency	$5.5	$5.7	$5.9	$6.1	$6.4	$6.6
Vehicle Replacement	$1.1	$1.2	$1.2	$1.1	$1.1	$1.2
Debt Service	$0.6	$1.0	$1.8	$2.5	$3.1	$3.5
Total Reserves Target	$49.8	$44.1	$49.0	$54.0	$57.9	$61.2

Notes:
(1) All figures shown in millions of dollars.

2.4.3.2 Reserve Test Forecast

Under existing rates, the District is forecasted to meet the reserve targets in only one of the next five years. By FY 2025, the District is projected to completely exhaust its reserve funds without additional rate revenue.

Table 2.18 Projected Reserve End of Year Balances before Revenue Adjustments

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Beginning Reserve	$48.5	$55.0	$48.9	$38.7	$21.7	($5.3)
Cash Flow [2]	$5.5	($6.2)	($10.2)	($17.0)	($27.0)	($32.6)
Ending Reserves	$55.0 [2]	$48.9	$38.7	$21.7	($5.3)	($37.9)
Reserve Balance Surplus / (Deficit)	$5.2	$4.8	($10.3)	($32.4)	($63.3)	($99.1)

Notes:
(1) All figures shown in millions of dollars.
(2) From Table 2.14.
(3) Adjusted to projected FY 2021 end of year balance.

2.5 Recommended Revenue Requirements

Given the District's forecasted financial metrics—failing to meet reserve targets in four of the next five years and failing to achieve positive net operating income and debt coverage at all within the next five years—additional rate revenue is recommended. Table 2.19 outlines the proposed revenue adjustments for the next five years and the updated net operating income following adjustments.

For the next two years, the Study recommends annual revenue increases of 5 percent. For FY 2024, the Study recommends a one-time revenue increase of 11 percent, followed by 9 and 7 percent in FY 2025 and FY 2026, respectively.

Table 2.19 Recommended Revenue Adjustments

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Proposed Revenue Increase	-	5.0%	5.0%	11.0%	9.0%	7.0%
Proposed Rate Revenue [2]	$77.1	$81.5	$87.1	$98.4	$108.4	$116.6
Other Operating Revenues	$8.4	$8.6	$8.7	$9.0	$9.4	$9.8
Less: Operating Expenses	($83.7)	($87.2)	($93.0)	($99.6)	($107.9)	($114.9)
Less: Non-Operating Expenses / (Offsetting Revenues)	$3.7	($5.1)	($3.1)	($3.8)	($5.6)	($4.5)
Cash Flow	$5.5	($2.3)	($0.2)	$4.0	$4.2	$7.0
Net Operating Income	$1.2	$1.9	$1.0	$5.3	$6.7	$8.0

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) Fixed charge, tiered water revenue, backflow, and private fire. Excludes construction rate revenue.
(3) The proposed revenue increases result in higher reserve balances, which in turn results in additional interest earnings. Those interest earnings are included in this line item, which is higher than the figures shown in Table 2.8.

Beyond FY 2026, the Study recommends the District maintain annual inflationary increases (2 to 3 percent) to keep pace with cost drivers and prevent future situations where revenues are severely out of alignment with expenses. This will ultimately mitigate the need for large one-time increases, potentially even larger than those recommended by this Study.

2.5.1 Debt Coverage

The proposed rate revenue increases are projected to result in the District passing its debt coverage targets in each of the next five years.

Table 2.20 Projected Debt Coverage Ratio after Revenue Adjustments

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Total Revenues	$85.5	$90.1	$95.9	$107.4	$117.7	$126.5
Operating Expenses [2]	$83.5	$87.0	$92.8	$99.3	$107.7	$114.7
Debt Service	$0.6	$1.0	$1.8	$2.5	$3.1	$3.5
Coverage Target	$0.3	$0.5	$0.9	$1.3	$1.5	$1.8
Surplus / (Deficit)	$1.2	$1.6	$0.3	$4.2	$5.4	$6.5
Debt Coverage Ratio	3.61 x	3.15 x	1.69 x	3.16 x	3.24 x	3.33 x

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) Excludes Capital Outlay.

2.5.2 Reserves

Assuming implementation of the proposed rate revenue increases, the District is projected to meet its reserve targets in all of the next five years.

Table 2.21 Projected Reserve End of Year Balances after Revenue Adjustments

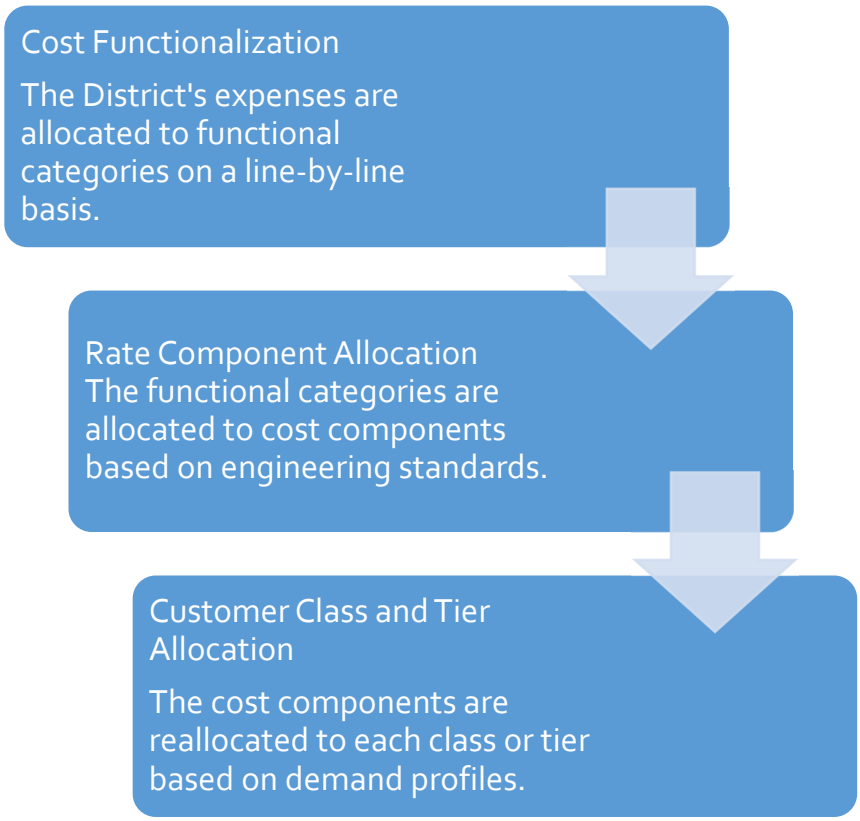
	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Beginning Reserve	$48.5	$55.0	$52.7	$52.5	$56.6	$60.8
Cash Flow [2]	$5.2	($2.3)	($0.2)	$4.0	$4.2	$7.0
Ending Reserves	$55.0 [3]	$52.7	$52.5	$56.6	$60.8	$67.8
Reserve Balance Surplus / (Deficit)	$5.2	$8.7	$3.6	$2.6	$2.8	$6.6

Notes:
(1) All figures shown in millions of dollars.
(2) From Table 2.19.
(3) Adjusted to projected FY 2021 end of year balance.

Section 3

COST OF SERVICE ANALYSIS

The Cost of Service analysis follows a step-by-step approach to tying the District's expenses to the rates charged to customers. Those steps are outlined in the figure below.



Based on the revenue requirement analysis outlined in the preceding chapter, the functional allocation designates each budget item to a functional category, which is then translated into a specific cost/rate component. Those functional categories and their associated costs are allocated to the distinct customer classes based on each class's unique account, meter, and demand characteristics. A customer class consists of users that commonly create or share responsibility for certain costs incurred by the utility, which is determined by customer consumption data (including peak demand) in order to combine similar groups of customers.

3.1 Legal and Policy Guidance

3.1.1 Legal Guidance

This Report should not be considered legal guidance and it does not offer any assurances of compliance with any other state, federal, or other laws. However, it is guided by the best available legal guidance and strives to match that guidance.

All water rates in California must meet the requirements outlined in the California State Constitution, Article XIII, Section 6. The rates recommended in this Report are developed based on the guidance from the 2015 decision by the Court of Appeal in Capistrano Taxpayers Association v. City of San Juan Capistrano, as well as other legal opinions and the provisions of the Constitution.

In San Juan Capistrano, the court stated that any rates, including tiered rates, must "correspond to the actual cost of providing service at a given level of usage." Furthermore, the court stated:

> *"And, we emphasize, there is nothing at all in [California Constitution Article XIII D, section 6,] subdivision (b)(3) or elsewhere in Proposition 218 that prevents water agencies from passing on the incrementally higher costs of expensive water to incrementally higher users. That would seem like a good idea. But subdivision (b)(3) does require they figure out the true cost of water, not simply draw lines based on water budgets…Our courts have made it clear they interpret the Constitution to allow tiered pricing; but the voters have made it clear they want it done in a particular way."*

This statement from the court outlines several fundamental principles for this rate analysis:

- Rates must be based on the cost of providing water service.
- Tiered pricing is an acceptable methodology under Proposition 218.
- Increasing block rates that pass incrementally higher costs of expensive water onto incrementally higher demand users is an acceptable methodology of proportionately allocating the costs of service under Proposition 218.

3.1.2 Industry Guidance

While Proposition 218 is the ultimate test for rates, industry guidance and commonly accepted rate-setting practices can serve as a template for achieving cost-based rates. The M1 Manual outlines the two most widely used methods for allocation of functionalized costs to cost components:

- **Base-Extra Capacity Method**, where costs are allocated among: (1) a base category to provide baseline water service or average day demand; (2) an extra capacity category to provide peak demand service, often split into maximum day and maximum hour components; (3) a customer category to provide services that do not vary with water usage, such as customer service and billing; and (4) direct fire protection.
- **Commodity-Demand Method**, where costs are allocated among: (1) a commodity category for costs that are directly driven by demand; (2) a demand category for building and maintaining peak system capacity; (3) a customer category to provide services that do not vary with water usage, such as customer service and billing; and (4) direct fire protection.

Both methodologies recognize that cost of service "depends not only on the total volume of water used, but also on the rate of use, or peak demand requirements."[4] Costs incurred by the District are not incurred uniformly, or simply based on the total quantity or volume of water used. The cost of service changes based on both when, how, and how much water is used. Both methodologies account for this by including an extra capacity or demand category, in recognition of costs associated with capacity that is not used consistently which impacts operating costs and capital asset related costs to accommodate peak flows.

[4] AWWA, *M1 Manual*, p. 61.

For this analysis, the Base-Extra Capacity methodology was selected. The following sections discuss how costs are allocated to the system's functions, cost components, and customer classes using this methodology.

