

# DRAFT REPORT



## South Tahoe Public Utility District *Comprehensive Water Rate Study*

April 2024



April 25, 2024

Mr. Paul Hughes  
General Manager  
South Tahoe Public Utility District  
1275 Meadow Crest Drive  
South Lake Tahoe, California 96150

**Subject: Draft Comprehensive Water Rate Study Report**

Dear Mr. Hughes:

HDR Engineering, Inc. (HDR) is pleased to present the draft report for the comprehensive water rate study conducted for the South Tahoe Public Utility District (District). A key objective in developing the District's comprehensive water rate study was to develop a financial plan and rates that generate adequate revenues to fund the operating and capital needs of the water utility. The study also focused on the development of proposed rates that are cost-based and proportional to the District's customers by conducting a cost of service analysis. This report outlines the approach, methodology, findings, and conclusions of the comprehensive water rate study.

This report was developed utilizing the District's accounting, operating, and customer records. HDR has relied on this information to develop our analyses that form our findings, conclusions and recommendations. At the same time, this study was developed utilizing generally accepted rate setting principles, and methodologies as outlined by the American Water Works Association. The conclusions and recommendations contained within this report are intended to provide a financial plan that meets the operating and capital needs of the utility while providing the basis for developing and implementing rates that are cost-based and proportional to the District's customers.

We appreciate the assistance provided by District staff in the development of this study. More importantly, we appreciate the opportunity to work with the District's staff, management, and Board of Directors on this project.

Sincerely,  
HDR Engineering, Inc.

Shawn Koorn  
Associate Vice President



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# Executive Summary

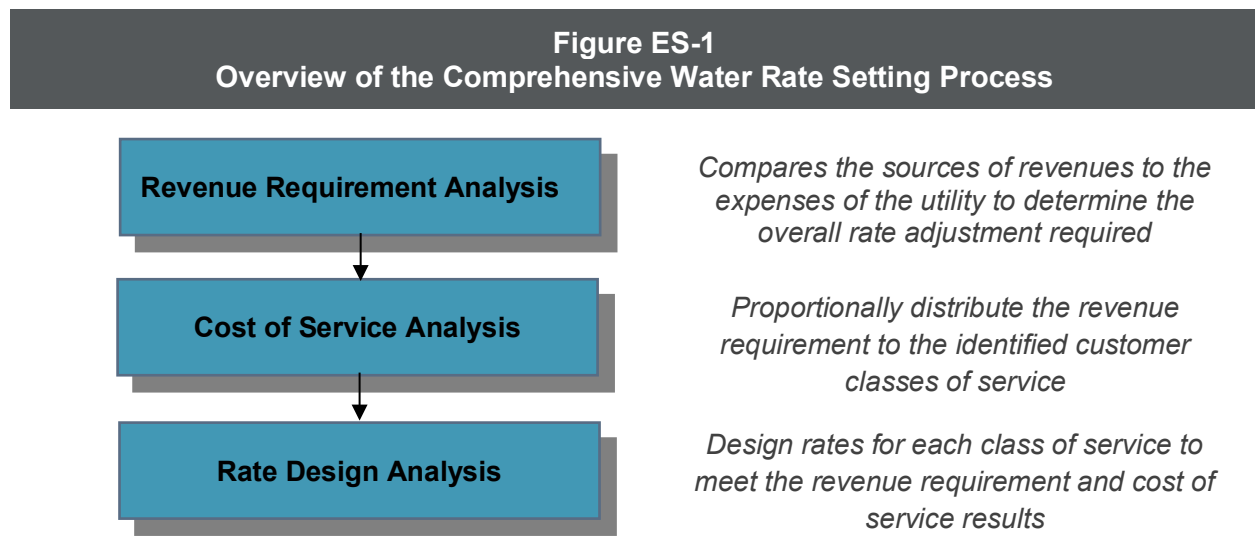
The South Tahoe Public Utility District (District) retained HDR Engineering, Inc. (HDR) to perform a comprehensive rate study for its water utility. A comprehensive rate study determines the adequacy of the existing water rates and provides the basis to maintain cost-based and proportional rates. This report will describe the methodology, findings, and conclusions and recommendations from the comprehensive water rate study undertaken for the District. The main objectives of the study were to:

- Review the District’s previously adopted water rates.
- Develop a financial plan (revenue requirement) for projecting operating and capital costs for the water utility for planning purposes.
- Provide the framework and methodology, based on generally accepted industry best practices, for the development of cost-based and proportional water rates.
- Adopt rates through the Proposition 218 process that adequately fund the Districts operational and capital expenses over the study time period.

The Districts System has approximately 250 miles of water lines 1,900 fire hydrants and treats on average approximately 5 million gallons a day. The District is located in the Tahoe basin and borders the California and Nevada state line serving approximately 14,000 customers in the City of South Lake Tahoe and the surrounding communities of Cascade Lakes, Luther Pass, and Echo Lake. The District owns, operates, and maintains, the supply, treatment, transmission, and distribution systems that serve these customers.

## Overview of the Rate Study Process

This comprehensive rate study consists of three interrelated analyses performed for the Water utility. Figure 1-1 provides an overview of these analyses.



A revenue requirement analysis is a comparison of the overall revenues and expenses, both operating and capital, of the utility. From this analysis, a determination can be made as to the overall level of adjustment necessary to rate revenues to meet annual needs. Next, a cost of service analysis is performed to proportionally distribute the revenue requirement to the identified customer classes of service (e.g., single-family, multi-family, commercial) for the study. Finally, once an overall level of revenue adjustment is determined and a proportional distribution of those costs, the last step of the rate study process is the design of rates to collect the appropriate level of revenues while considering other rate design goals and objectives of the utility (e.g., revenue stability, cost-based, continuity in philosophy) as developed as part of the cost of service analysis.

## Key Water Rate Study Results

- A revenue requirement analysis was developed for the projected time period of FY 2025 through FY 2033 for the water utility.
- The Department's FY 2024 adopted water utility budget was used as the starting point of the analysis along with the current capital improvement plan.
- Operation and maintenance (O&M) expenses are projected to increase at inflationary levels with no assumed changes to levels of service or anticipated extraordinary expenses.
- A cost of service analysis was developed to review the proportionality of the existing rates and to proportionately distribute the revenue requirement to the District's water utility customer classes of service and customers within each class.
- The results of the cost of service analyses provided the unit costs (i.e., cost basis) which were used to establish the proposed water rates.
- The study has developed proposed rates for the FY 2025 – FY 2029 time period, by customer class of service.
- The proposed water rate revenue adjustments average 9.5% annually from FY 2025 through FY 2029, effective July 1 of each year.

## Summary of the Revenue Requirement Analysis

A revenue requirement analysis is the first analytical step in the comprehensive water rate study process. This analysis determines the adequacy of the current rates to fund annual operating expenses and capital improvement needs. From this analysis, a determination can be made as to the overall level of water rate revenue adjustments needed to provide prudent funding for the District's water system.

As a practical matter, a multi-year time frame is recommended in an attempt to identify and plan for major expenses that may be on the horizon. By anticipating future financial requirements, the District can begin planning for these changes sooner, thereby minimizing short-term rate impacts while also stabilizing long-term rates. For the District's study, a ten-year projected time period was developed (FY 2024 – FY 2033) with a focus on the next 5-year period (FY 2025 – FY 2029) for rate setting purposes.

For the revenue requirement analysis a "cash basis" approach was utilized. The cash basis approach is the most commonly methodology used by municipal and special purpose district utilities to set their revenue requirement and is the approach utilized by the District in past water rate studies. In its most basic form, it is composed of O&M expenses, taxes / transfer payments, annual

debt service payments, and rate funded capital projects. The inputs for the District's revenue requirement analysis were the District's adopted water utility budget, recent and historical billed customer data, and the water capital improvement plan. Budgeted O&M expenses were projected using inflationary factors for the District's various expenses to provide water supply, treatment, transmission, and distribution services.

A capital funding plan is developed as part of the revenue requirement which serves as one of the inputs to the revenue requirement and establishes how the District's water utility capital projects will be funded. The proper and adequate funding of capital projects is important to help maintain existing facilities, provide consistent levels of service and minimize rate impacts over time. A general financial guideline is that, at a minimum, a utility should fund an amount equal to or greater than annual depreciation expense through current rate revenue (Rate Funded Capital). Annual depreciation expense reflects the current investment in plant being depreciated or "losing" its useful life. Therefore, this portion of plant investment needs to be replaced or repaired to maintain the existing level of infrastructure (and service levels). However, it must be kept in mind that, in theory, annual depreciation expense reflects an investment in infrastructure that was placed in service an average of 15 years ago, assuming a 30-year useful (i.e., depreciable life). It is important to note and understand that depreciation expense is not the same as replacement cost. Thus, a Rate Funded Capital component amount which exceeds the water utility's share of depreciation expense is reasonable and appropriate target to aspire to as the utility becomes more fiscally sound. In developing this financial plan, HDR and the District have attempted to minimize rate impacts while funding the planned capital improvement projects.

HDR and District staff worked with the District Board to review various capital improvement needs and the resulting funding scenarios for each. These included various levels of renewal and replacement funding and prioritization of specific system improvements. Based on these discussions with the Board, the final capital improvement funding plan was developed. In developing this financial plan, HDR and the District have attempted to minimize rate impacts while funding the planned capital improvement projects through a mix of long-term borrowing and rate funding. Provided in Table ES-1 is a summary of the proposed capital improvement funding plan.