3.2 Functional Cost Allocation

3.2.1 Functional Cost Categories

The functional cost allocation assigns the revenue requirement for the test year by major function. The Study developed a list of functions specific to the District's water system. Each functional component is allocated to specific cost components, which can then be assigned to rates. The functional components used for the District are:

- **Pumping:** Costs associated with pump stations in the Distribution and Transmission systems.
- **Distribution and Transmission System:** Costs associated with delivering treated water to customers. Costs include transmission and distribution mains primarily, and do not include pump stations or storage tanks and reservoirs, which are allocated separately.
- **Storage:** Costs associated with treated or finished water reservoirs and tanks (not raw surface water reservoirs).
- **Treatment:** Costs associated with treatment of potable water, either at centralized facilities or wellhead treatment for groundwater production.
- **Meters and Services:** Costs associated with water meters and service connections.
- **Customer Service:** Costs related to fielding customer requests, questions, and complaints; also covers outreach and communication for non-conservation related programs.
- **Billing:** Costs associated with staff and materials needed to generate bills; including meter readers, postage, and billing systems.
- **Source of Supply:** Costs related to both groundwater pumping, imported water purchases, and replenishment operations and purchases.
- **Backflow:** Costs related to the District's backflow and cross-connection control program for commercial and non-residential customers.
- **Fire Protection:** All infrastructure and costs associated solely with providing fire flow
- **General:** Costs associated with other expenses that do not fit any of the other categories. Examples include electrical equipment, heating, ventilation, and air conditioning (HVAC) equipment, plant staff vehicles, lands not associated with supply protection or a specific asset, and management and administration of the District, among other items.
- **Conservation:** Costs associated with conservation programs, such as rebates, and communications aimed at increasing overall water supply and reliability through encouraging or mandating customers that use large amounts of water to reduce water usage in order to increase water supply and reliability. The District's budget was analyzed line-by-line.

3.2.2 Cost and Asset Functionalization

The Study "functionalized" the District's operating expenses and fixed assets into each of the above categories using the FY 2022 budgeted OPEX and the current fixed asset registry.[5] These two different functionalization approaches—the OPEX and Capital Expenditures (CAPEX) functionalization's—are generated and used for different parts of the revenue requirement.

The OPEX functionalization is used for any operating expense and offsetting revenues used as part of the revenue requirement, while CAPEX is used for CIP expenses and funding sources. The CAPEX approach is used for the fixed assets because the District, as well as most utilities, spend CIP typically in accordance with the current functionalization of the system. For instance, if 10 percent of the value of the system is related to storage tanks and reservoirs, as is the case with the District, then it is reasonable to assign approximately 10 percent of the CIP to storage tanks and reservoirs because it is assumed the District will invest a proportional amount of maintenance, repair, and replacement on storage.

Results of the functionalization of OPEX and CAPEX are shown in Table 3.1. The detailed allocation of OPEX is provided in the appendix. However, the District has nearly 900 assets that were allocated as part of the CAPEX functionalization, making it unfeasible to outline the details in the Report. Therefore, the allocations are incorporated as part of the Excel rate model provided to the District upon completion of this Study.

Table 3.1 Functionalization of Expenses

Functional Category	Allocation of OPEX	Allocation of CAPEX
Pumping	7%	3%
Treatment	3%	2%
Storage	3%	10%
Transmission	15%	63%
Customer Service	7%	0%
Billing	9%	0%
Meter Costs	4%	8%
Source of Supply	24%	13%
Backflow	18%	1%
Conservation	2%	0%
Fire Protection	6%	0%

3.2.3 Allocation of Revenue Requirements to Functional Categories

The next step is to allocate the revenue requirement for the test year—in this case, FY 2022—to each of the functional categories shown in Table 3.1. This is outlined in the following tables.

[5] Assets were valued using the Replacement Cost New approach, also frequently referred to as the "trended acquisition cost." This approach takes the original cost of the asset and brings it into present day dollars using an industry standard construction cost index.

Table 3.2 Allocation of Operating Costs to Functional Categories

Operating Cost Item	Functional Category Allocation [2]												Total [3]
	Pumping	Treatment	Storage	Transmission	Customer Service	Billing	Meter Costs	Source of Supply	Replenishment	Backflow	Conservation	Fire Protection	
Salaries & Benefits	$2.95	$1.30	$1.36	$6.06	$2.71	$3.40	$1.59	$9.42	$7.10	$0.63	$2.40	$0.96	$39.88
Supplies & Services	$1.73	$0.76	$0.80	$3.55	$1.59	$1.99	$0.93	$5.51	$4.16	$0.37	$1.41	$0.56	$23.35
Utilities	$0.77	$0.34	$0.35	$1.57	$0.70	$0.88	$0.41	$2.45	$1.85	$0.16	$0.62	$0.25	$10.36
Replenishment	$0.99	$0.44	$0.46	$2.04	$0.91	$1.15	$0.54	$3.17	$2.39	$0.21	$0.81	$0.32	$13.44
Capital Outlay	$0.02	$0.01	$0.01	$0.03	$0.01	$0.02	$0.01	$0.05	$0.04	$0.00	$0.01	$0.01	$0.22
Total **Allocated**	$6.45	$2.84	$2.98	$13.25	$5.93	$7.45	$3.47	$20.61	$15.54	$1.37	$5.26	$2.09	$87.24

Notes:
(1) All figures shown in millions of dollars.
(2) Allocated using the OPEX percentages from Table 3.1.
(3) From Table 2.10.

Table 3.3 Allocation of Non-Operating Expenses / (Offsetting Revenues) to Functional Categories

Non-Operating Cost Item	Functional Category Allocation [2]												Total [3]
	Pumping	Treatment	Storage	Transmission	Customer Service	Billing	Meter Costs	Source of Supply	Replenishment	Backflow	Conservation	Fire Protection	
Domestic CIP	$0.51	$0.32	$1.50	$9.85	$ -	$ -	$1.29	$1.99	$0.17	$ -	$0.05	$ -	$15.69
General District	$0.11	$0.07	$0.33	$2.14	$ -	$ -	$0.28	$0.43	$0.04	$ -	$0.01	$ -	$3.41
Motorpool	$0.05	$0.03	$0.13	$0.89	$ -	$ -	$0.12	$0.18	$0.02	$ -	$0.00	$ -	$1.41
WSBFC Funding	($0.33)	($0.21)	($0.96)	($6.32)	$ -	$ -	($0.83)	($1.28)	($0.11)	$ -	($0.04)	$ -	($10.06)
Grant Funding	($0.01)	($0.01)	($0.04)	($0.24)	$ -	$ -	($0.03)	($0.05)	($0.00)	$ -	($0.00)	$ -	($0.38)
Loan Funding	($0.09)	($0.05)	($0.25)	($1.63)	$ -	$ -	($0.21)	($0.33)	($0.03)	$ -	($0.01)	$ -	($2.60)
Interfund Loans / (Repayments)	($0.11)	($0.07)	($0.32)	($2.07)	$ -	$ -	($0.27)	($0.42)	($0.04)	$ -	($0.01)	$ -	($3.30)
Debt Service	$0.03	$0.02	$0.09	$0.61	$ -	$ -	$0.08	$0.12	$0.01	$ -	$0.00	$ -	$0.96
Total	$0.17	$0.11	$0.49	$3.22	$ -	$ -	$0.42	$0.65	$0.06	$ -	$0.02	$ -	$5.13

Notes:
(1) All figures shown in millions of dollars.
(2) Allocated using the CAPEX percentages from Table 3.1.
(3) From Table 2.11 and Table 2.12.

Table 3.4 Allocation of Non-Rate Revenues to Rate Components

Non-Rate Revenue Item	Functional Category Allocation [2]												Total [3]
	Pumping	Treatment	Storage	Transmission	Customer Service	Billing	Meter Costs	Source of Supply	Replenishment	Backflow	Conservation	Fire Protection	
Availability Charges	($0.05)	($0.02)	($0.02)	($0.10)	($0.04)	($0.06)	($0.03)	($0.15)	($0.11)	($0.01)	($0.04)	($0.02)	($0.65)
Property Taxes	($0.17)	($0.07)	($0.08)	($0.35)	($0.15)	($0.19)	($0.09)	($0.54)	($0.41)	($0.04)	($0.14)	($0.05)	($2.28)
Charges for Services	($0.24)	($0.11)	($0.11)	($0.50)	($0.22)	($0.28)	($0.13)	($0.78)	($0.59)	($0.05)	($0.20)	($0.08)	($3.30)
Investment Income	($0.09)	($0.04)	($0.04)	($0.19)	($0.09)	($0.11)	($0.05)	($0.30)	($0.23)	($0.02)	($0.08)	($0.03)	($1.27)
Other Revenue	($0.08)	($0.04)	($0.04)	($0.17)	($0.08)	($0.10)	($0.04)	($0.27)	($0.20)	($0.02)	($0.07)	($0.03)	($1.12)
Contributions to / (Deductions from) Reserves	($0.17)	($0.08)	($0.08)	($0.35)	($0.16)	($0.20)	($0.09)	($0.55)	($0.41)	($0.04)	($0.14)	($0.06)	($2.31)
Total	($0.81)	($0.36)	($0.37)	($1.66)	($0.74)	($0.93)	($0.43)	($2.58)	($1.95)	($0.17)	($0.66)	($0.26)	($10.92)

Notes:
(1) All figures shown in thousands of dollars.
(2) Allocated using the OPEX percentages from Table 3.1.
(3) From Table 2.8.

Table 3.5 Total Allocation to Functional Components

Non-Rate Revenue Item	Functional Category Allocation												Total
	Pumping	Treatment	Storage	Transmission	Customer Service	Billing	Meter Costs	Source of Supply	Replenishment	Backflow	Conservation	Fire Protection	
Operating Expenses [2]	$6.45	$2.84	$2.98	$13.25	$5.93	$7.45	$3.47	$20.61	$15.54	$1.37	$5.26	$2.09	$87.24
Non-Operating Expenses [3]	$0.17	$0.11	$0.49	$3.22	$0.00	$0.00	$0.42	$0.65	$0.06	$0.00	$0.02	$0.00	$5.13
Offsetting Non-Rate Revenues [4]	($0.81)	($0.36)	($0.37)	($1.66)	($0.74)	($0.93)	($0.43)	($2.58)	($1.95)	($0.17)	($0.66)	($0.26)	($10.92)
Total	$5.81	$2.59	$3.09	$14.82	$5.19	$6.52	$3.46	$18.68	$13.65	$1.20	$4.62	$1.83	$81.46

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 3.2.
(3) From Table 3.3.
(4) From Table 3.4.

3.3 Rate Component Allocation

Table 3.1 also includes the "Allocation Basis" for the functional category, which forms the basis for the allocation to the rate components. These rate components are the foundation of the individual rates, with each component corresponding to individual or multiple rate components.

The District's rate components are used to allocate costs to the fixed monthly service charges and the tiered volumetric rates. The volumetric components include base, extra capacity (maximum day and maximum hour), and conservation. The customer-related rate components (local distribution, meters and services, fire protection, and billing and collecting) are the basis of the fixed monthly service charges.

Fire protection costs are separated into private and public. While private fire protection costs are only allocated to private fire customers through the private fire service charge, the public fire protection costs are reallocated back to all customer classes based on their fire flow requirements.

3.3.1 Rate Component Descriptions

The following describes each of the cost components for the District.

Base: This category includes a portion of operating and capital costs related to treatment, distribution, pumping, storage, and source of supply, up to a level that meets the District's baseline (average day) demands throughout the year. Base also includes a portion of general and administrative costs associated with the operations and management of those functions.

Extra Capacity – Max Day: This category includes a portion of costs outlined in the Base description above related to meeting maximum day demands. These costs are incremental to those required for Base service. This cost includes capital costs related to oversizing the system to meet excess max day demand.

System peaking factors are used to determine the appropriate allocations to the Extra Capacity cost components. For the purpose of this study, the maximum day peaking factor is 1.85. This means that the maximum day demand is assumed to be 1.85 times the average day demand, and the maximum hour demand is assumed to be three times the average day demand.

The calculation of the allocation basis from these peaking factors is detailed in the next section.

Extra Capacity – Max Hour: The Max Hour category is similar to the Max Day category but covers the additional costs related to peak above Max Day. These costs are incremental to those required for Base and Max Day service. The Max Hour peaking factor is 3.00 time the average hour demand.

Water Conservation: Costs associated with conservation incentive programs and communications aimed at encouraging or mandating customers to reduce water usage.

Local Distribution: A portion of the costs associated with constructing and maintaining the local distribution service lines that deliver water from pipelines to the customer. These costs are included in the fixed charge to recover the investment the District makes in the infrastructure required to deliver water to the customer regardless of usage.

Meters and Services: Costs associated with customer meters and service lines and the associated capacity. These costs are included in the fixed charge based on the meter's hydraulic capacity.

Billing and Collecting: Costs related to operational support activities including accounting, billing, and customer service. These expenditures are common to all customers and are reasonably uniform across the different customer classes.

Direct Fire Protection: Costs associated with providing direct fire protection services. A portion of the distribution system costs are included as the system must have sufficient hydraulic capacity to support the pressures and flow demands for fire protection service.

3.3.2 Extra Capacity Allocation Factors

For costs related to either Max Day or Max Hour, the peaking factors for each component need to be normalized into a 100 percent scale to allow allocation of costs. The peaking factors are generated as a ratio of the peak demand for a given time period (max month, max day, etc.) to the average demand for the same time period.

For Base-Extra Capacity, this relies on Max Day Demand (MDD) and Max Hour Demand (MHD) flow criteria. CVWD staff provided average day demand (ADD) and MDD conditions. For MHD, staff was in the process of undergoing a water distribution master plan concurrent with the Study. Staff recommended a MHD condition of 300 percent of ADD (on an hourly basis) on the Design Criteria for Domestic Water Facilities in the District's Development Design Manual.

CVWD's ADD is approximately 74.0 million gallons per day (mgd).

3.3.2.1 Max Day Demand

For MDD, the highest demand day is approximately 136.7 mgd based on the average of peak demand days from 2016, 2017, and 2019.[6] Table 3.6 outlines the calculation of the allocation basis from these peaking factors. Base corresponds with ADD, which is set at 100 percent. The incremental Max Day capacity required above ADD to meet MDD is 62.7 mgd, or 85 percent.

The percentages associated with total MDD capacity need to be normalized into a 100 percent basis. After normalizing, 54 percent of capacity is associated with Base demand and 46 percent is associated with the incremental capacity needed to meet MDD.

Table 3.6 Max Day Allocation

Peaking Factor	MGD	Percent of Base	Normalized Allocation
Base (Average Day)	74.0	100%	54%
Incremental Max Day	62.7	85%	46%
Total Max Day	136.7	185%	100%

3.3.2.2 Max Hour Demand

Table 3.7 outlines the calculation of the allocation basis from the MHD peaking factors. District staff reported that MHD is approximately equal to 300 percent of ADD (on an hourly basis). This estimate was recently updated as part of the District's water system master plan. This equates to 9.3 million gallons (MG) during MHD.

The MHD condition needs to be allocated across Base, Max Day, and Max Hour. The District's ADD of 74.0 mgd is 3.1 MG on an hourly basis. Like the MDD allocation, Base corresponds with average hour demand (AHD), which is set at 100 percent.

[6] Max day demand for 2018 was unavailable.

The incremental MDD capacity required above AHD also needs to be allocated. The incremental MDD of 62.7 mgd from Table 3.6 calculates to 2.6 MG per hour during the MDD criteria. This is still 85 percent of AHD.

Finally, incremental MHD is 62.7 mgd, or 115 percent of AHD.

The percentages associated with total MDD capacity need to be normalized into a 100 percent basis. After normalizing, 54 percent of capacity is associated with Base demand and 46 percent is associated with the incremental capacity needed to meet MDD.

Table 3.7 Max Hour Allocation

Peaking Factor	Million Gallons	Percent of Base	Normalized Allocation
Base (Average Hour)	3.1	100%	33%
Incremental Average Hour for Max Day	2.6	85%	28%
Incremental Max Hour	3.6	115%	38%
Total	9.3	300%	100%

3.3.3 Allocation of Revenue Requirements to Cost Components

The next step in the Cost of Service analysis is to allocate revenue requirements to each cost component outlined in Section 3.3.1. Each functional category allocation from Table 3.5 is then reallocated to a rate component. Several of these functional categories are allocated entirely and directly to one rate component. These include the Customer Service and Billing (to the Customer Service rate component), Meter Service, Conservation, Backflow, and Fire Protection (all to the rate component of the same respective name).

The percentages connecting each functional category with a rate component are outlined in Table 3.8. These percentages are then used to distribute the functional category totals from Table 3.5 into the rate components, with results summarized in Table 3.9. Finally, the resulting allocations to each rate component are applied to future year revenue requirements in Table 3.10.

Other functional categories are allocated across several rate components. These bases are as follows:

Pumping, Storage, and Replenishment: These functional categories are designed and maintained to meet Base, Max Day, and Max Hour demands. Pump stations and storage tanks and reservoirs must be sized to meet peak hour demands across the system. The replenishment charges are assessed because the District must pay for groundwater recharge to offset its groundwater extractions. This groundwater recharge is driven by peak demand users requiring the District to expand its water source of supply and fund recharge operations. Such facilities are sized in order to accommodate high water users that place peak demand on the water system. Pump stations and storage reservoirs for instance are directly driven by max hour demands periods. The District must size these facilities to maintain pressure and supply during max hour periods. Max hour periods typically occur during morning or early evening hours. When these periods are combined with max month periods, such as July when irrigation needs are often greatest, the "stacking" of max periods results in a higher overall system capacity needed. This is directly driven by high demand users. If users stayed within their Tiers 1 and 2 allocations, the system could be sized at a smaller capacity. As customers enter Tiers 4 and 5 however, the overall capacity needed to serve all customers increases along with that demand.

Much of the cost to create these facilities is fixed in nature. The capital investment to upsize a storage reservoir is a fixed expense. However, assessing this cost to customers as a fixed charge would not be fair to the customers who maintain low demand. While they are responsible for some level of peaking on the system, a customer who never exceeds Tier 2 contributes far less to max hour demand compared with a customer who never stays below Tier 4. The proportional cost of service assigns a greater share of the capital costs to the Tier 4 customer than to the Tier 2 customer.

This concept is best illustrated by Figure 3.1. This figure shows how system capacity must be built to meet peak demand periods, which often far exceed base demand. Outside of these peak demand periods however, much of that system capacity is unnecessary. Nonetheless, the District must build capacity to meet those peak periods.

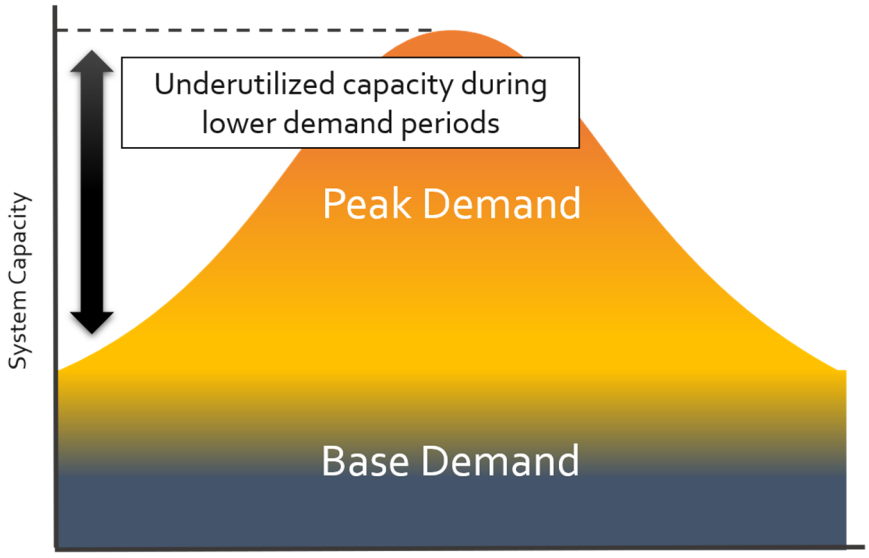


Figure 3.1 Conceptual Diagram of System Capacity for Peak Demand

Therefore, these three functional categories are allocated to Base, Max Day, and Max Hour according to the factors outlined in Table 3.7.

Transmission: Similar to the Pumping and Storage functional categories, Transmission is sized in large part to meet Max Day and Max Hour needs. However, because Transmission includes smaller diameter distribution lines in this analysis, as well as large transmission lines, a portion of these costs have been allocated to a Local Distribution rate component. This reflects the fact that local distribution lines are sized to meet the capacity reservations of the immediate service area. 10 percent of Transmission related costs are allocated to this rate component, in line with the percentage of the District's share of smaller service lines in the local distribution system (pipelines under 6-inches in diameter).

The remainder of costs in the Transmission functional category are allocated based on the factors in Table 3.7.

Treatment and Source of Supply: Treatment and Source of Supply primarily meet Base followed by Max Day demands. These categories do not typically fall into the Max Hour category because water production (which in this case includes groundwater pumping and any associated treatment) generally takes place long before the demand for that water occurs. Groundwater is pumped, treated, and then enters the distribution system or storage reservoirs, but the production takes place before those peak periods.