**Table ES-1  
Overview of the Water Capital Improvement Plan (000's)**

	Budget	Projected								
	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
<b>Capital Plan Costs</b>										
Capitalized Engineering	\$2,177	\$2,318	\$2,382	\$2,447	\$2,515	\$2,584	\$2,656	\$2,729	\$2,805	\$2,883
Debt Service	941	1,454	1,551	1,577	2,043	2,457	2,660	2,249	2,306	2,366
Capital Improvement Projects	16,500	9,260	9,964	17,196	15,785	15,289	14,006	14,658	15,952	12,379
Capital Reserve Funding	0	2,897	525	146	4,963	2,760	0	893	0	1,634
<b>Total Capital Investment</b>	<b>\$19,619</b>	<b>\$15,928</b>	<b>\$14,422</b>	<b>\$21,367</b>	<b>\$25,306</b>	<b>\$23,089</b>	<b>\$19,322</b>	<b>\$20,529</b>	<b>\$21,063</b>	<b>\$19,262</b>
<b>Capital Plan Funding</b>										
Capital Reserve	\$1,962	\$0	\$0	\$0	\$0	\$0	\$1,895	\$0	\$3,245	\$0
Capacity/Connection Fees	354	354	354	354	354	354	354	354	354	354
Debt Proceeds	8,321	5,800	5,585	8,183	10,542	7,499	1,503	3,058	0	0
Capital Funded from Rates	8,982	9,774	8,483	12,830	14,410	15,236	15,570	17,117	17,464	18,908
<b>Total Capital Funding</b>	<b>\$19,619</b>	<b>\$15,928</b>	<b>\$14,422</b>	<b>\$21,367</b>	<b>\$25,306</b>	<b>\$23,089</b>	<b>\$19,322</b>	<b>\$20,529</b>	<b>\$21,063</b>	<b>\$19,262</b>



The District's capital funding plan includes, three funding sources, revenue collected from the current year's rates (Rate Funded Capital), reserve funds, and debt. The District's financial plan has two line items that would be considered rate funded capital, capital improvement charge, which is a specific distribution from rates for capital projects, as well as another component that accounts for the remaining amount, capital funded from rates. For this analysis the capital charge was rolled up into the capital funded from rates component. As a point of reference, the District's annual depreciation for the water assets is approximately \$4.3 million. As can be seen in Table ES-1, the District's funding approach exceeds the minimum funding level of annual depreciation expense. However, this is a critical funding source for maintaining infrastructure and should be reviewed and updated on an annual basis during the budgeting process.

As noted, the revenue requirement is comprised of O&M expenses, transfers/taxes, annual debt service payments, and rate funded capital. As outlined above, the O&M expenses were based on the most recent adopted budget for the District, in this case FY 2024. Future year projections from 2025 through 2033 were based on historical inflationary factors and known changes in costs. Transfers were made to the capital fund to meet future capital improvement funding in combination with projected long-term borrowing. Annual debt service payments, both principal and interest for existing water utility debt, were funded annually based on the amortization schedules, along with District developed projections for future long-term borrowing. Finally, rate funded capital was developed to meet future capital funding needs and industry standard approaches.

These components are summed to develop the total revenue requirement for the District's water utility. The results of the revenue requirement are presented in Table ES-2 and provide the basis for future revenue adjustments to meet operating and capital funding needs.

**Table ES-2  
Summary of the Revenue Requirement Analysis (000's)**

	Budget	Projected								
	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
<b>Sources of Funds</b>										
Rates	\$15,344	\$15,342	\$15,356	\$15,371	\$15,386	\$15,402	\$15,414	\$15,436	\$15,459	\$15,482
Other Revenues	<u>7,186</u>	<u>8,330</u>	<u>7,021</u>	<u>6,288</u>	<u>6,852</u>	<u>7,413</u>	<u>7,705</u>	<u>8,897</u>	<u>8,176</u>	<u>8,387</u>
<b>Total Sources of Funds</b>	<b>\$22,530</b>	<b>\$23,672</b>	<b>\$22,377</b>	<b>\$21,659</b>	<b>\$22,238</b>	<b>\$22,815</b>	<b>\$23,120</b>	<b>\$23,333</b>	<b>\$23,635</b>	<b>\$23,868</b>
<b>Applications of Funds</b>										
Operations & Maintenance Expenses	\$12,523	\$14,942	\$14,772	\$13,810	\$14,157	\$14,514	\$14,880	\$15,255	\$15,640	\$16,035
Rate Funded Capital:	8,982	9,774	8,483	12,830	14,410	15,236	15,570	17,117	17,464	18,908
Debt Service	1,376	1,930	2,138	2,260	3,155	4,076	4,427	3,951	3,951	3,951
To / (From) Reserves	<u>(350)</u>	<u>(1,517)</u>	<u>(1,551)</u>	<u>(1,577)</u>	<u>(2,043)</u>	<u>(2,457)</u>	<u>(2,660)</u>	<u>(2,249)</u>	<u>(2,306)</u>	<u>(2,366)</u>
<b>Total Revenue Requirement</b>	<b>\$22,530</b>	<b>\$25,129</b>	<b>\$23,841</b>	<b>\$27,323</b>	<b>\$29,678</b>	<b>\$31,369</b>	<b>\$32,216</b>	<b>\$34,074</b>	<b>\$34,749</b>	<b>\$36,528</b>
Bal./(Def.) of Funds	\$0	(\$1,457)	(\$1,464)	(\$5,664)	(\$7,440)	(\$8,555)	(\$9,096)	(\$10,741)	(\$11,114)	(\$12,660)
Bal./(Def.) of Funds as % of Rates	0.0%	9.5%	9.5%	36.8%	48.4%	55.5%	59.0%	69.6%	71.9%	81.8%
<b>Proposed Rate Adjustment</b>	<b>0.0%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>

As shown in Table ES-2, current revenues are insufficient to prudently fund the District’s water O&M and capital needs. It is important to note the annual deficiencies in the Table ES-2 are cumulative. That is, any adjustments in the initial years will reduce the deficiency in the later years. Over the projected time period, rates need to be adjusted by approximately 55% over the five-year rate setting period (FY 2024 – FY 2029) in order to adequately and properly fund the District’s water utility O&M and capital infrastructure needs.

Based on the revenue requirement analysis developed, HDR recommends the District increase the overall revenue levels of the water utility. Based on the plan developed in this report, the recommended annual adjustments of 9.5% will provide adequate funding for the time period of FY 2024 FY 2029 based on the assumptions developed as part of the rate study. Revenue adjustments after the proposed five-year period will be based on an updated analysis and O&M and capital needs at that time.

### Summary of the Cost of Service Analysis

A cost of service analysis determines the proportional distribution of the revenue requirement to the District’s water customer classes of service. The objective of the cost of service analysis is different from determining the revenue requirement. A cost of service analysis determines the proportional manner to collect the revenue requirement based on each customer class’s characteristics and facility requirements.

For the water utility, there are three customer classes of service (i.e., rate schedules). Based on the cost of service analysis, the revenue requirement for FY 2025 has been proportionally distributed to the District’s customer classes of service. This reflects each customer class’s proportional share of the costs associated with providing water service. The sum of the total distributed costs is compared to the current revenues of each customer class to determine the overall change in rates. A summary of the cost of service analysis is provided in Table ES-3.

Table ES - 3 Summary of the Cost of Service Analysis (\$000)				
Class of Service	Present Revenue (FY 2025)	Distributed Costs	\$ Difference	% Difference
Residential	\$10,078	\$11,123	(\$1,045)	10.4%
Multifamily	2,089	2,262	(173)	8.3%
Commercial	<u>3,175</u>	<u>3,414</u>	<u>(239)</u>	<u>7.5%</u>
Total	\$15,342	\$16,799	(\$1,457)	9.5%

Table ES-3 provides a comparison of the current rate revenues to the distributed costs. The difference between the rate revenues and distributed costs for each class of service represents the variance between the level of revenues currently received from each class of service (e.g., current rates), and the proportional distribution of costs. In viewing these results, it is important to remember that a cost of service analysis is not an exact calculation. Rather, it reflects the current relationships between current customer revenues and current costs. These relationships change over time given

budgetary changes and changes in customer consumption patterns and characteristics. A customer class is generally considered being within a reasonable range of its Cost of Service when the customers cost of service change is within 5% of the overall rate adjustment. However, even though the results of this study are indicating very minor differences in costs, given the requirements of Proposition 218 it is recommended that the cost of service adjustments be implemented for the development of the proposed water rates.

## Summary of the Rate Design Analysis

Rates that meet the utility's objectives are designed based on both the revenue requirement and the cost of service analyses. The purpose of this study is to develop cost-based and proportional rates for the District's customers. It is recommended that rates be reevaluated periodically so that rates are collecting sufficient revenue to properly maintain adequate level of operations and investment in the system to provide future reliable operations and maintain proportionality between the customer classes of service as costs and customer characteristics change.

The overall revenue adjustments were determined in the revenue requirement analysis to calculate the prudent revenue levels necessary to fund operating and capital expenses (e.g., cost basis). How the overall revenue adjustment is applied by class of service takes into consideration the cost of service results to determine how the overall revenue adjustment is collected (proportionality between customers).

Based on the revenue requirement and the cost of service analysis proposed rates were developed for the next five-years. The proposed rates for FY 2025 are based on the results of the cost of service analysis while future years (FY 2026 – FY 2029) were adjusted evenly across all customer classes based on the overall revenue needs identified in the revenue requirement analysis. Table ES-4 provides the current rates and the proposed rates for the next five-years.

**Table ES-4  
Current and Proposed Rates**

	Current	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
<b>Monthly Charge by Meter Size</b>						
5/8" & 3/4"	\$54.97	\$60.12	\$65.83	\$72.08	\$78.93	\$86.43
1"	91.75	100.34	109.87	120.31	131.74	144.25
1 1/2"	183.00	200.13	219.14	239.96	262.76	287.72
2"	292.89	320.31	350.74	384.06	420.54	460.49
3"	549.55	600.99	658.09	720.61	789.06	864.02
4"	916.06	1,001.81	1,096.98	1,201.20	1,315.31	1,440.27
6"	1,831.51	2,002.96	2,193.24	2,401.59	2,629.75	2,879.57
8"	2,930.56	3,204.89	3,509.35	3,842.74	4,207.80	4,607.54
10"	4,213.11	4,607.50	5,045.21	5,524.50	6,049.33	6,624.02
<b>Unmetered Customers</b>						
Single Family	\$69.70	\$75.98	\$83.20	\$91.11	\$99.76	\$109.24
Duplex	115.74	126.17	138.15	151.29	165.66	181.39
Triplex	157.24	171.41	187.69	205.54	225.05	246.43
Four-plex	203.43	221.76	242.83	265.92	291.16	318.83
Additional Multifamily Units (>4)	34.09	37.16	40.69	44.56	48.79	53.43
Commercial	100.92	110.01	120.46	131.92	144.44	158.17
<b>Commodity Charges (\$/CCF)</b>						
<b>Single Family</b>						
0 - 15 CCF	\$1.88	\$2.03	\$2.22	\$2.43	\$2.66	\$2.91
15 + CCF	\$2.87	\$3.02	\$3.31	\$3.63	\$3.97	\$4.35
<b>Multifamily</b>						
All Consumption	\$1.87	\$2.16	\$2.37	\$2.59	\$2.84	\$3.11
<b>Commercial</b>						
All Consumption	\$1.94	\$2.20	\$2.41	\$2.63	\$2.88	\$3.16

## Summary

This completes the summary of the comprehensive rate study completed for the District's water utility. Based on the Board discussion, and results of the comprehensive water rate study, the following recommendations have been developed:

- The revenue requirement analysis showed a deficiency of annual revenues to meet annual operating and capital needs. To maintain the revenue sufficiency of the water utility, proposed annual revenue adjustments of 9.5% are recommended in FY 2025 through FY 2029.
- The cost of service study resulted in minor cost differences between the various customer classes of service. To meet the requirements of Proposition 218, it is recommended that rates be developed based on the cost of service results, for each customer class of service.
- Proposed rates were developed that reflect the overall revenue needs and cost of service results for the next five-year period. It is recommended that the proposed rates be adopted as they reflect the proportional distribution of costs.

A full and complete discussion of the development of the comprehensive water rate study and the proposed rate adjustments can be found in following sections of this report.

# 1 Introduction

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The South Tahoe Public Utility District (District) retained HDR Engineering, Inc. (HDR) to conduct a comprehensive rate study for its water utility. A comprehensive water rate study determines the adequacy of the existing water rates and provides the basis to maintain cost-based and proportional rates. This report describes the methodology, findings, and conclusions of the comprehensive water rate study process undertaken for the District.

The District owns and operates the water supply, treatment, transmission and distribution system in the City of South Lake Tahoe and surrounding communities. In all the District serves approximately 14,000 water customers with the vast majority being residential, or single-family, customers.

This study determined whether existing rates are adequate to meet the utility's operating and capital expenses with revenues received from customers a rates set too low may result in insufficient funds to maintain system integrity. The study also provides the basis for developing proportional rates for the District's customers to meet the requirements set in the California Constitution Article XIII D, commonly referred to as proposition 218. This requires water utilities to established a rate methodology which result in cost based and proportional rates.

This study has been designed and intended to comply with the requirements of Proposition 218. This study has been developed using industry accepted water rate setting methodologies and best practices, as outlined in the American Water Works Association M1 Manual, along with District specific water system and customer data and information.

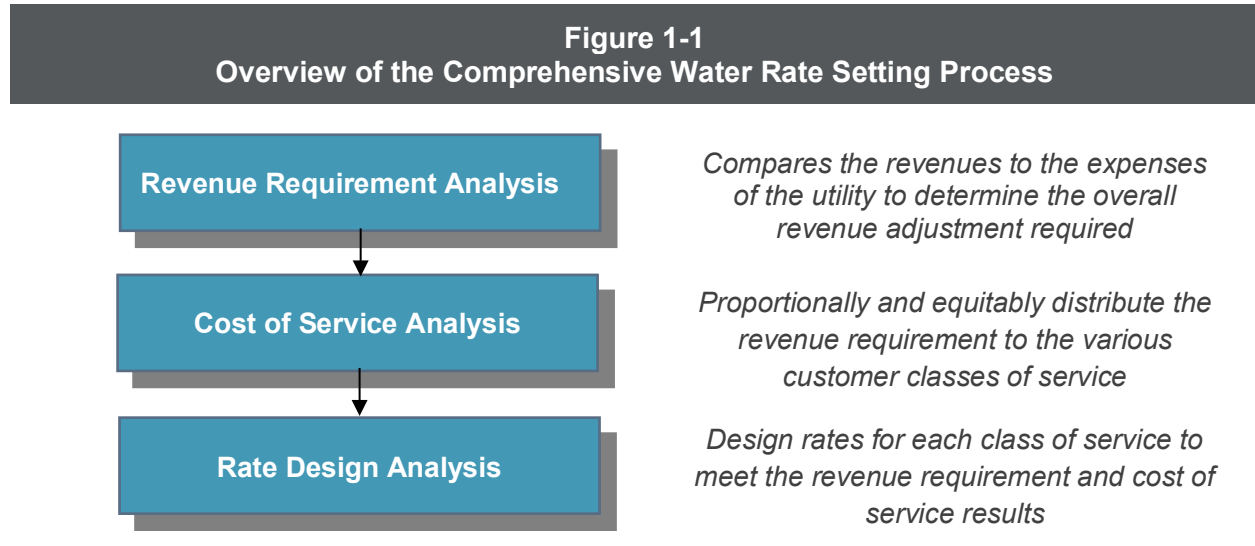
## 1.1 Goals and Objectives

The District had a number of goals and objectives in mind for the comprehensive water rate study. These goals and objectives were discussed with District staff and the District's board to guide the rate study to its conclusion. These goals and objectives were as follows:

- Develop the water study in a manner that is consistent with the principles and methodologies established by the American Water Works Association M1, Principles of Water Rates, Fees and Charges (AWWA M1 Manual).
- Utilize best industry practices, while recognizing and acknowledging the specific and unique characteristics of the District's water system and facilities.
- Review the District's rates utilizing generally accepted rate making methodologies to determine adequacy and proportionality of the water rates.
- Incorporate the District's financial planning criteria and goals, such as debt service coverage ratios, adequate funding of capital infrastructure, and maintenance of prudent reserve levels.
- Develop the proposed financial plan which adequately supports the water utility's funding requirements, while attempting to minimize overall impacts to rates.
- Provide rates designed to meet the requirements of Article XIII D.
- Develop proposed rates that are cost-base, proportional, and reflective of the District's specific costs.

## 1.2 Overview of the Rate Study Process

A comprehensive rate study consists of three interrelated analyses, each which were performed for the District's water rate study. Figure 1-1 provides an overview of these analyses.



A revenue requirement analysis is concerned with the overall sources and expenses of the utility. From this analysis, a determination can be made as to the overall level of adjustment to revenues. Next, a cost of service analysis is performed to proportionally distribute the revenue requirement to the District's customer classes of service (e.g., single-family, multi-family, commercial). Finally, once an overall level of revenue adjustment is determined and a proportional distribution of those costs, the last step of the rate study process is the design of rates to collect the appropriate level of revenues while considering other rate design goals and objectives of the utility (e.g., revenue stability, cost-based, continuity in philosophy) as included within the cost of service analysis. As a part of this study, HDR developed each of these analyses to analyze the District's current water rates which are based on generally accepted cost of service and rate setting techniques.

## 1.3 Report Organization

This report is organized as follows:

- ✓ Section 2 provides background information about the utility rate setting process
- ✓ Section 3 reviews the revenue requirement analysis
- ✓ Section 4 reviews the cost of service analysis
- ✓ Section 5 reviews the rate design analysis

A technical appendices is attached at the end of the report which provides the detailed analysis used in preparation of this report.



## 1.4 Summary

This report will review the comprehensive water rate study prepared for the District. This report has been developed utilizing generally accepted rate setting methodologies as outlined in the AWWA M1 Manual and the District's system and customer operation and characteristics to meet the requirements of Proposition 218. The next section of the report provides an overview of the basic theory and methodology used to establish cost-based rates. This provided the methodological foundation for the development of the District's water rate study.

## 2 Overview of the Rate Setting Process

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### 2.1 Introduction

This section provides background information about the rate setting process, including descriptions of generally accepted principles, types of utilities, methods of determining revenue requirement, cost of service, and rate design. This information is useful for gaining a better understanding of the details presented in Sections 3 through 5.

### 2.2 Generally Accepted Rate Setting Principle

As a practical matter, all utilities should consider setting rates around some generally accepted principles and guidelines. Utility rates should be:

- ✓ Cost-based and proportional, and meets the utility's full revenue requirement
- ✓ Easy to understand and administer
- ✓ Designed to conform with generally accepted rate setting techniques
- ✓ Stable in their ability to provide adequate revenues for meeting the utility's financial, operating, and regulatory requirements
- ✓ Established at a level which is stable from year-to-year from a customer's perspective

### 2.3 Determining the Revenue Requirement

Because public and private utilities have very different administrative and financial characteristics, their methods differ for determining the revenue requirement and setting rates.

#### 2.3.1 Public Utilities

Most public utilities like the District use the "cash basis" approach for establishing their revenue requirement and setting rates. This approach conforms to most public utility budgetary requirements and the calculation is easy to understand. A public utility totals its cash expenditures for a period of time to determine its required revenues. The revenue requirement for a public utility is usually comprised of the following costs or expenses:

- ✓ Total Operating Expenses: This includes a utility's operation and maintenance (O&M) expenses, plus any applicable taxes or transfer payments. Operation and maintenance expenses include the materials, electricity, labor, supplies, etc., needed to keep the utility functioning.
- ✓ Total Capital Expenses: Capital expenses are calculated by adding debt service payments (principal and interest) to capital improvements financed with rate revenues (Rate Funded Capital). In lieu of including capital improvements financed with rate revenues, a utility sometimes includes annual depreciation expense to stabilize the annual revenue requirement.

Under the cash basis approach, the sum of the capital and operating expenses equals the utility’s revenue requirement during any period of time (see Table 2-1). Note that the two portions of the capital expense component, debt service and capital improvements financed from rates, are necessary under the cash basis approach because utilities generally cannot finance all their capital facilities with long-term debt.

An exception may occur if a public utility provides service to a wholesale or contract customer. In this situation, a public utility could use the “utility basis” approach (see below) to earn a fair return on its investment.

Table 2-1 Cash versus Utility Basis Comparison	
Cash Basis	Utility Basis (Accrual)
+ O&M Expense	+ O&M Expense
+ Taxes or Transfer Payments	+ Taxes or Transfer Payments
+ Rate Funded Capital (≥ Depreciation Expense)	+ Annual Depreciation Expense
+ Debt service (Principal + Interest)	+ Return on Investment
= Total Revenue Requirement	= Total Revenue Requirement

## 2.4 Analyzing Cost of Service

After the total revenue requirement is determined, it is allocated to the users of the service. The allocation, as analyzed through a cost of service study, reflects the cost relationships for producing and delivering services. A cost of service study requires three steps:

1. Costs are **functionalized** or grouped into the various cost categories related to providing service (supply, treatment, distribution, pumping, etc.). This step is often largely accomplished by the utility’s chart of accounts within its accounting system.
2. The functionalized costs are then **allocated** to specific cost components. Allocation refers to the arrangement of the functionalized data into cost components. For example, a water utility’s costs are typically allocated as average day, peak day, or customer-related.
3. Once the costs are allocated the appropriate cost component(s), they are **distributed** to the customer classes of service (single-family, multi-family, commercial). The distribution is based on each customer class’s relative, and proportional, contribution to the cost component. For example, customer-related costs are proportionally distributed to each class of service based on the total number of customers in that class of service. Once costs are distributed, the required revenues for achieving cost-based rates can be determined.