Table 3.8 Allocation Basis for Functionalized Costs to Rate Components

Functional Category	Rate Component Allocation								
	Customer Service	Meter Service	Local Distribution	Base	Max Day	Max Hour	Conservation	Backflow	Fire Protection
Pumping	-	-	-	33%	28%	38%	-	-	-
Treatment	-	-	-	54%	46%	-	-	-	-
Storage	-	-	-	33%	28%	38%	-	-	-
Transmission	-	-	10%	30%	25%	35%	-	-	-
Customer Service	100%	-	-	-	-	-	-	-	-
Billing	100%	-	-	-	-	-	-	-	-
Meter Costs	-	100%	-	-	-	-	-	-	-
Source of Supply	-	-	-	54%	46%	-	-	-	-
Replenishment	-	-	-	33%	28%	38%	-	-	-
Backflow	-	-	-	-	-	-	-	100%	-
Conservation	-	-	-	-	-	-	100%	-	-
Fire Protection	-	-	-	-	-	-	-	-	100%

Table 3.9 Allocation of Test Year Revenue Requirements to Rate Components

Functional Category	Rate Component Allocation									Total [2]
	Customer	Meters	Local Distribution	Base	Max Day	Max Hour	Conservation	Backflow	Fire Protection	
Pumping	$-	$-	$-	$1.9	$1.6	$2.2	$-	$-	$-	$5.8
Treatment	$-	$-	$-	$1.4	$1.2	$-	$-	$-	$-	$2.6
Storage	$-	$-	$-	$1.0	$0.9	$1.2	$-	$-	$-	$3.1
Transmission	$-	$-	$1.5	$4.4	$3.8	$5.1	$-	$-	$-	$14.8
Customer Service	$5.2	$-	$-	$-	$-	$-	$-	$-	$-	$5.2
Billing	$6.5	$-	$-	$-	$-	$-	$-	$-	$-	$6.5
Meter Costs	$-	$3.5	$-	$-	$-	$-	$-	$-	$-	$3.5
Source of Supply	$-	$-	$-	$10.1	$8.6	$-	$-	$-	$-	$18.7
Replenishment	$-	$-	$-	$4.5	$3.9	$5.2	$-	$-	$-	$13.6
Backflow	$-	$-	$-	$-	$-	$-	$-	$1.2	$-	$1.2
Conservation	$-	$-	$-	$-	$-	$-	$4.6	$-	$-	$4.6
Fire Protection	$-	$-	$-	$-	$-	$-	$-	$-	$1.8	$1.8
Total	$11.7	$3.5	$1.5	$23.5	$19.9	$13.8	$4.6	$1.2	$1.8	$81.5

Notes:
(1) All figures shown in millions of dollars.
(2) From Table 3.5.

Table 3.10 Allocation of Future Revenue Requirements to Rate Components

Rate Component	Allocation (2)	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Customer	14%	$11.7	$12.5	$14.2	$15.6	$16.8
Meter Services	4%	$3.5	$3.7	$4.2	$4.6	$5.0
Local Distribution	2%	$1.5	$1.6	$1.8	$2.0	$2.1
Base	29%	$23.5	$25.1	$28.4	$31.3	$33.7
Max Day	24%	$19.9	$21.3	$24.0	$26.5	$28.6
Max Hour	17%	$13.8	$14.8	$16.7	$18.4	$19.8
Conservation	6%	$4.6	$4.9	$5.6	$6.1	$6.6
Backflow	2%	$1.3	$1.3	$1.5	$1.7	$1.8
Fire Protection	2%	$1.8	$2.0	$2.2	$2.5	$2.7
Total		$81.5	$87.2	$98.5	$108.5	$117.1

Notes:
(1) All figures shown in millions of dollars.
(2) Based on the Total from Table 3.9.

3.4 Customer Class and Tier Allocations

With the revenue requirements first allocated to the functional categories and then allocated to rate components, the rate components must finally be allocated to each individual customer class or tier on a fair and equitable basis before rates are calculated.

For some rate components, there is no differentiation between customer classes. On the fixed monthly charge, Customer Service and Meter Service are provided equally across customer classes. All customers receive the benefit of Customer Service and Billing equally, regardless of customer class. Meter Service is allocated based on meter size, again regardless of customer class. These rate components are converted to unit costs and then to a portion of the monthly fixed charge in the next section of the Report.

3.4.1 Allocation to Customer Classes

3.4.1.1 Allocation of Local Distribution to Customer Classes

The Local Distribution rate component is allocated to each customer class based on their portion of Max Day capacity. This is calculated using a multi-step process:

1. From billing records, gather the Average Month Demand (AMD) for each customer class and calculate the ADD.
2. From billing records, gather the MMD for each class.
3. Determine the ratio of MMD to AMD (MMD / AMD ratio) for each class.
4. Determine the systemwide ratio of MDD to MMD (MDD / MMD ratio). [7]
5. Calculate the MDD by multiplying the ADD by the systemwide MDD / MMD ratio and the class specific MMD / AMD ratio.
6. Subtract the ADD from the MDD to calculate the Max Day Capacity needed for each class.

[7] The District's MMD was August 2017, with metered demand of 3,436 MG, equating to 113.0 MGD. The District reported its MDD for 2016, 2017, and 2019 (2018 was not available for the Study), giving an average of 136.7 MGD. This yields an MDD/MMD ratio of 1.21.

7. Calculate the percentage share for each class.

Table 3.11 Calculation of Max Day Customer Class Allocation

Class	AMD	ADD	MMD	MMD/AMD Ratio	MDD / MMD Ratio	MDD (2)	MDD Extra Capacity	
							MGD (3)	% of Total
Single Family	1,747	57.4	2,517	1.44	1.74	100.2	42.7	51%
Multi-Family	228	7.5	286	1.26	1.52	11.4	3.9	5%
Commercial	216	7.1	300	1.39	1.68	11.9	4.8	6%
Landscape	783	25.8	1,443	1.84	2.23	57.4	31.7	38%
Total	2,974	97.8	4,547	1.53	1.53	180.9	83.1	100%

Notes:
(1) All figures shown in thousand gallons unless otherwise noted.
(2) Max Day Demand = Systemwide MMD/MDD Ratio multiplied by average daily demand during Max Month.
(3) MDD minus ADD.

The percentages are then used to allocate Local Distribution for each year, as shown in Table 3.12.

Table 3.12 Allocation of Local Distribution Rate Component to Classes

	Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Single Family	51%	$0.8	$0.8	$0.9	$1.0	$1.1
Multi-Family	5%	$0.1	$0.1	$0.1	$0.1	$0.1
Commercial	6%	$0.1	$0.1	$0.1	$0.1	$0.1
Landscape	38%	$0.6	$0.6	$0.7	$0.8	$0.8
Total (2)		$1.5	$1.6	$1.8	$2.0	$2.1

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 3.10.

3.4.1.2 Allocation of Fire Protection

The Fire Protection rate component is broadly split into two pieces: public fire protection, which covers all of the fire hydrants and other fire flow infrastructure that all properties subject to water rates customers benefit from; and private fire protection, for sprinkler systems and other direct connection fire flow customers.

These costs are allocated based on MEU. Fire flow requirements occupy a portion of system capacity. Therefore, each customer is allocated these costs in accordance with the capacity reserved by their meter.

There is a two-step process to this allocation:

1. First, determine what percentage of MEU are related to private fire protection (measured by private fire meters) versus public fire protection (measured by fire hydrants, which have a 6-inch service line).
2. Then, allocate the remainder to each customer class based on that class's share of MEU.

Both steps use the meter ratios shown in Table 2.1.

The District provided a detailed breakdown of private fire meters and the number of public fire hydrants. Approximately 11 percent of fire protection needs are related to private fire meters, on a MEU basis. The breakdown by service line size is shown in Table 3.13.

The remaining 89 percent of Fire Protection rate component costs are allocated based on the MEU shares shown in Table 2.3. This final allocation to both private fire and the other customer classes is shown in Table 3.14.

Table 3.13 Private and Public Fire Protection MEU Share

Service Line Size	Fire Protection	Public Hydrants
2-inch	16	-
3-inch	46	-
4-inch	563	-
6-inch	660	17,327
8-inch	523	-
10-inch	125	-
12-inch	1	-
Total Connections	1,934	17,327
Total MEU	71,635	577,567
Percent Share	11%	89%

Table 3.14 Allocation of Fire Protection Capacity Rate Component to Classes

	Allocation	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Single Family	69%	$1.3	$1.4	$1.5	$1.7	$1.8
Multi-Family	5%	$0.1	$0.1	$0.1	$0.1	$0.1
Commercial	7%	$0.1	$0.1	$0.2	$0.2	$0.2
Landscape	8%	$0.1	$0.2	$0.2	$0.2	$0.2
Private Fire	11%	$0.2	$0.2	$0.2	$0.3	$0.3
Total [2]	**100%**	$1.8	$2.0	$2.2	$2.5	$2.6

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 3.10.

3.4.2 Allocation to Tiers

The District's commodity rates do not differentiate between customer classes. Instead, the rate components that make up the commodity rates—Base, Max Day, Max Hour, and Conservation—are allocated to each tier, weighted based on systemwide peak profiles that correspond to the cost of building excess capacity that remains unused much of the time.

To allocate these costs to each tier, each unit of water sold is weighted based on at which tier rate it's sold, using a weighting factor that is specific to the rate component.

For the Base rate component, the weighting factor is one because all units of water benefit from the base capacity costs. Max Day, Max Hour, and Conservation are weighted based on systemwide demand ratios, which are as follows:

- Min Month / Average Month: the ratio of the systemwide minimum month to the average demand month. This is intended to replicate the sub-Base level of usage if all customers remained in Tier 1.
- Average / Average: this is set at one to reflect a scenario where demand is constant throughout the year, month, or day with no peak periods. The District has designed its system to assume that Tiers 1 and 2 provide sufficient water for Base level usage with some seasonal trends. The Average / Average reflects this.
- Max Month / Average Month: this is modeled after the seasonal peaks that the District's customers exhibit. The hotter, dryer summer months typically require increased irrigation. Often this exceeds the Base design capacities assumed in Tiers 1 and 2, and Tier 3 is thus weighted to account for this above-Base usage.
- Max Day / Average Day: after moving above the seasonal peak allocated to Tier 3, Tier 4 reflects the peak associated with Max Day demand. Usage in Tier 4 builds upon the seasonal peak established in Tier 3, contributing to the peak demand capacity found during the annual Max Day demand.
- Max Hour / Average Hour: finally, tier 5 is weighted based on the ratio of the system's annual peak hour demand to the average hour. This is the highest peak scenario that the District must plan for.

The systemwide factors are shown in Table 3.15.

Table 3.15 Systemwide Demand Conditions

Demand Condition	Million Gallons	Ratio to Average (1)
Average Month Demand (2)	2,252.00	1.00
Average Day Demand (3)	74.03	1.00
Minimum Month Demand (4)	1,248.00	0.55
Maximum Month Demand (5)	3,436.00	1.53
Maximum Day Demand (6)	136.70	1.85
Maximum Hour Demand (7)	222.00	3.00

Notes:
(1) Ratios are calculated based on the average for that time scale, e.g. Max Day / Average Day, Max Month / Average Month, etc.
(2) Based on average systemwide demand for FY 2016 through FY 2020.
(3) Based on Average Month Demand converted to a daily basis.
(4) February 2017 was the lowest demand month over last five years.
(5) August 2017 was the highest demand month over last five years.
(6) Based on the average of Max Day Demand for available years, including 131.9 MG (2016), 143.6 (2017), and 134.6 (2019).
(7) Based on staff estimate of Max Hour Demand.