## 2.5 Designing Rates

Rates that meet the utility’s objectives are designed based on both the revenue requirement and the cost of service analyses. This approach results in rates that are strictly cost-based. In designing the final proposed rates, factors such as ability to pay, continuity of past rate philosophy, economic

development, ease of administration, and customer understanding may be taken into consideration. However, the proposed rates must take into consideration each customer class's proportionate share of the costs allocated through the cost of service analysis to meet Proposition 218 requirements.

## 2.6 Economic Theory and Rate Setting

One of the major justifications for a comprehensive rate study is founded in economic theory. Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained. This statement's implications on utility rate designs are significant. For example, a water utility usually incurs capacity-related costs to meet summer outdoor watering needs. It follows that the customers who create excessive demands on the system and create the need for upsizing of the distribution system should pay for those over-sized facilities in proportion to their contribution to total system demand requirements. When costing and pricing techniques are refined, consumers have a more accurate understanding of what the commodity costs to produce and deliver.

***“Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained.”***

## 2.7 Summary

This section of the report has provided a brief introduction to the general principles, techniques, and economic theory used to set utility rates. These principles and techniques will become the basis for the District's analysis. The next section will review the development of the revenue requirement for the water rate study.



## 3 Development of the Revenue Requirement

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### 3.1 Introduction

This section describes the development of the revenue requirement analysis for the District's water rate study. The revenue requirement analysis is the first analytical step in the comprehensive rate study process. This analysis determines the adequacy (level) of the District's overall water rate levels. From this analysis, a determination can be made as to the overall level of water revenue adjustment needed to provide adequate and prudent funding for both operating and capital needs.

In developing the water revenue requirement, it was assumed the water utility must financially "stand on its own" and adequately fund both operations and capital. As a result, the revenue requirement analysis as developed herein assumes the full and proper funding needed to operate and maintain the water system on a financially sound and prudent basis over a long-term period. This results in stable rate levels from both the District's and customers perspective and minimizes large rate swings over time.

Provided below is a detailed discussion of the development of the revenue requirement analysis for the District's water utility.

### 3.2 Establishing a Time Frame and Approach

The first step in calculating the revenue requirement was to establish a time frame for the revenue requirement analysis. For this study, the revenue requirement was developed for a ten-year projected time period (FY 2025 – FY 2033), not including the FY 2024 adopted budget year. While a ten-year period was reviewed, for long-term sustainability purposes, the focus of the rate setting process for Proposition 218 is the next five-year period of FY 2025 – FY 2029.

The second step in determining the revenue requirement for the District, was to decide on the basis of accumulating costs. For the District's revenue requirement, a "cash basis" approach was utilized, which is also the approach used in past studies completed by the District. As was discussed in Section 2, the cash basis approach is the most common methodology used by municipal utilities such as the District to set their revenue requirement. Section 2 of this report also provided a simple overview of the cash basis methodology. The actual revenue requirement developed for the District was customized to follow the District's system of accounts (budget documents), which contains the four basic cost components of a cash basis methodology. Table 3-1 provides a summary of the specific components within the cash basis approach used to develop the District's revenue requirement.

**Table 3-1**  
**Overview of the Water Utility Cash Basis Revenue Requirement**

+ Water Operation and Maintenance Expenses
+ Transfer / Taxes
+ Rate Funded Capital[1]
<u>+ Debt Service (P + I) – Existing and Future</u>
= Total Water Revenue Requirement
<u>- Miscellaneous Revenues</u>
= Net Revenue Requirement (Balance Required from Rates)

[1] Rate Funded Capital
+ Total Water Capital Improvement Projects
- Funding Sources Other than Rates
✓ Connection Fees
✓ Capital Reserves
<u>✓ Long term debt issues</u>
= Rate Funded Capital

Given a time period around which to develop the revenue requirement and a method to accumulate the appropriate costs; the focus shifts to the development and projection of the revenues and expenses of the water utility.

The primary financial inputs in this process were the District’s historical billing records, adopted water operating budget, and capital improvement plan. Presented below is a detailed discussion of the steps and key assumptions in the development of the District’s water projected revenues and expenses.

### 3.3 Projection of Revenues

The starting point of the analysis is the projection of revenues received by the District for providing water services. These revenue sources include rate revenues, or revenues received from customers, along with other miscellaneous revenues received as part of operating a water utility. Provided below is a summary of the revenues received by the District’s water utility.

#### 3.3.1 Projecting Water Rate Revenues

The first step in developing the revenue requirement was to develop a projection of rate revenues, at present rate levels. This process involved developing a revenue projection based on historical billing units for each customer group such as meters by size and consumption by customer class and by consumption tier where applicable. The billing units for each customer group were then multiplied by the applicable current rates. This method of independently calculating rate revenues provides the linkage between the projected rate revenues used within the analysis and the projected billing units (i.e., meters, consumption) for revenue projections, cost allocation and distribution, and rate design.

The majority of the District’s rate revenues are derived from single-family customers. Currently, the District has three classes of service, or rate schedules. These are: single-family, multi-family, and commercial customers.

In total, at present rates, the District is projected to receive approximately \$15.3 million in rate revenue in FY 2024. Over the planning horizon of this study, customer growth is assumed to increase 0.2% annually resulting in projected rate revenue in FY 2033 of \$15.4 million.

### 3.3.2 Projecting Miscellaneous Revenues

In addition to rate revenues, the District also receives a variety of miscellaneous revenues which includes property tax, capacity charges, connection fees, and interest income. The sum of the miscellaneous revenue is approximately \$7.2 million in FY 2024 and increases to \$8.4 million in FY 2033. The District receives a approximately \$3.5 million from property taxes and also is expected to receive approximately \$7.0 million from federal aid over the next three years.

## 3.4 Projecting Operation and Maintenance Expenses

Operation and maintenance (O&M) expenses are incurred by the District to operate and maintain the existing plant in service and provide water service. In general, operation and maintenance expenses are grouped into a number of different functional categories. HDR reviewed the District’s FY 2024 adopted budget and determined it contained sufficient detail to develop the revenue requirement analysis. Therefore, in developing this analysis, HDR maintained the overall functional nature of the District’s system of accounts (i.e., underground repair, pumps, etc.).

Once the FY 2024 expenses were developed, escalation factors were developed for the basic types of expenses the District incurs: salaries, benefits, professional service, materials and supplies, equipment, miscellaneous, and utilities. The escalation factors developed for the projection of the District’s O&M expenses were in the range of two to eight percent per year, depending on the type of cost and recent inflationary trends. Provided in Table 3-2 is a summary of the escalations factors used with the study.

**Table 3–2  
Summary of the Average Annual Escalation Factors**

Type of Expense	FY 2025-2033
Labor	3.6%
Dental & Vision Benefits	3.0%
Medical Benefits	3.6%
Worker's Compensation	2.0%
Materials & Supplies	2.0%
Insurance	2.0%
OPEB	2.0%
Professional Services	2.0%
Repairs & Maintenance	2.0%
Equipment	2.0%
Miscellaneous	2.0%
Utilities	2.0%

For 2025 salaries and benefits were escalated at 8% to account for implementing the results of a compensation study. Total O&M expenses for the District are projected to be approximately \$12.5 million in FY 2024, increasing to approximately \$16.0 million by FY 2033 as a result of expected inflation.

### 3.5 Projecting Capital Project Funding

The District's capital plan includes significant funding for replacing and upsizing waterlines. The District intends to pay for the necessary capital improvement projects with a mix of long-term debt and annual rate funding.

The District anticipates spending between \$1.4 and \$9.5 million per year on capital projects. The balance of the required funds for the District's capital plan are expected to be funded with periodic long-term debt. The additional debt issues are funded through the annual debt service payments and included in the development of the revenue requirement. A summary of the water capital improvement funding plan is provided in Table 3-3.



**Table 3-3  
Overview of the Water Capital Improvement Plan (000's)**

	Budget	Projected								
	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
Capitalized Engineering	\$2,177	\$2,318	\$2,382	\$2,447	\$2,515	\$2,584	\$2,656	\$2,729	\$2,805	\$2,883
Debt Service	941	1,454	1,551	1,577	2,043	2,457	2,660	2,249	2,306	2,366
Capital Improvement Projects	16,500	9,260	9,964	17,196	15,785	15,289	14,006	14,658	15,952	12,379
Capital Reserve Funding	0	2,897	525	146	4,963	2,760	0	893	0	1,634
<b>Total Capital Investment</b>	<b>\$19,619</b>	<b>\$15,928</b>	<b>\$14,422</b>	<b>\$21,367</b>	<b>\$25,306</b>	<b>\$23,089</b>	<b>\$19,322</b>	<b>\$20,529</b>	<b>\$21,063</b>	<b>\$19,262</b>
<b>Capital Plan Funding</b>										
Capital Reserve	\$1,962	\$0	\$0	\$0	\$0	\$0	\$1,895	\$0	\$3,245	\$0
Capacity/Connection Fees	354	354	354	354	354	354	354	354	354	354
Debt Proceeds	8,321	5,800	5,585	8,183	10,542	7,499	1,503	3,058	0	0
Capital Funded from Rates	8,982	9,774	8,483	12,830	14,410	15,236	15,570	17,117	17,464	18,908
<b>Total Capital Funding</b>	<b>\$19,619</b>	<b>\$15,928</b>	<b>\$14,422</b>	<b>\$21,367</b>	<b>\$25,306</b>	<b>\$23,089</b>	<b>\$19,322</b>	<b>\$20,529</b>	<b>\$21,063</b>	<b>\$19,262</b>

A general financial guideline is that, at a minimum, a utility should fund an amount equal to or greater than annual depreciation expense through rates. The District's annual depreciation for the water utility is approximately \$3 million. Annual depreciation expense reflects the current investment in plant being depreciated or "losing" its useful life. Therefore, this portion of infrastructure needs to be replaced to maintain the existing level of infrastructure. It must also be kept in mind that, in theory, annual depreciation expense reflects an investment in infrastructure an average of 15 years ago, assuming a 30-year depreciable (useful) life. Simply funding an amount equal to annual depreciation expense will not be sufficient to replace the existing or depreciated facility. Therefore, consideration should be given to funding within rates some amount greater than annual depreciation expense for renewals and replacements. Whenever possible, the District should be funding capital projects from rates in an amount greater than annual depreciation expense. The District is currently projected to fund an average of \$7.5 million annually on capital projects, and increasing over the rate study projected period. While this level of funding is greater than annual depreciation, it is important for the District to continually review the renewal and replacement needs as well as fire flow improvements to ensure adequate funding on an annual basis to maintain and improve the water system.

### 3.6 Projection of Annual Debt Service

The District currently has a number of outstanding loans which funded water lines and meter installations. The District's current capital plan is substantial and to reduce the short-term rate impacts to customers the District plans to issue additional long-term debt.

During the last rate study the majority of the District's customers were unmetered. In 2004 AB 2572 requires all customer to be metered by 2025, which is the reason for the need for meter installations. In FY 2024 the District had \$1,375,555 in annual debt service payments, based on current interest rates ranging from 0% to 2.5%. Based on the capital funding plan, and planned issuance of long-term debt, the District has estimated future debt issuance with rates between 2.7% and 4.5% over a 20 year term. It is projected that annual debt service payments will increase over the projected time period reaching approximately \$4.0 million by FY 2029.

It is important to note that HDR is not advising the District on the terms of any bond issuances but rather identifying the overall funding needs. The District will work with an independent financial advisor and District financial staff for the issuance of long-term debt. HDR is not acting in a municipal advisor role to the District for the issuance of any long-term borrowing.

### 3.7 Summary of the Revenue Requirement Analysis

Given the above projections of revenues and expenses, a summary of the revenue requirement for the District's water utility can be developed. In developing the revenue requirement, consideration was given to the financial planning considerations of the District. In particular, emphasis was placed on attempting to minimize rates, yet still have adequate funds to support the operational activities and capital projects throughout the projected time period. Presented in Table 3-4 is a summary of the water revenue requirement. A detailed analysis of the revenue requirement can be found in the Exhibits 2 through 4 in the Technical Appendices.

**Table 3-4  
Summary of the Revenue Requirement Analysis (000's)**

	Budget	Projected								
	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
<b>Sources of Funds</b>										
Rates	\$15,344	\$15,342	\$15,356	\$15,371	\$15,386	\$15,402	\$15,414	\$15,436	\$15,459	\$15,482
Other Revenues	<u>7,186</u>	<u>8,330</u>	<u>7,021</u>	<u>6,288</u>	<u>6,852</u>	<u>7,413</u>	<u>7,705</u>	<u>7,897</u>	<u>8,176</u>	<u>8,387</u>
<b>Total Sources of Funds</b>	<b>\$22,530</b>	<b>\$23,672</b>	<b>\$22,377</b>	<b>\$21,659</b>	<b>\$22,238</b>	<b>\$22,815</b>	<b>\$23,120</b>	<b>\$23,333</b>	<b>\$23,635</b>	<b>\$23,868</b>
<b>Applications of Funds</b>										
Operations & Maintenance Expenses	\$12,523	\$14,942	\$14,772	\$13,810	\$14,157	\$14,514	\$14,880	\$15,255	\$15,640	\$16,035
Rate Funded Capital:	8,982	9,774	8,483	12,830	14,410	15,236	15,570	17,117	17,464	18,908
Debt Service	1,376	1,930	2,138	2,260	3,155	4,076	4,427	3,951	3,951	3,951
To / (From) Reserves	<u>(350)</u>	<u>(1,517)</u>	<u>(1,551)</u>	<u>(1,577)</u>	<u>(2,043)</u>	<u>(2,457)</u>	<u>(2,660)</u>	<u>(2,249)</u>	<u>(2,306)</u>	<u>(2,366)</u>
<b>Total Revenue Requirement</b>	<b>\$22,530</b>	<b>\$25,129</b>	<b>\$23,841</b>	<b>\$27,323</b>	<b>\$29,678</b>	<b>\$31,369</b>	<b>\$32,216</b>	<b>\$34,074</b>	<b>\$34,749</b>	<b>\$36,528</b>
Balance/(Def.) of Funds	<b>\$0</b>	<b>(\$1,457)</b>	<b>(\$1,464)</b>	<b>(\$5,664)</b>	<b>(\$7,440)</b>	<b>(\$8,555)</b>	<b>(\$9,096)</b>	<b>(\$10,741)</b>	<b>(\$11,114)</b>	<b>(\$12,660)</b>
Balance/(Def.) of Funds as % of Rates	<b>0.0%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>36.8%</b>	<b>48.4%</b>	<b>55.5%</b>	<b>59.0%</b>	<b>69.6%</b>	<b>71.9%</b>	<b>81.8%</b>
<b>Proposed Rate Adjustment</b>	<b>0.0%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>	<b>9.5%</b>

It is important to note the annual deficiencies (line noted as “Bal/(Defic.) of Funds”) in Table 3-4 are cumulative. That is, any adjustment in the initial years will reduce the cumulative deficiency in the following years. The results of the revenue requirement analysis indicate a deficiency of funds over the planning period. These results indicate that the District’s water revenues will need to increase by 9.5% annually in FY 2025 through FY 2029. The calculation of the proposed revenue adjustments are based on the annual deficiency of funds divided by the current rate revenues to determine the percentage revenue adjustment necessary to fund annual operating and capital expenses.

### 3.8 Consultant’s Recommendations

Based on the revenue requirement analysis developed, HDR recommends the District increase the overall revenue levels of the water utility based on the proposed adjustments shown in Table 3-4 during the next five-year period. The first proposed revenue adjustment would be in FY 2025. Subsequent years of adjustments, through FY 2029 are proposed, to fund the annual debt service payments and meet debt service coverage ratios. Table 3-5 shows the proposed revenue transition plan for the next ten-year period. The proposed rate adjustments would allow the District to fund projected O&M and capital needs over the next ten-year period for the water utility.

Table 3-5 Ten-Year Rate Transition Plan								
FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%

### 3.9 Summary

This section of the report has summarized the development of the revenue requirement for the District’s water utility. The revenue requirement resulted in a projection of revenue adjustments necessary to prudently fund the water utility operating and capital infrastructure requirements over the next five-year period. The next section will discuss the cost of service analysis, or proportional distribution of costs, to the customer’s served by the District.



## 4 Development of the Cost of Service

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In the previous section, the revenue requirement analysis focused on the total sources and application of funds required to adequately fund the District's water utility operating and capital needs. This section of the report will discuss the development of the cost of service analysis. A cost of service analysis is concerned with the proportional distribution of the total revenue requirement to the District's water customer classes of service (e.g., single-family, multi-family, commercial). The previously developed revenue requirement was functionalized, allocated and distributed using generally accepted cost of service principles as outlined in the AWWA M1 Manual for the District's study.

In recent years, increasing emphasis has been placed on cost of service studies to meet Proposition 218 requirements. Following the generally-accepted guidelines and principles of a cost of service analysis will inherently lead to rates which are proportional and cost-based and reflect the requirements of Proposition 218.

### 4.1 Objectives of a Cost of Service Study

There are two primary objectives in conducting a water cost of service study:

- ✓ Proportionally distribute the revenue requirement to the customer classes of service
- ✓ Derive average unit costs for subsequent rate designs

The objectives of the water cost of service analysis are different from determining revenue requirement. As noted in the previous section, a revenue requirement analysis determines the utility's overall financial needs, while the cost of service study determines the proportional manner to collect the revenue requirement.

The cost of service analysis results in unit costs which are used to design the proposed water rates which reflect the costs incurred by the customers. For example, a water utility incurs costs related to average day, peak day, customer-cost components, and fire protection. Each of these types of costs may be collected in a slightly different manner as to allow for the development of rates that collect costs in the same manner as they are incurred.

### 4.2 Determining the Customer Class of Service

The first step in a cost of service study is to determine the customer classes of service. Currently, the District has a separate rate schedule for single family, multi-family, and commercial customer types. In determining classes of service for cost of service purposes, the objective is to group customers together into similar or homogeneous groups based upon facility requirements and/or consumption characteristics. HDR reviewed the customer classes of service and recommends maintaining the District's current customer classes of service (i.e., rate schedules).

Based on this recommendation, the classes of service used within the cost of service analysis for cost distribution purposes are:

- ✓ Single family – Tier 1
- ✓ Single family – Tier 2
- ✓ Multi-family
- ✓ Commercial

## 4.3 General Cost of Service Procedures

A cost of service study utilizes a three-step approach to review costs. These were previously discussed in our generic discussion in Section 2, and take the form of functionalization, allocation, and distribution. Provided below is a detailed discussion of the water cost of service study conducted for the District, and the specific steps taken within the analysis.

### 4.3.1 Functionalization of Costs

The first analytical step in the cost of service process is called functionalization. Functionalization is the arrangement of expenses and asset (infrastructure) data by major operating functions within each utility. For example, a water utility generally incurs costs for source, treatment, distribution, etc. Within this study, the functionalization of the cost data was accomplished through the District's system of accounts and asset data.

### 4.3.2 Allocation of Costs

The second analytical task performed in a cost of service analysis is the allocation process. Allocation determines why the expenses were incurred or what type of need is being met. The District's plant accounts and revenue requirement were reviewed and allocated using the following cost components:

- ✓ **Commodity Related Costs:** Commodity costs are those costs which tend to vary with the total quantity of water consumed by a customer class. Commodity costs are those incurred under average day (demand) conditions and are generally specified for a period of time such as a month or year. Chemicals or utilities (electricity) are examples of commodity-related cost as these costs tend to vary based upon the total demand of water. For the proposed tiered rate structure for single-family, the commodity costs are allocated for each tier based on the total consumption billed in each tier based for the proposed tier sizes rather than in total for the multi-family and commercial customers.