Because essentially all customers peak in some way, regardless of how much or how little usage they exhibit, Max Day is allocated to all five tiers. Max Hour is allocated to Tiers 3, 4, and 5 because usage within Tiers 1 and 2 contribute a negligible amount to this peak scenario. The weighting factor for each tier is shown in Table 3.16.

Table 3.16 Tier Weighting Basis and Factors

Tier	Weighting Basis	Weighting Factor [1]
Tier 1	Min Month / Avg Month	0.55
Tier 2	Average Day Demand	1.00
Tier 3	Max Month / Avg Month	1.53
Tier 4	Max Day Ratio	1.85
Tier 5	Max Hour Ratio	3.00

Note:
(1) From Table 3.15.

Each tier's usage is then weighted based on those weighting factors, as shown in Table 3.17.

Table 3.17 Weighted Usage by Tier

Tier	Base [1]	Max Day [2]	Max Hour [2]	Conservation [2]
Tier 1	9.41	5.21	–	–
Tier 2	19.93	19.93	–	–
Tier 3	5.53	8.44	8.44	8.44
Tier 4	1.66	3.06	3.06	3.06
Tier 5	0.59	1.76	1.76	1.76
Total	37.11	38.39	13.25	13.25

Note:
(1) Unweighted tier usage as shown in Table 2.5.
(2) Usage from Table 2.5 multiplied by the weighting factor in Table 3.15.

Finally, each tier is allocated the costs for each rate component based on its share of the weighted usage in that rate component. These results are shown in Table 3.18.

Table 3.18 Share of Costs Allocated to Each Tier

Tier	Base	Max Day	Max Hour	Conservation
Tier 1	25%	14%	–	–
Tier 2	54%	52%	–	–
Tier 3	15%	22%	64%	64%
Tier 4	4%	8%	23%	23%
Tier 5	2%	5%	13%	13%

Note:
(1) Calculated as percent of total for each rate component total in Table 3.17.

3.4.2.1 Allocation of Base

Table 3.19 outlines the five-year revenue requirements per tier for Base.

Table 3.19 Allocation of Base Rate Component to Tiers

Tier	Allocation [2]	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	25%	$5.9	$6.4	$7.2	$7.9	$8.5
Tier 2	54%	$12.6	$13.5	$15.2	$16.8	$18.0
Tier 3	15%	$3.5	$3.7	$4.2	$4.7	$5.0
Tier 4	4%	$1.0	$1.1	$1.3	$1.4	$1.5
Tier 5	2%	$0.4	$0.4	$0.4	$0.5	$0.5
Total [3]	**100%**	$23.5	$25.1	$28.3	$31.2	$33.6

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 3.18.
(3) From Table 3.10.

3.4.2.2 Allocation of Max Day

Table 3.20 outlines the five-year revenue requirements per tier for Max Day.

Table 3.20 Allocation of Max Day Rate Component to Tiers

Tier	Allocation [2]	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	14%	$2.7	$2.9	$3.3	$3.6	$3.9
Tier 2	52%	$10.3	$11.0	$12.5	$13.7	$14.8
Tier 3	22%	$4.4	$4.7	$5.3	$5.8	$6.3
Tier 4	8%	$1.6	$1.7	$1.9	$2.1	$2.3
Tier 5	5%	$0.9	$1.0	$1.1	$1.2	$1.3
Total [3]	**100%**	$19.9	$21.2	$24.0	$26.4	$28.4

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 3.18.
(3) From Table 3.10.

3.4.2.3 Allocation of Max Hour

Table 3.21 outlines the five-year revenue requirements per tier for Max Hour.

Table 3.21 Allocation of Max Hour Rate Component to Tiers

Tier	Allocation [2]	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-
Tier 3	64%	$8.8	$9.4	$10.6	$11.7	$12.6
Tier 4	23%	$3.2	$3.4	$3.8	$4.2	$4.6
Tier 5	13%	$1.8	$2.0	$2.2	$2.4	$2.6
Total [3]	**100%**	$13.8	$14.7	$16.6	$18.3	$19.7

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 3.18.
(3) From Table 3.10.

3.4.2.4 Allocation of Conservation

Table 3.22 outlines the five-year revenue requirements per tier for Conservation. These costs are related to the Water Management division within the Communication department, which assists customers through rebate programs, educational programs, and irrigating practice assistance. The division also assists in billing by setting and then performing quality control analysis for budget based tiered rates. The division assists customers in a variety of ways, contributing to the customer service allocation. The vast majority of this division's resources are focused on high-volume users. As such, these costs are allocated to Tiers 3 through 5.

Table 3.22 Allocation of Conservation Rate Component to Tiers

Tier	Allocation [2]	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	-	-	-	-	-	-
Tier 2	-	-	-	-	-	-
Tier 3	64%	$2.9	$3.1	$3.5	$3.9	$4.2
Tier 4	23%	$1.1	$1.1	$1.3	$1.4	$1.5
Tier 5	13%	$0.6	$0.7	$0.7	$0.8	$0.9
Total [3]	**100%**	$4.6	$4.9	$5.6	$6.1	$6.6

Notes:
(1) All figures shown in millions of dollars unless otherwise noted.
(2) From Table 3.18.
(3) From Table 3.10.

Section 4

RATE DESIGN AND CALCULATION

The District's Domestic water rates are composed of two pieces:

- A monthly fixed service charge that all customers pay, based on their meter size. Water usage does not determine this charge.
- A commodity usage charge, based on a function of how much water the customer consumes, the customer's individual water budget for that month, and lastly, the tiered rates.

4.1 Monthly Fixed Service Charge

The monthly fixed service charge is calculated with the following formula:

$$\begin{aligned} &Fixed\ Service\ Charge \\ &\quad = Customer\ Service\ Flat\ Charge \\ &\quad + Number\ of\ MEUs\ \times\ (Per\ MEU\ Meter\ Service\ Charge \\ &\quad + Per\ MEU\ Public\ Fire\ Protection\ Charge + Per\ MEU\ Local\ Distribution\ Charge) \end{aligned}$$

4.1.1 Monthly Fixed Service Charge Rate Components

4.1.1.1 Customer Service and Billing

The Customer Service and Billing rate component is the same for all customers, regardless of usage, meter size, or customer class. All customers benefit from this category equally. The calculation then is simply the result of the total allocated costs divided by the total number of bills projected for each year, as shown in Table 4.1.

Table 4.1 Calculation of Customer Service and Billing Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Total Allocated Costs [1]	$11.5m	$12.3m	$13.9m	$15.3m	$16.5m
Projected Number of Bills [2]	1,293,213	1,299,679	1,306,177	1,312,708	1,319,272
Unit Cost ($/month/bill) [3]	$8.90	$9.47	$10.63	$11.66	$12.48

Notes:
(1) From Table 3.10.
(2) From Table 2.2.
(3) Allocated Costs divided by Projected Bills. Results may not foot due to rounding to nearest $0.01.

4.1.1.2 Meter Services and Public Fire

The Meter Services and Public Fire rate components are all allocated to customers based on their meter size, specifically the number of MEU associated with that meter size. The MEU ratios for each meter size are shown in Table 2.1 for reference. The calculation of the per MEU charge is shown in Table 4.2.

Table 4.2 Calculation of Meter Services Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Total Allocated Costs (1)	$3.1m	$3.3m	$3.7m	$4.1m	$4.4m
Projected Total Annual MEU (2)	1,525,034	1,532,659	1,540,323	1,548,024	1,555,764
Unit Cost ($/month/MEU) (3)	$2.02	$2.15	$4.84	$5.30	$5.68

Notes:
(1) From Table 3.10.
(2) From Table 2.3.
(3) Allocated Costs divided by Projected MEU. Results may not foot due to rounding to nearest $0.01 for individual Public Fire components.

Table 4.3 Calculation of Public Fire Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Total Allocated Costs (1)	$1.6m	$1.8m	$2.0m	$2.2m	$2.4m
Projected Total Annual MEU (2)	1,525,034	1,532,659	1,540,323	1,548,024	1,555,764
Unit Cost ($/month/MEU) (3)	$1.08	$1.15	$1.29	$1.42	$1.52

Notes:
(1) From Table 3.10.
(2) From Table 2.3.
(3) Allocated Costs divided by Projected MEU. Results may not foot due to rounding to nearest $0.01 for individual Public Fire components.

4.1.1.3 Local Distribution

The Local Distribution rate component was allocated to each individual customer class in Table 3.12, based on each class's share of Max Day capacity. The calculation of the Local Distribution unit rate for each customer class is outlined in the following sections.

Single Family

Table 4.4 Single Family Local Distribution Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Allocated Local Distribution Costs (1)	$761k	$814k	$919k	$1,013k	$1,090k
Projected Total Annual MEU (2)	1,177,731	1,183,620	1,189,538	1,195,486	1,201,463
Unit Cost ($/month/MEU) (3)	$0.65	$0.69	$0.78	$0.85	$0.91

Notes:
(1) From Table 3.12.
(2) From Table 2.3.
(3) Allocated Costs divided by Projected MEU. Results may not foot due to rounding to nearest $0.01.

Multi-Family

Table 4.5 Multi-Family Local Distribution Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Allocated Local Distribution Costs (1)	$70k	$74k	$84k	$93k	$100k
Projected Total Annual MEU (2)	89,521	89,968	90,418	90,870	91,325
Unit Cost ($/month/MEU) (3)	$0.78	$0.83	$0.94	$1.02	$1.10

Notes:
(1) From Table 3.12.
(2) From Table 2.3.
(3) Allocated Costs divided by Projected MEU. Results may not foot due to rounding to nearest $0.01.

Commercial

Table 4.6 Commercial Local Distribution Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Allocated Local Distribution Costs (1)	$86k	$92k	$104k	$115k	$123k
Projected Total Annual MEU (2)	121,628	122,236	122,848	123,462	124,079
Unit Cost ($/month/MEU) (3)	$0.71	$0.76	$0.85	$0.93	$1.00

Notes:
(1) From Table 3.12.
(2) From Table 2.3.
(3) Allocated Costs divided by Projected MEU. Results may not foot due to rounding to nearest $0.01.

Landscape

Table 4.7 Landscape Local Distribution Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Allocated Local Distribution Costs (1)	$565k	$604k	$682k	$751k	$809k
Projected Total Annual MEU (2)	136,154	136,834	137,519	138,206	138,897
Unit Cost ($/month/MEU) (3)	$4.15	$4.42	$4.96	$5.44	$5.83

Notes:
(1) From Table 3.12.
(2) From Table 2.3.
(3) Allocated Costs divided by Projected MEU. Results may not foot due to rounding to nearest $0.01.

4.1.2 Monthly Fixed Service Charges by Class

For each class, there are two tables in the following section:

- The calculation of the monthly fixed service charge for FY 2022 by combining the rate components.
- The five-year rate schedule for the total monthly fixed service charge.