- ✓ **Capacity Related Costs:** Capacity costs are those which vary with peak demands, or the maximum rates of flow to customers. System capacity is required when there are large demands for water placed upon the system (e.g., summer lawn watering). For water utilities, capacity related costs are generally related to the sizing of facilities needed to meet a customer’s maximum water demand at any point in time. For example, portions of distribution storage tanks, pumps, and mains (pipes) must be adequately sized to meet the peak demands of all customers. Similar to the commodity related costs, capacity related costs are allocated for each single family tier, multi-family, and commercial customer classes based on the peaking factor for those customers in each tier to reflect the costs associated with higher consumption in each tier. Capacity costs were split between supply capacity, related to providing peak event consumption, and distribution capacity, related to system peak demands.
- ✓ **Customer Related Costs:** Customer related costs vary with the addition or deletion of a customer. Customer related costs typically include the costs of billing, collecting, and accounting. Customer related costs may also be further categorized as actual or weighted.
- ✓ **Fire Protection Related Costs:** Fire protection costs are those costs related to the public fire protection functions. Usually, such costs are those related to public fire hydrants and the over-sizing of mains and distribution storage tanks for fire protection purposes.
- ✓ **Direct Assignments:** Certain costs associated with operating the utility may be directly traced to a specific customer or class of service. These costs are then “directly assigned” to that specific class of service.

### 4.3.3 Development of Distribution Factors

Once the allocation process is complete, the allocated costs are distributed to each customer class of service. For the District’s study, allocated costs were distributed to the customer classes of service using the following distribution factors.

- ✓ **Commodity Distribution Factor:** As noted earlier, commodity-related costs vary with the total water consumption. Therefore, the commodity distribution factor was based on the projected total metered consumption plus losses for each class of service and tier for the projected

#### **Terminology of a Water Cost of Service Analysis**

**Functionalization** – The arrangement of the cost data by functional category (e.g. Distribution, pumping, treatment).

**Allocation** – The assignment of functionalized costs to cost components (e.g. average day, peak day, and customer related).

**Distribution** – Distributing the allocated costs to each class of service based upon each class’s proportional contribution to that specific cost component.

**Commodity Costs** – Costs that are classified as commodity related vary with the total consumption of water (e.g., power for pumping).

**Capacity Related Costs** – Costs classified capacity related refer to the peak demand on the system. Different types of customers may have high water peak demand characteristics and high demand system components are a significant cost to the water system. Treatment facilities are often designed and sized around meeting these costs.

**Customer-Related Costs** – Costs classified as customer related vary with the number of customers on the system, e.g., billing costs.

**Fire Protection-Related Costs** – Costs classified as fire protection related vary with different fire protection requirements of the different customer classes.

**Direct Assignment** – Costs that can be clearly identified as belonging to a specific customer group or group of customers.

test period. A distribution factor was developed for multifamily, commercial, and the single family tiers to reflect the consumption for each customer class and tier.

- ✓ **Capacity Distribution Factor:** The capacity distribution factor was developed based on the assumed contribution to peak day demands of each class. Peak day demands by customer class of service and tier was developed using peaking factors for each customer group and tier. In this particular case, the peaking factor was defined as the relationship between peak day contribution and average day use and determined for each customer group based on a review of the average month to peak month consumption. Given an estimated peaking factor, the peak day contribution for each class of service was developed. The peak factors were developed for multifamily, commercial, and each tier for single-family which reflects the increased peaking factor for those customers using higher levels of consumption. Capacity costs were split into two categories: supply capacity and distribution capacity. Supply capacity is related to the customer class's peak use. Therefore, coincident peak day demand is used to allocate water supply related costs. Distribution capacity costs were allocated based on the capacity requirements of each customer class. The overall system capacity is designed based on the sum total of demands placed on it by each individual customer meter. Therefore, non-coincident peak day demand was used to allocate costs incurred as a result of the capacity (demand) requirements of the water mains and storage tanks.
- ✓ **Customer Distribution Factor:** Customer costs within the cost of service study are allocated to each customer class of service based on their respective customer counts. The number of customers, by customer class of service, was developed within the revenue requirement study. In total four types of customer allocation factors were developed for the costs of service, actual customer, dwelling units, customer accounts, and meters & services. Customer costs do not vary by the average day or peak day use of the class of service and are based on one of the three customer allocation factors developed. Actual customer is based on the number of customer accounts. Weighted customer intends to reflect the disproportionate costs associated with various customers. These customers can be assigned a higher per customer cost as they require additional administrative costs and possible monitoring. Lastly meters & services reflects the capacity each customer class places on the system assuming the sum of customer meter size capacity.
- ✓ **Fire Protection Distribution Factor:** The development of the distribution factor for public fire protection expenses involved an analysis of each class of service and their fire flow requirements. The analysis took into account the gallon per minute fire flow requirements in the event of a fire, along with the duration of the required flow. The fire flow rates used within the distribution factor were based on industry standards and similar experiences with other water cost of service studies. The minimum fire flow requirements are then multiplied by the number of customers in each class of service, and the assumed duration of the fire, to determine each class's prorated fire flow requirements.

Given the development of the allocation factors, the final step in the cost of service study is to distribute the allocated costs to the various customer classes of service.

## 4.4 Functionalization and Allocation of Plant in Service

In performing the functionalization of plant in service, HDR utilized the District's historical plant (asset) records. Once the plant assets were functionalized, the analysis shifted to the allocation of



the asset. The allocation process included reviewing each group of assets and determining which cost component the assets were related to. For example, the District assets were allocated as: commodity-related, capacity-related, customer-related, revenue-related, fire protection-related, or a direct assignment. Provided below is a summary of the allocation process. The following approach is based on the methodology as described in the AWWA M1 Manual and the District's facility requirements and infrastructure.

**Source of supply** – Source of supply was allocated as 100% Commodity as source of supply generally consists of wells that are usually not intended to meet peak demand.

**Treatment** – Treatment was allocated 42% to commodity and 58% to capacity-supply. This reflects the purpose of the treatment facilities, to meet both average day and peak day needs of the system.

**Pumping Equipment** – Pumping equipment was also allocated as 42% to commodity and 58% to capacity-supply to reflect average day and peak day.

**Transmission & Distribution** – Transmission and distribution lines (mains) are typically assumed to provide three types of costs. First, a distribution system must be in place to meet a customer's minimum use requirements for water. This portion of the distribution main plant investment is considered to be a customer related cost, or a function of the number of customers on the system. Next, a portion of the distribution system mains is considered a function of meeting peak flow requirements on the system. Distribution mains must be sized to adequately meet the maximum (peak) flows demanded by customers. This portion of the distribution main plant investment is considered capacity related. Finally, distribution mains must also be over-sized for public fire flow demands. This final portion of over-sizing for distribution plant investment is classified as fire protection-related. Based on an analysis of the District's distribution main size and lengths, a minimum system analysis was completed to develop the assignment of the distribution mains as 29% customer - weighted by meters and service, 63% capacity-distribution related, and 8% fire protection related.

Table 4 - 1 provides a summary of the basic functionalization and allocation of the major water plant items. A more detailed exhibit of the functionalization and allocation of Districts water plant (assets) can be found in the Technical Appendix in Exhibit 11.

**Table 4-1  
Summary of the Allocation of Water Utility Plant in Service**

Plant Component	Com.	Capacity		Customer			Rev. Related	Fire Protection	Direct Assign
		Supply	Dist.	Actual Cust.	Weighted Cust.	Weighted Meters & Svc			
Source of Supply	100%	0%	0%	0%	0%	0%	0%	0%	0%
Water Rights	100%	0%	0%	0%	0%	0%	0%	0%	0%
Treatment Plant	42%	58%	0%	0%	0%	0%	0%	0%	0%
Pump/Force Mains	42%	58%	0%	0%	0%	0%	0%	0%	0%
Trans & Dist.	0%	0%	63%	0%	0%	29%	0%	8%	0%
Land & Easement	16%	6%	50%	0%	0%	23%	0%	6%	0%
Other Land Rights	16%	6%	50%	0%	0%	23%	0%	6%	0%
Construction In progress	16%	6%	50%	0%	0%	23%	0%	6%	0%
G&A Equipment	16%	6%	50%	0%	0%	23%	0%	6%	0%

## 4.5 Functionalization and Allocation of Operating Expenses

Operating expenses are generally functionalized and allocated in a manner similar to the corresponding plant account. For example, maintenance of distribution lines is typically allocated in the same manner (allocation percentages) as the similarly corresponding plant account for distribution lines like underground repairs. This approach to allocation of operating expenses was used for this analysis.

For the District’s study, the revenue requirement for FY 2025 was functionalized, allocated, and distributed. As noted earlier, the District utilized a cash basis revenue requirement, which was comprised of operation and maintenance expenses, debt service, and rate funded capital. Table 4-2 provides a breakdown of allocated expenses. A more detailed review of the allocation of revenue requirement can be found in the Technical Appendix, Exhibit 12.

**Table 4-2  
Summary of the Allocation of the Water Revenue Requirement (\$000)**

Total	Com.	Capacity		Customer			Rev. Related	Fire Protection	Direct Assign
		Supply	Dist.	Actual Cust.	Weighted Cust.	Weighted Meters & Svc			
\$16,799	\$1,996	\$1,986	\$7,440	\$0	\$0	\$4,489	\$0	\$887	\$0
100.0%	11.9%	11.8%	44.3%	0.0%	0.0%	26.7%	0.0%	5.3%	0.0%

## 4.6 Major Assumptions of the Cost of Service Study

A number of key assumptions were used within the District’s water cost of service study. Below is a brief discussion of the major assumptions used.

- ✓ The test period used for the cost of service analysis was FY 2025. The revenue and expense data was previously developed within the revenue requirement analysis.
- ✓ A cash basis approach was utilized which conforms to generally accepted water cost of service approaches and methodologies. Under the cash basis approach, the revenue requirement previously developed are distributed to each customer class of service.
- ✓ The allocation of plant in service was developed based on generally accepted cost allocation techniques. Furthermore, the allocation process was developed using the District specific data and the District’s operation of the water system.

## 4.7 Summary Results of the Cost of Service Analysis

In summary form, the cost of service analysis began by functionalizing the District’s infrastructure records and FY 2025 revenue requirement. The functionalized infrastructure and revenue requirement was then allocated to the appropriate cost component(s). The individual allocation totals were then distributed to the customer classes of service based on the appropriate distribution factor(s). The distributed expenses for each customer group were then aggregated to determine each customer group’s overall revenue responsibility. A summary of the detailed cost responsibility developed for each class of service is shown below in Table 4-3.