Single Family

Table 4.8 Calculation of Single Family Monthly Fixed Service Charges for FY 2022

Meter Size	MEU Ratio (1)	Customer Service & Billing (2)	Meter Services (3)	Public Fire (4)	Local Distribution (5)	Total
3/4-inch	1.0	$8.90	$2.02	$1.08	$0.65	$12.65
1-inch	1.7	$8.90	$3.37	$1.80	$1.08	$15.15
1 1/2-inch	3.3	$8.90	$6.73	$3.60	$2.17	$21.40
2-inch	5.3	$8.90	$10.77	$5.76	$3.47	$28.90
3-inch	10.0	$8.90	$20.20	$10.80	$6.50	$46.40
4-inch	16.7	$8.90	$33.67	$18.00	$10.83	$71.40

Notes:
(1) From Table 2.1.
(2) From Table 4.1.
(3) From Table 4.2. Multiplied by MEU Ratio.
(4) From Table 4.3. Multiplied by MEU Ratio.
(5) From Table 4.4. Multiplied by MEU Ratio.

Table 4.9 Current and Proposed Single Family Monthly Fixed Service Charges

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$7.92	$12.65	$13.46	$15.12	$16.58	$17.75
1-inch	$13.18	$15.15	$16.12	$18.11	$19.86	$21.26
1 1/2-inch	$26.36	$21.40	$22.77	$25.60	$28.06	$30.05
2-inch	$42.19	$28.90	$30.75	$34.58	$37.90	$40.59
3-inch	$79.06	$46.40	$49.37	$55.53	$60.86	$65.18
4-inch	$131.77	$71.40	$75.97	$85.46	$93.66	$100.31

Multi-Family

Table 4.10 Calculation of Multi-Family Monthly Fixed Service Charges for FY 2022

Meter Size	MEU Ratio (1)	Customer Service & Billing (2)	Meter Services (3)	Public Fire (4)	Local Distribution (5)	Total
3/4-inch	1.0	$8.90	$2.02	$1.08	$0.78	$12.78
1-inch	1.7	$8.90	$3.37	$1.80	$1.30	$15.37
1 1/2-inch	3.3	$8.90	$6.73	$3.60	$2.60	$21.83
2-inch	5.3	$8.90	$10.77	$5.76	$4.16	$29.59
3-inch	10.0	$8.90	$20.20	$10.80	$7.80	$47.70
4-inch	16.7	$8.90	$33.67	$18.00	$13.00	$73.57

Notes:
(1) From Table 2.1.
(2) From Table 4.1.
(3) From Table 4.2. Multiplied by MEU Ratio.
(4) From Table 4.3. Multiplied by MEU Ratio.
(5) From Table 4.4. Multiplied by MEU Ratio.

Table 4.11 Current and Proposed Multi-Family Monthly Fixed Service Charges

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$9.05	$12.78	$13.60	$15.28	$16.75	$17.94
1-inch	$15.07	$15.37	$16.35	$18.38	$20.14	$21.58
1 1/2-inch	$30.21	$21.83	$23.24	$26.13	$28.63	$30.68
2-inch	$48.30	$29.59	$31.50	$35.43	$38.81	$41.60
3-inch	$90.56	$47.70	$50.77	$57.13	$62.56	$67.08
4-inch	$150.90	$73.57	$78.30	$88.13	$96.49	$103.48

Commercial

Table 4.12 Calculation of Commercial Monthly Fixed Service Charges for FY 2022

Meter Size	MEU Ratio (1)	Customer Service & Billing (2)	Meter Services (3)	Public Fire (4)	Local Distribution (5)	Total
3/4-inch	1.0	$8.90	$2.02	$1.08	$0.71	$12.71
1-inch	1.7	$8.90	$3.37	$1.80	$1.18	$15.25
1 1/2-inch	3.3	$8.90	$6.73	$3.60	$2.37	$21.60
2-inch	5.3	$8.90	$10.77	$5.76	$3.79	$29.22
3-inch	10.0	$8.90	$20.20	$10.80	$7.10	$47.00
4-inch	16.7	$8.90	$33.67	$18.00	$11.83	$72.40

Notes:
(1) From Table 2.1.
(2) From Table 4.1.
(3) From Table 4.2. Multiplied by MEU Ratio.
(4) From Table 4.3. Multiplied by MEU Ratio.
(5) From Table 4.4. Multiplied by MEU Ratio.

Table 4.13 Current and Proposed Commercial Monthly Fixed Service Charges

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$5.68	$12.71	$13.53	$15.19	$16.66	$17.84
1-inch	$9.46	$15.25	$16.24	$18.23	$19.99	$21.41
1 1/2-inch	$18.93	$21.60	$23.00	$25.83	$28.33	$30.35
2-inch	$30.27	$29.22	$31.12	$34.95	$38.33	$41.07
3-inch	$56.70	$47.00	$50.07	$56.23	$61.66	$66.08
4-inch	$94.55	$72.40	$77.14	$86.63	$94.99	$101.81

Landscape

Table 4.14 Calculation of Landscape Monthly Fixed Service Charges for FY 2022

Meter Size	MEU Ratio (1)	Customer Service & Billing (2)	Meter Services (3)	Public Fire (4)	Local Distribution (5)	Total
3/4-inch	1.0	$8.90	$2.02	$1.08	$4.15	$16.15
1-inch	1.7	$8.90	$3.37	$1.80	$6.92	$20.98
1 1/2-inch	3.3	$8.90	$6.73	$3.60	$13.83	$33.07
2-inch	5.3	$8.90	$10.77	$5.76	$22.13	$47.57
3-inch	10.0	$8.90	$20.20	$10.80	$41.50	$81.40
4-inch	16.7	$8.90	$33.67	$18.00	$69.17	$129.73

Notes:
(1) From Table 2.1.
(2) From Table 4.1.
(3) From Table 4.2. Multiplied by MEU Ratio.
(4) From Table 4.3. Multiplied by MEU Ratio.
(5) From Table 4.4. Multiplied by MEU Ratio.

Table 4.15 Current and Proposed Landscape Monthly Fixed Service Charges

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	$19.63	$16.15	$17.19	$19.30	$21.17	$22.67
1-inch	$32.74	$20.98	$22.34	$25.08	$27.51	$29.46
1 1/2-inch	$65.46	$33.07	$35.20	$39.53	$43.36	$46.45
2-inch	$104.79	$47.57	$50.64	$56.87	$62.38	$66.83
3-inch	$196.46	$81.40	$86.67	$97.33	$106.76	$114.38
4-inch	$327.39	$129.73	$138.14	$155.13	$170.16	$182.31

4.2 Commodity Tiered Rates

The commodity rates are calculated based on the unit rates for the Base, Max Day, Max Hour, and Conservation rate components. For Base, all units have the same unit rate. Max Day, Max, Hour, and Conservation have different unit rates at each tier. The tiered rate is the sum of those four rate components. For reference, the projected water sales by tier are shown in

Table 4.16. The allocations to each tier shown in the previous section will be divided by the respective sales within a tier.

Table 4.16 Projected Water Sales Volumes by Tier

Tier	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	9.3	9.3	9.4	9.4	9.5
Tier 2	19.6	19.7	19.8	19.9	20.0
Tier 3	5.5	5.5	5.5	5.5	5.6
Tier 4	1.6	1.6	1.6	1.7	1.7
Tier 5	0.6	0.6	0.6	0.6	0.6
Total	36.6	36.7	36.9	37.1	37.3

Note:
(1) All figures shown in millions of units sold. One unit of water equals one CCF.

4.2.1 Base Unit Rate

The Base unit rate is constant for all tiers and is calculated by dividing the total allocated costs by the projected total water sales. The five-year Base unit rate is shown in Table 4.17.

Table 4.17 Base Water Unit Rate

	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Allocated Base Costs [1]	$23.7m	$25.0m	$28.2m	$31.2m	$33.6m
Projected Units of Water Sold (ccf) [2]	37.1m	37.3m	37.5m	37.7m	37.9m
Base Rate ($/ccf) [3]	$0.642	$0.683	$0.767	$0.841	$0.901

Notes:
(1) From Table 3.10.
(2) From Table 4.16.
(3) Allocated Costs divided by Projected Units Sold. Results may not foot due to rounding to nearest $0.01 for individual Meter Service and Public Fire components.

4.2.2 Max Day Unit Rate per Tier

The Max Day unit rate differs for each tier and is calculated by dividing the total allocated costs for each tier (from Table 3.20) by the projected water sales within that respective tier. The five-year unit rate is shown in Table 4.18.

Table 4.18 Max Day Unit Rate

Class	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	$0.291	$0.310	$0.348	$0.381	$0.408
Tier 2	$0.525	$0.559	$0.628	$0.688	$0.737
Tier 3	$0.801	$0.853	$0.958	$1.050	$1.125
Tier 4	$0.969	$1.032	$1.159	$1.271	$1.361
Tier 5	$1.575	$1.676	$1.883	$2.064	$2.211

Note:
(1) Allocated Costs from Table 3.20 divided by Projected Units Sold from Table 4.16.

4.2.3 Max Hour Unit Rate per Tier

The Max Day unit rate differs for each tier and is calculated by dividing the total allocated costs for each tier (from Table 3.21) by the projected water sales within that respective tier. The five-year unit rate is shown in Table 4.19.

Table 4.19 Max Hour Unit Rate

Class	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	$-	$-	$-	$-	$-
Tier 2	$-	$-	$-	$-	$-
Tier 3	$1.609	$1.713	$1.924	$2.109	$2.259
Tier 4	$1.948	$2.073	$2.329	$2.553	$2.734
Tier 5	$3.164	$3.368	$3.784	$4.147	$4.442

Note:
(1) Allocated Costs from Table 3.20 divided by Projected Units Sold from Table 4.16.

4.2.4 Conservation Unit Rate per Tier

Table 4.20 Conservation Unit Rate

Class	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	$-	$-	$-	$-	$-
Tier 2	$-	$-	$-	$-	$-
Tier 3	$0.537	$0.572	$0.643	$0.704	$0.754
Tier 4	$0.650	$0.692	$0.778	$0.852	$0.913
Tier 5	$1.057	$1.125	$1.263	$1.385	$1.483

Note:
(1) Allocated Costs from Table 3.20 divided by Projected Units Sold from Table 4.16.

4.2.5 Final Tiered Rates

The final tiered rates for FY 2022, which combine the Base unit rate for all tiers with the tier-specific Max Day, Max Hour, and Conservation unit rates, are shown in Table 4.21.

This calculation is repeated for each year, as shown in the five-year proposed rate schedule outlined in

Table 4.22.

Table 4.21 Calculation of Tiered Rates

Tier	Base [1]	Max Day [2]	Max Hour [3]	Conservation [4]	Total [5]
Tier 1	$0.642	$0.291	$-	$-	$0.94
Tier 2	$0.642	$0.525	$-	$-	$1.17
Tier 3	$0.642	$0.801	$1.609	$0.537	$3.59
Tier 4	$0.642	$0.969	$1.948	$0.650	$4.21
Tier 5	$0.642	$1.575	$3.164	$1.057	$6.44

Notes:
(1) From Table 4.17.
(2) From Table 4.18.
(3) From Table 4.19.
(4) From Table 4.20.
(5) Sum of Base, Max Day, Max Hour, and Conservation. Results have been rounded up to the nearest $0.01.