Table 4 – 3 Summary of the Distribution of the Water Revenue Requirement (\$000)				
Cost Classifier	Total Costs	Single Family	Multifamily	Commercial
Commodity	\$1,996	\$1,013	\$341	\$642
Capacity - Supply	1,986	1,047	319	620
Capacity - Distribution	7,440	6,124	1,316	0
Actual Customer	4,489	3,695	794	0
Public Fire Protection	887	845	42	0
Revenue Related	0	0	0	0
Direct Assignment	0	0	0	0
<b>Total</b>	<b>\$16,799</b>	<b>\$12,724</b>	<b>\$2,813</b>	<b>\$1,262</b>

The distribution of costs reflects the benefits received from infrastructure in place to provide service and the resulting operating expenses for each customer class of service. The difference between the rate revenues and distributed costs for each class of service represents the variance from current rate levels to reflect this cost of service analysis. It is important to remember that a cost of service analysis is not an exact calculation. Rather it reflects the current relationships between current customer rate revenues and current costs. Cost of service relationships can change over

time given changes in the way costs may be incurred, along with changes in customer characteristics.

The revenue requirement determined the overall revenue adjustment necessary to fund operating and capital expenses. The cost of service results provide an indication of how the overall revenue adjustment should be collected. Table 4-4 provides the results of the Cost of Service comparing the revenue at current rates to the allocated costs.

Table 4 - 4 Summary of the Cost of Service Analysis (\$000)				
Class of Service	Present Revenue (FY 2025)	Allocated Costs	\$ Difference	% Difference
Single Family	\$10,078	\$11,123	(\$1,045)	10.4%
Multifamily	2,089	2,262	(173)	8.3%
Commercial	<u>3,175</u>	<u>3,414</u>	<u>(239)</u>	<u>7.5%</u>
Total	\$15,342	\$16,799	(\$1,457)	9.5%

In reviewing the above results, it should also be understood that a cost of service analysis is based on one year’s data and customer information, and customer characteristics may change over time. Therefore, it is appropriate to determine whether these findings are consistent over time, by conducting a cost of service analysis periodically to support the rates charged to the various customer classes of service. While the above results are reasonable, given the requirements of Proposition 218, the proposed rates need to reflect the results of the cost of service analysis, and specifically the average unit costs.

Average unit costs are based on the distribution of costs to the various cost of service characteristics divided by the appropriate consumption or equivalent meters. These unit costs, or cost-based rates become the rates in year 1 of the proposed rates. In this way, the rates reflect the results of the cost of service and the proportional distribution of costs. Provided in Table 4-5 is a summary of the unit costs.

Table 4 - 5 Summary of the Unit Costs					
	Commodity Costs (\$/CCF)	Capacity Costs (\$/CCF)	Direct Assignment Costs (\$/CCF)	Total Unit Costs (\$/CCF)	Differential Costs (\$/CCF)
<b>Single-family</b>					
Tier 1, 0 – 15 CCF	\$1.12	\$0.91	\$0.00	\$2.03	N/A
Tier 2, Over 15 CCF	1.12	1.91	0.00	3.02	1.00
<b>Multi-family</b>	1.12	1.04	0.00	2.16	N/A
<b>Commercial</b>	1.12	1.08	0.00	2.20	N/A

These unit costs were developed based on the allocation of costs for each component, consumption, and capacity, divided by the estimated total system volume. One of the key uses of this data is to determine the rate differential between each single-family tier as well as the unit costs for multi-family and commercial. It should also be noted that the above unit costs do not include the fixed cost component which is developed on meter size basis. These customer, or fixed charges, are in addition to the consumption charges developed above. A more detailed discussion of the development of the unit costs is provided in the rate design section of this report.

## 4.8 Consultant's Conclusions and Recommendations

The results of the cost of service show minor cost differences between the various customer classes of service. While the cost difference are minor, it is recommended that the District implement rates that reflect the results of the cost of service. Furthermore, the unit costs become the basis for the rates in the first year of the proposed rates. Future years are adjusted "across the board" based on the overall revenue needs as developed in the revenue requirement for the time period established by the Board and the Proposition 218 process.

## 4.9 Summary

This section of the report has provided an analysis of the cost of service analysis developed for the District. This analysis was prepared using generally accepted cost of service techniques. The next section of the report will review the present and proposed water rates for the District.

## 5 Development of the Rate Designs

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The final step of a comprehensive rate study is the design of rates to collect the desired levels of revenues, based on the results of the revenue requirement and cost of service analyses. In reviewing water rate designs, consideration is given to the level of the rates and the structure of the rates. The level of the rates refers to the amount of annual revenues received through rates. The structure of the rate is how the customer is charged. The combination of the level of rates, and structure of rates, provides a price signal to the customer on how their use impacts the costs of the system.

### 5.1 Rate Design Criteria and Considerations

Prudent rate administration dictates that several criteria must be considered when setting utility rates. Some of these rate design criteria are listed below:

- ✓ Rates which are easy to understand from the customer's perspective
- ✓ Rates which are easy for the utility to administer
- ✓ Consideration of the customer's ability to pay
- ✓ Continuity, over time, of the rate making philosophy
- ✓ Policy considerations (encourage efficient use, economic development, etc.)
- ✓ Provide revenue stability from month to month and year to year
- ✓ Promote efficient allocation of the resource
- ✓ Equitable and non-discriminatory (cost-based)

The focus of the District's water rate study is to develop cost-based rates, and is the primary guidance to utilities on rate structure and policy. It is important that the District provide its customers with a proper price signal as to what their consumption is costing. This goal may be approached through rate level and structure. When developing the proposed rate designs, all the above listed criteria can be taken into consideration. However, it should be noted that it is difficult, if not impossible, to design a rate that meets all the goals and objectives listed above. For example, it may be difficult to design a rate that takes into consideration the customer's ability to pay, and one which is cost-based. In designing rates, there are always trade-offs between a utility's rate design goals and objectives.

### 5.2 Development of Cost-Based Rates

Developing cost-based and equitable rates is of paramount importance in developing proposed water rates. While always a key consideration in developing rates, meeting the legal requirements, and documenting the steps taken to meet the requirements, has been in the forefront with the recent legal challenges in the State of California on water rates. Given this, the District's proposed water rates have been developed to meet the requirements of California constitution article XIII D, section 6 (Article XIII D). A key component of Article XIII D is the development of rates which reflect the cost

of providing service and are proportionally allocated among the various customer classes of service. HDR would point out that there is no single prescribed methodology for equitably assigning costs to the various customer groups. The American Water Works Association (AWWA) M1 Manual clearly delineates various methodologies which may be used to establish cost-based rates. Article XIII D does not prescribe a particular methodology for establishing cost-based rates; consequently, HDR developed the District's proposed water rates based on the methodologies provided in the AWWA M1 Manual and the District's customer and system characteristics and costs to meet the requirements of Article XIII D and to provide an administrative record of the steps taken to establish the District's water rates.

HDR is of the opinion that the proposed rates comply with legal requirements of Article XIII D. HDR reaches this conclusion based upon the following:

- **The revenue derived from water rates does not exceed the funds required to provide the property related service (i.e., water service).** The proposed rates are designed to collect the overall revenue requirements of the District's water utility.
- **The revenues derived from water rates shall not be used for any purpose other than that for which the fee or charge is imposed.** The revenues derived from the District's water rates are used exclusively to operate and maintain the District's water system.
- **The amount of a fee or charge imposed upon a parcel or person as an incident of property ownership shall not exceed the proportional costs of the service attributable to the parcel.** Section 4 of this report focused exclusively on the issue of proportional assignment of costs to customer classes of service. The proposed rates have appropriately grouped customers into customer classes of service, single-family, multi-family and commercial that reflect the varying consumption patterns and system requirements of each customer class of service. The grouping of customers and rates into these classes of service creates the proportionality expected under Article XIII D by having differing rates by customer classes of service which reflect both the level of revenue to be collected by the utility, but also the manner in which these costs are incurred and assigned to customer classes of service based upon their proportional impacts and burdens on District's the water system.

The District currently has different rate structure for each of its three customer classes of service. Single-family customers are charged a monthly meter charge which varies by size as well as a consumption charge for each of the tiers. The tier size for single family are 0 to 15 hundred cubic feet (CCF) for tier 1 and over 15 CCF feet per month. Both multi-family and commercial are charged a monthly meter charge which is the same as single-family and a uniform rate for all consumption as opposed to the tiered single family rate. This is a typical approach for multi-family and commercial customers given the different types of customers as will be explained later in this report. Based on the review of the current rate structures, it is recommended that the individual rate component charges reflect the overall revenue needs and cost of service results, while maintaining the current rate structure.

As a part of this study, HDR developed a water rate design discussion to clearly demonstrate and support the proposed water rates and tiered pricing for the single-family customer class. The following discussion provides a more detailed analysis of the costing techniques and methodologies used to support the District's proposed rate design.

## 5.2.1 Determination of Sizing and Number of Tiers

The first step in reviewing the District's current, and proposed, tiered rate structure is to identify the number of tiers and determine the size of the tiers. After reviewing the customer consumption patterns, it was determined that the current tier size reflect the consumption patterns of the single-family customer class.

Given the variability of multi-family and commercial customers overall use and the diversity of customer's within the class, it is difficult to develop tiers which reflect the typical customer consumption habits like is done for single-family customers. For example, a multi-family complex may have 5 living units or 50 living units. As a result, the overall consumption levels are different and that makes it difficult to develop a tiered rate structure that is proportional to all customers. It should also be noted that while the overall consumption (total usage) can vary for different size multi-family customers, the overall characteristics and patterns remain the same. As a note, the same can be said for commercial customers, while single-family customers overall consumption patterns are very similar (homogeneous) and behave in a much more like manner. With this variability of possible water use it is recommended that multi-family and commercial customers would remain with a uniform rate, or a single rate for all consumption.

## 5.2.2 Establishing the Cost-Basis for Pricing Tiers

Given past legal decisions regarding water rates, HDR has concluded that utilities have available to them at least three technical approaches to be able to demonstrate (i.e., cost justify) the individual pricing of the tiers. These technical approaches encompass the following areas:

1. Cost differences in water supply (i.e., stacking of water supply resources to tiers).
2. Cost differences from high peak use consumers (relationship of average use to peak use).
3. Direct assignment of costs to specific tiers (conservation program costs, etc.).