Table 4.22 Proposed Tiered Rates

Class	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Tier 1	$0.98	$0.94	$1.00	$1.12	$1.23	$1.31
Tier 2	$1.37	$1.17	$1.25	$1.40	$1.53	$1.64
Tier 3	$2.55	$3.59	$3.83	$4.30	$4.71	$5.04
Tier 4	$4.83	$4.21	$4.48	$5.04	$5.52	$5.91
Tier 5	$6.34	$6.44	$6.86	$7.70	$8.44	$9.04

Appendix A

CURRENT AND PROJECTED CUSTOMER CLASS BILLING PROFILES

Current and Projected Bills by Customer Class

Table 1A Current and Projected Single Family Annual Bills

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	1,079,867	1,085,267	1,090,693	1,096,147	1,101,627	1,107,135
1-inch	45,108	45,334	45,561	45,788	46,017	46,247
1 1/2-inch	4,436	4,458	4,481	4,503	4,525	4,548
2-inch	382	384	386	388	390	392
3-inch	–	–	–	–	–	–
4-inch	–	–	–	–	–	–

Table 2A Current and Projected Multi-Family Annual Bills

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	15,347	15,424	15,501	15,579	15,657	15,735
1-inch	14,954	15,029	15,104	15,180	15,256	15,332
1 1/2-inch	6,068	6,099	6,129	6,160	6,190	6,221
2-inch	5,019	5,044	5,069	5,095	5,120	5,146
3-inch	60	61	61	61	62	62
4-inch	72	73	73	73	74	74

Table 3A Current and Projected Commercial Annual Bills

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	28,930	29,075	29,220	29,366	29,513	29,660
1-inch	11,681	11,740	11,798	11,857	11,916	11,976
1 1/2-inch	8,129	8,170	8,211	8,252	8,293	8,335
2-inch	7,894	7,934	7,973	8,013	8,053	8,094
3-inch	72	73	73	73	74	74
4-inch	–	–	–	–	–	–

Table 4A Current and Projected Landscape Annual Bills

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	25,323	25,450	25,577	25,705	25,833	25,962
1-inch	9,590	9,638	9,686	9,734	9,783	9,832
1 1/2-inch	16,471	16,553	16,636	16,719	16,803	16,887
2-inch	7,257	7,293	7,330	7,367	7,403	7,440
3-inch	56	57	57	57	57	58
4-inch	–	–	–	–	–	–

Current and Projected MEUs by Customer Class

Table 5A Current and Projected Single Family Annual MEUs

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	1,079,867	1,085,267	1,090,693	1,096,147	1,101,627	1,107,135
1-inch	75,181	75,557	75,934	76,314	76,696	77,079
1 1/2-inch	14,787	14,861	14,935	15,010	15,085	15,160
2-inch	2,037	2,047	2,057	2,068	2,078	2,088
3-inch	–	–	–	–	–	–
4-inch	–	–	–	–	–	–

Table 6A Current and Projected Multi-Family Annual MEUs

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	15,347	15,424	15,501	15,579	15,657	15,735
1-inch	24,924	25,049	25,174	25,300	25,426	25,553
1 1/2-inch	20,227	20,328	20,430	20,532	20,635	20,738
2-inch	26,768	26,902	27,036	27,171	27,307	27,444
3-inch	603	606	609	612	615	618
4-inch	1,206	1,212	1,218	1,224	1,230	1,236

Table 7A Current and Projected Commercial Annual MEUs

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	28,930	29,075	29,220	29,366	29,513	29,660
1-inch	19,469	19,566	19,664	19,762	19,861	19,960
1 1/2-inch	27,098	27,234	27,370	27,507	27,644	27,782
2-inch	42,103	42,313	42,525	42,738	42,951	43,166
3-inch	724	727	731	735	738	742
4-inch	–	–	–	–	–	–

Table 8A Current and Projected Landscape Annual MEUs

Meter Size	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
3/4-inch	25,323	25,450	25,577	25,705	25,833	25,962
1-inch	15,983	16,063	16,143	16,224	16,305	16,386
1 1/2-inch	54,903	55,178	55,454	55,731	56,009	56,290
2-inch	38,705	38,898	39,093	39,288	39,484	39,682
3-inch	563	566	568	571	574	577
4-inch	–	–	–	–	–	–

Appendix B

DETAILED FUNCTIONALIZATION OF OPERATING COSTS

The functionalization of operating costs was presented in Table 3.1. That table summarizes the detailed cost center allocation that was performed as part of the Study. Costs were functionalized in one of two ways:

- Some costs were allocated directly in part or in whole to one or more functions, such as source of supply, pumping, customer service, etc.
- Other costs were allocated to a general "As All Others" category. These cost centers were then reallocated based on the subtotal of cost centers that could be allocated to specific functions. These cost centers were allocated to As All Others either because sufficient data was unavailable or more commonly because the cost center benefitted all functions in proportion to how the rest of the system is allocated. For instance, the General Manager's time is typically spread in proportion to how all of the other divisions spend their time and resources. As such, it was allocated to As All Others.

The next two tables present the detailed functionalization of cost center:

- Table 1B outlines the basis and data used behind functionalization of all cost centers that were allocated in part or in whole to a category. If a cost center was allocated to As All Others, it is not included in this table.
- Table 2B outlines the functionalization of each of the District's cost centers.

The FY 2021 budget was used as the test year for functionalizing costs. It is important to point out that the total of Table 2B does not match the projected operating expenses in Table 2.10. That is because the detailed budget data necessary for this functionalization was not yet ready based on the updated budget used in Table 2.10. However, the results of the functionalization are still valid because the budget updates were proportional to what was used in the functionalization process.

Table 1B Cost Functionalization Basis

Department	Division	Functionalization Basis
Administration	General Manager – Colorado River	This line item relates to the GM's time spent addressing issues surrounding the Colorado River supply, which is categorized as a source of supply related item.
Communications	Communications / Legislation	This cost center serves the entire district and the entire domestic water service; therefore costs were allocated across the fund.
Communications	Water Management	This cost center was allocated based on the share of services provided. Water Management assists customers through rebate programs, educational programs, and irrigating practice assistance. The division also assists in billing by setting and then performing quality control analysis for budget based tiered rates. The division assists customers in a variety of ways, contributing to the customer service allocation.
Engineering	Administration	The percent allocations are based on the hours spent processing letters, requests for proposals, specifications and answering phone calls for the specific categories listed (pumping, treatment, storage, transmission, and customer service).
Engineering	Electric Energy	The percent allocations are based on the hours spent reviewing plans and specifications for the specific categories listed (pumping, treatment, and storage)
Engineering	Domestic Water	The percent allocations are based on the hours spent preparing letters, requests for proposals, specifications and attending meetings/answering phone calls for the specific categories listed (pumping, treatment, storage, transmission, and customer service).
Engineering	Right of Way	The percent allocations are based on the hours spent providing right-of-way assistance and support for the specific categories listed (pumping, storage, transmission, and customer service).
Engineering	Survey	The percent allocations are based on the hours spent providing survey services for the specific categories listed (pumping, storage, transmission, and customer service).
Engineering	Development Services	The percent allocations are based on the hours spent providing customer service and meter processing support for the specific categories listed (meter costs and customer service).
Engineering	Inspection	The percent allocations are based on the hours spent providing inspection services for the specific categories listed (pumping, treatment, storage, transmission, and customer service).
Environmental Services	Administration	Allocated based on the weighted average of estimated allocations provided for the remaining divisions.
Environmental Services	Environmental	Estimated allocations are based on: 1) Anticipated number and type of projects in each domestic category, both existing and planned environmental compliance; 2) Contracted project costs; 3) Type and level of effort involved with each project (permitting, monitoring, reporting, environmental review); 4) Cumulative staff effort; 5) Staff wages

Department	Division	Functionalization Basis
Environmental Services	Water Resource	This division typically works exclusively on source of supply.
Environmental Services	Monitoring	Allocation was estimated based on the number of staff days typically allocated annually to each of the functional areas of Domestic monitoring.
Environmental Services	Water Quality	Allocation was estimated based on a review of expense allocation for the Domestic program and estimated functional breakdown developed by evaluating frequency of permitting, compliance reporting, and consumer responses.
Environmental Services	Laboratory	Allocation was estimated based on the number of analyses performed for each of the functions.
Facilities & Maintenance	All Divisions	The Facilities and Maintenance Department has recently completed a comprehensive preventative maintenance plan. Operations and Maintenance work activity is defined as follows: • Preventative Maintenance / Recurring – Preventive maintenance refers to regular, routine maintenance to help keep equipment up and running, preventing any unplanned downtime and expensive costs from unanticipated equipment failure. It requires careful planning and scheduling of maintenance on equipment before there is an actual problem as well as keeping accurate records of past inspections and servicing reports. • Corrective Maintenance / Non-Recurring – Corrective maintenance is maintenance which is carried out after failure detection and is aimed at restoring an asset to a condition in which it can perform its intended function. • Emergency Reactive Maintenance / Non-Recurring – Emergency maintenance is maintenance required when an asset or piece of equipment suffers an unexpected breakdown or change in condition that results in an immediate threat to health and safety. The Facilities and Maintenance Department utilizes a comprehensive work order system that includes all work request information: source of work, description of work, priority, cost to complete, days to complete, and hours to perform. This information is required for CVWD to plan for the delivery of maintenance services as well as evaluate performance. To obtain the greatest effectiveness from the work order system, all work requests and activities performed by maintenance staff must be recorded on work orders. A comprehensive list of all maintenance activity has been catalogued and categorized by activity, division, facility, frequency, and hours to determine the full-time equivalent productivity per maintenance task. Facilities include, the canal, boosters, reservoirs, wells, IXTP treatment plants, lift stations, and water reclamations plants, for example. CVWD staff members were able to use this data to determine the hours spent at Domestic sites (facilities) to determine the percentages.

Department	Division	Functionalization Basis
Operations	All Divisions	Operational activities were catalogued for each Domestic Division that categorizes tasks, hours, and quantity by facility/asset. The data was derived from a combination of SunGard UOP reports, financial reports, and institutional knowledge of scheduling and completing jobs. Management staff used this data to determine the hours spent by division at facilities (defined by COSS using industry best practices definitions) to determine the percentages.
Service	Meter Reading	The primary task completed by the Meter Reading division is the monthly reading of all domestic water meters. However, meter reading will also complete work orders at domestic accounts to satisfy customer requests or inquiries. In reviewing the work orders and job-related tasks performed by the different meter reading classifications within Meter Reading, it was determined that 90% of expenses should be allocated to billing and 10% to customer service (see attached spreadsheet). The 10% allocation to customer service represents staff's time and effort to address customer requests and complaints – this includes time to complete work orders or communicate directly with customers on the phone or in the field.

Table B2 Functionalization of FY 2021 Operating Expense Line Items

Department	Division	Pumping	Treatment	Storage	Transmission	Customer Service	Billing	Meter Costs	Source of Supply	Replenishment	Backflow	Conservation	Fire Protection	As All Others	Total
Administration	General Manager	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$518	$518
Administration	General Manager – Colorado River	$-	$-	$-	$-	$-	$-	$-	$-	$120	$-	$-	$-	$-	$120
Administration	Reprographics	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$39	$39
Administration	Records Management	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$249	$249
Business Technology	Information Services	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$2,434	$2,434
Communications	Communications / Legislation	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$1,523	$1,523
Communications	Water Management	$-	$-	$-	$-	$687	$687	$-	$-	$-	$-	$4,259	$-	$-	$5,632
Engineering	Administration	$76	$38	$95	$133	$38	$-	$-	$-	$-	$-	$-	$-	$-	$380
Engineering	Electric Energy	$36	$18	$18	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$71
Engineering	Domestic Water	$398	$199	$497	$696	$199	$-	$-	$-	$-	$-	$-	$-	$-	$1,989
Engineering Services	Right of Way	$7	$-	$7	$25	$32	$-	$-	$-	$-	$-	$-	$-	$-	$71
Engineering Services	Survey	$14	$-	$8	$55	$8	$-	$-	$-	$-	$-	$-	$-	$-	$85
Engineering Services	CAD/GIS	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$471	$471
Engineering	Development Services	$-	$-	$-	$-	$324	$-	$91	$-	$-	$-	$-	$-	$-	$416
Engineering	Inspection	$69	$17	$69	$232	$43	$-	$-	$-	$-	$-	$-	$-	$-	$430
Environmental Services	Administration	$9	$19	$19	$65	$7	$-	$-	$114	$-	$-	$-	$-	$-	$232
Environmental Services	Environmental	$25	$13	$63	$63	$-	$-	$-	$88	$-	$-	$-	$-	$-	$251
Environmental Services	Water Resource	$-	$-	$-	$-	$-	$-	$-	$975	$-	$-	$-	$-	$-	$975
Environmental Services	Monitoring	$-	$15	$15	$120	$15	$-	$-	$135	$-	$-	$-	$-	$-	$299
Environmental Services	Water Quality	$74	$74	$74	$185	$74	$-	$-	$260	$-	$-	$-	$-	$-	$742
Environmental Services	Laboratory	$-	$85	$-	$211	$-	$-	$-	$127	$-	$-	$-	$-	$-	$423
Finance	Administration	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$374	$374
Finance	Financial Accounting	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$1,092	$1,092
Finance	Purchasing	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$211	$211
Finance	Warehouse	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$450	$450
Finance	Non-Departmental	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$13	$13
Human Resources	Administration	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$2,328	$2,328
Human Resources	Safety	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$392	$392
Business Technology	Claims	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$599	$599
Business Technology	Risk Management	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$737	$737

Department	Division	Pumping	Treatment	Storage	Transmission	Customer Service	Billing	Meter Costs	Source of Supply	Replenishment	Backflow	Conservation	Fire Protection	As All Others	Total
Legislative	Board of Directors	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$68	$68
Legislative	Board Secretary	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$406	$406
Operations	Administration	$-	$-	$-	$-	$-	$0	$-	$-	$-	$-	$0	$-	$471	$471
Operations	Emergency Response	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$30	$30
Operations	Operations Control	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$614	$614
Operations	Non-Potable Water Admin	$-	$-	$-	$-	$-	$-	$-	$-	$-	$22	$-	$-	$51	$73
Operations	Production	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$276	$276
Operations	Construction	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$273	$273
Operations	Non -Potable Water	$-	$-	$-	$-	$-	$-	$-	$-	$-	$99	$-	$-	$-	$99
Operations	Domestic Production Administration	$89	$824	$51	$101	$101	$-	$-	$101	$-	$-	$-	$-	$-	$1,267
Operations	Utilities	$1,620	$-	$-	$-	$-	$-	$-	$7,910	$-	$-	$-	$-	$-	$9,530
Operations	Replenishment Charges	$-	$-	$-	$-	$-	$-	$-	$-	$12,520	$-	$-	$-	$-	$12,520
Operations	Date Palm	$221	$166	$110	$110	$110	$-	$-	$386	$-	$-	$-	$-	$-	$1,104
Operations	Valley	$461	$230	$154	$77	$154	$-	$-	$461	$-	$-	$-	$-	$-	$1,535
Operations	Leak Repair	$-	$-	$-	$1,083	$-	$-	$-	$-	$-	$-	$-	$-	$-	$1,083
Operations	Service Installation	$-	$-	$-	$1,046	$-	$-	$46	$-	$-	$57	$-	$-	$-	$1,149
Operations	La Quinta	$155	$466	$155	$78	$155	$-	$-	$544	$-	$-	$-	$-	$-	$1,553
Operations	Backflow	$-	$-	$-	$-	$-	$-	$97	$-	$-	$870	$-	$-	$-	$966
Operations	Meter Repair	$-	$-	$-	$-	$-	$-	$2,506	$-	$-	$-	$-	$-	$-	$2,506
Operations	Metering Systems Administration	$24	$-	$-	$43	$-	$-	$84	$-	$-	$64	$-	$-	$-	$214
Operations	West Shores	$151	$76	$151	$1,013	$45	$-	$-	$76	$-	$-	$-	$-	$-	$1,512
Operations	Facility/Leak Detection	$-	$-	$-	$634	$405	$-	$-	$-	$-	$-	$-	$-	$-	$1,039
Operations	System Maintenance	$-	$-	$-	$826	$-	$-	$-	$-	$-	$-	$-	$-	$-	$826
Operations	Maintenance Admin	$-	$-	$18	$326	$-	$-	$-	$-	$-	$-	$-	$115	$-	$459
Operations	Valve Repair	$-	$-	$-	$836	$-	$-	$-	$-	$-	$-	$-	$-	$-	$836
Operations	Hydrant Maintenance	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$-	$987	$-	$987
Operations	Domestic Maintenance	$190	$-	$14	$815	$-	$-	$-	$339	$-	$-	$-	$-	$-	$1,358
Operations	Pressure Control Devices/Air Vac	$-	$-	$-	$783	$-	$-	$-	$138	$-	$-	$-	$-	$-	$921
Operations	Construction Admin	$-	$-	$-	$157	$20	$-	$2	$-	$-	$2	$-	$22	$-	$203
Operations	Construction	$-	$-	$-	$705	$-	$-	$-	$-	$-	$-	$-	$577	$-	$1,282

Department	Division	Pumping	Treatment	Storage	Transmission	Customer Service	Billing	Meter Costs	Source of Supply	Replenishment	Backflow	Conservation	Fire Protection	As All Others	Total
Operations	Domestic Emergency Response Crew	$-	$-	$-	$281	$-	$-	$-	$-	$-	$-	$-	$-	$-	$281
Service	Administration	$-	$-	$-	$-	$300	$300	$-	$-	$-	$-	$-	$-	$-	$599
Service	Customer Service Administration	$-	$-	$-	$-	$1,793	$-	$-	$-	$-	$-	$-	$-	$-	$1,793
Service	Meter Readers Administration	$-	$-	$-	$-	$290	$2,606	$-	$-	$-	$-	$-	$-	$-	$2,896
Service	Customer Accounting	$-	$-	$-	$-	$-	$2,466	$-	$-	$-	$-	$-	$-	$-	$2,466
Facilities & Maintenance	Admin	$86	$5	$66	$5	$25	$-	$-	$314	$-	$-	$5	$-	$-	$507
Facilities & Maintenance	Buildings & Grounds	$130	$6	$84	$6	$-	$-	$-	$415	$-	$-	$6	$-	$-	$648
Facilities & Maintenance	Building Maintenance (Admin)	$45	$-	$8	$-	$-	$-	$-	$227	$-	$-	$-	$-	$-	$281
Facilities & Maintenance	Carpentry	$150	$-	$28	$-	$-	$-	$-	$758	$-	$-	$-	$-	$-	$936
Facilities & Maintenance	Welding	$-	$-	$-	$-	$-	$-	$-	$406	$-	$-	$-	$-	$-	$406
Facilities & Maintenance	Facilities Maintenance (Admin)	$56	$-	$60	$-	$-	$-	$-	$255	$-	$-	$4	$-	$-	$375
Facilities & Maintenance	Facilities Maintenance	$61	$-	$65	$-	$-	$-	$-	$275	$-	$-	$4	$-	$-	$405
Facilities & Maintenance	Electrical (Admin)	$133	$-	$38	$-	$-	$-	$-	$210	$-	$-	$-	$-	$-	$381
Facilities & Maintenance	Electricians	$582	$-	$166	$-	$-	$-	$-	$915	$-	$-	$-	$-	$-	$1,664
Facilities & Maintenance	Pump Maintenance	$87	$-	$-	$-	$-	$-	$-	$779	$-	$-	$-	$-	$-	$865
Facilities & Maintenance	A/C Maintenance	$56	$-	$-	$-	$-	$-	$-	$81	$-	$-	$-	$-	$-	$137
Facilities & Maintenance	Electronics (Admin)	$61	$16	$103	$19	$-	$-	$-	$122	$-	$-	$-	$-	$-	$321
Facilities & Maintenance	Electronics Technicians	$170	$45	$287	$54	$-	$-	$-	$340	$-	$-	$-	$-	$-	$895
Facilities & Maintenance	Stormwater and Drainage (Admin)	$11	$-	$-	$-	$-	$-	$-	$11	$-	$-	$-	$-	$-	$23
Facilities & Maintenance	Stormwater and Drainage	$0	$-	$-	$-	$-	$-	$-	$0	$-	$-	$-	$-	$-	$0
Facilities & Maintenance	Zanjeros Admin	$-	$-	$-	$-	$-	$-	$-	$1	$-	$-	$-	$-	$-	$1
Facilities & Maintenance	Zanjeros	$-	$-	$-	$-	$-	$-	$-	$2	$-	$-	$-	$-	$-	$2
Subtotal Operating Expenses		$5,247	$2,310	$2,422	$10,783	$4,826	$6,059	$2,826	$16,766	$12,640	$1,114	$4,278	$1,702	**$13,620**	**$84,594**
Reallocation of As All Others		$1,007	$443	$465	$2,069	$926	$1,163	$542	$3,217	$2,425	$214	$821	$327	**$(13,620)**	$-
Total Operating Expenses		$6,254	$2,753	$2,887	$12,852	$5,752	$7,222	$3,368	$19,983	$15,065	$1,328	$5,100	$2,028	**$-**	**$84,594**
Allocation Basis		7.4%	3.3%	3.4%	15.2%	6.8%	8.5%	4.0%	23.6%	17.8%	1.6%	6.0%	2.4%		

Note:
(1) All figures in thousands of dollars.