In certain cases, the cost differences may be related to the cost of water supply when a utility has more than one source of water supply. Additionally, this water supply approach may also include the cost of alternative water supplies (e.g., recycled or reuse water). For example, reuse water may be assigned to higher tiers to reflect outdoor use or the need for additional/alternative water supply to meet the demands of the high use customers.

The second possible source of cost differences for the pricing of tiers is related to high-peak use (peak demand) customers. Customers that use more water create greater demands and costs on the system. A water supply and distribution system must be sized to meet these peak use requirements. In other words, on the hottest day of the year when everyone is watering their lawn, the supply and distribution system must be sized to meet those peak use demands. Economic theory clearly states that equity is achieved when those that create the demand event, pay for the demand event. In this particular case, this has implications upon the equitable allocation of capacity-related costs to the different usage tiers (low use vs. high peak use).

Finally, certain costs may be directly assigned to specific tiers. For example, a conservation program which focuses on outdoor water use may be directly assigned to the water tiers, or seasons, which are most directly related to outdoor use. The direct assignment to a specific price tier will create a price differential for that tier.



For the District’s study, the focus of the analysis was on the second method of determining the cost impacts and cost differences associated with peak demands. The pricing of the tiers, or uniform rate, was developed to provide the cost-basis and meet the intent of Proposition 218.

### 5.3 Development of the Unit Costs for Rate Designs

To begin the assignment of costs related to specific tiers, the results of the cost of service analysis is utilized. As noted in Section 4, the cost of service analysis allocates the revenue requirement between the various cost components of average use (commodity), peak demands (capacity), and customer (actual and weighted). However, the results provided in Table 4 - 2 which allocated the totals to the customer classes of service are further allocated between the rate structure components (e.g., service charge, usage charge, tiers). Provided in Table 5 – 2 is a summary of the allocation of the FY 2020 revenue requirement from the cost of service analysis (same as Table 4 - 2).

Total	Com.	Capacity		Customer			Rev. Related	Fire Protection	Direct Assign
		Supply	Dist.	Actual Cust.	Weighted Cust.	Weighted Meters & Svc			
\$16,799	\$1,996	\$1,986	\$7,440	\$0	\$0	\$4,489	\$0	\$887	\$0
100.0%	11.9%	11.8%	44.3%	0.0%	0.0%	26.7%	0.0%	5.3%	0.0%

The total of the above allocated costs, of approximately \$16.8 million, is the same as the total costs allocated in Table 4 - 2 of the cost of service analysis. This allocation of the total revenue requirement for FY 2025 is then distributed to the various customer classes of service. Prior to the recent legal decisions, the analyses would have been complete. However, given the requirement to provide the cost-basis for each rate, both fixed and variable pricing, the allocated costs are further distributed between the various rate structure components based on the corresponding distribution factors. The distribution factors were discussed for the costs of service in Section 4 of this report. For example, the commodity costs are divided through by each customer class’s consumption from a given tier. Provided below is a discussion of the approach used to allocate the revenue requirement between the various customer classes of service as established in Sections 3 and 4 to the various rate components for each customer class of service.

#### 5.3.1 Commodity Distribution Factor

The commodity distribution factor is based on the average annual use for each of the customer classes of service, and more importantly by tier. For the development of the pricing of the proposed rates the following customer class components were used:

- Single-family
  - ✓ Tier 1
  - ✓ Tier 2
- Multi-family

- Commercial

To develop the commodity distribution factor for each customer class, the usage for each class, and tier, was divided by the total water production of the system. This produces the percent of the system that each class is responsible for and, therefore, their contribution to commodity related costs. Provided below in Table 5 – 3 is a summary of the commodity Distribution factor.

Table 5 - 2 Summary of the Commodity Distribution Factor				
Reference Calculation	A	B	C C = A + B	D
	FY 2025 Consumption CCF	Est. System Losses CCF	Total Annual Use (CCF)	% of Total
<b>Single Family</b>				
Tier 1, 0 – 15 CCF	678,626	92,972	771,598	38.0%
Tier 2, Over 15 CCF	223,221	\$30,581	253,802	12.5%
Unmetered	<u>5,112</u>	<u>\$700</u>	<u>5,812</u>	<u>0.3%</u>
<b>Single Family Total</b>	906,959	124,253	1,031,212	50.8%
<b>Multifamily</b>	305,581	41,865	347,446	17.1%
<b>Commercial</b>	<u>574,395</u>	<u>78,692</u>	<u>653,087</u>	<u>32.1%</u>
<b>Total</b>	1,786,935	244,810	2,031,745	100.0%

As can be seen, the development of the commodity distribution factor is straightforward. It is important to note that the distribution factor is based on the actual metered consumption each class and tier, plus overall system losses. In this way, those costs allocated to the commodity component can be proportionally distributed to the appropriate customer class and customer class tier. As an example, Tier 1 consumption of the single family class of service represents 50.8% of the total consumption on the system. As a result, 50.8% of the commodity related costs are then distributed to Tier 1 of the single family customers.

This approach is used for each of the customer classes of service for each rate component. Using the costs allocated to the commodity component in the cost of service analysis from Table 5 - 1, and the commodity distribution factor in Table 5 - 2, the distribution of costs to each tier or customer class can be developed. The summary of the distributed commodity costs are shown below in Table 5 – 3.

**Table 5 - 3  
Distribution of Commodity Costs (\$000s)**

Reference Calculation	A	B	C	D D = B / C
	% of Total	Commodity Costs	Water Sales (CCF)	Unit Cost (\$/CCF) <sup>[1]</sup>
<b>Single Family</b>				
Tier 1, 0 – 15 CCF	37.98%	\$758	678,626	\$1.12
Tier 2, Over 15 CCF	12.49%	249	223,221	1.12
Unmetered	<u>0.29%</u>	<u>6</u>	5,112	<u>1.12</u>
<b>Single Family Total</b>	50.76%	\$1,007	901,847	\$1.12
<b>Multifamily</b>	17.10%	\$341	\$305,581	\$1.12
<b>Commercial</b>	32.14%	642	574,395	\$1.12

The figures in column A are from column D in Table 5 – 3. The costs shown in column B are based on the total commodity related costs from column A of Table 5 – 2. Column C is from column A in Table 5 – 3, or the actual consumption that is billed to the customers.

From the unit costs developed in Table 5 – 3 above, the per unit cost basis of the tiered and uniform rates can be determined for the commodity related costs identified in the cost of service analysis (Column D). For example, for the proposed single-family tier 1 rate, the commodity component is \$1.12 per CCF. This applies to each tier and customer class (single-family, multi-family, commercial).

### 5.3.2 Capacity-Supply Distribution Factor

As was mentioned in the development of the allocation and distribution for the cost of service analysis, the capacity costs were split between capacity-supply and capacity-distribution. The capacity-distribution costs are included in the monthly fixed service charge whereas the capacity-supply costs are included in the costs developed for the consumption charge calculation. The capacity-supply distribution factor utilizes the same customer classes, and tiers, as has been established for the cost of service study. Whereas commodity costs are related to the volume of water used by each class of service by tier or season, the capacity supply costs are related to how the class uses that water in each tier or annually. Customers use water in different ways and at different times, thus creating different usage patterns and resulting in different peaking factors. These usage patterns drive how the District must size the system to meet the peak demands of customers. To determine the distribution by tier or annually, peaking factors need to be developed for each customer class of service tier or season. The peaking factors for each class of service must be estimated due to a lack of specific metered data related to peak day usage by each class of service. One method discussed in the AWWA M1 Manual used to estimate a class's peaking factor is to review the average month amount of water consumed and compare it to the maximum month amount of water consumed. By dividing the maximum month by the average month, a peak-day factor is calculated. Essentially, this factor provides a seasonal surrogate for the difference between the average use and peak day use in each tier or season. For example, if a customer used 10 CCF

per month on average and in the peak month 15 CCF was used, the peaking factor would be 1.50 (15 / 10 = 1.50). In this example, the peaking factor is stating that the maximum usage in a month is 1.50 time higher than the average usage per month.

For the District’s study the consumption patterns of each customer class and tier were reviewed and peaking factors were developed for each tier. In other words, a peak factor for each customer, by tier was developed to depending on the amount of water used and the peak demands of those customers within that tier compared to the average customer consumption peak. Shown below in Table 5 – 4 is a summary of the capacity-supply distribution factor for each customer class.

Table 5-4 Summary of the Capacity-Supply Distribution Factor				
Reference Calculation	A	B	C C = A * B	D
	Average Consumption (MGD)	Peaking Factors	Peak Day Use (MGD)	% of Total
<b>Single Family</b>				
Tier 1, 0 – 15 CCF	1.79	2.13	3.81	26.5%
Tier 2, Over 15 CCF	1.23	3.37	4.17	29.0%
Unmetered	<u>0.01</u>	<u>2.13</u>	<u>0.03</u>	<u>0.2%</u>
<b>Single Family Total</b>	3.04	2.64	8.00	55.8%
<b>Multifamily</b>	0.93	2.30	2.13	14.8%
<b>Commercial</b>	<u>1.80</u>	<u>2.34</u>	<u>4.21</u>	<u>29.4%</u>
<b>Total</b>	5.76	2.49	14.34	100.0%

Table 5 – 4 above shows the development of the capacity-supply distribution factor. For example, based on the District’s single-family customer consumption data, those customers that stayed within tier 1 have a peak factor of 2.13. In other words, those customers that stay within tier 1 use 2.13 times more water in the peak period than on average. This is compared to customers in the second tier which show a higher peaking factor based on how the customers in these tiers consume water. These peaking factors were developed on the District’s specific customers consumption patterns. Similar to the distribution of commodity costs to the tiers or customer classes, the capacity-supply related costs are distributed in the same manner. For example, 26.5% of the capacity-supply costs are allocated to Tier 1 of the single-family customers based on column D in Table 5 - 4. To determine this, the average day use (column A) of each tier or class is multiplied by the peaking factor (column B). The total peak use by tier or class is divided by the system total peak use to develop the proportional distribution.

Table 5 – 5 provides a summary of the distributed capacity-supply costs to each tier and season.

**Table 5-5  
Distributed Capacity-Supply Costs (\$000s)**

Reference Calculation	A	B	C	D D = B/C
	% of Total	Capacity Costs	Water Sales (CCF)	Unit Costs (\$/CCF)
<b>Single Family</b>				
Tier 1, 0 – 15 CCF	26.5%	\$616	678,626	\$0.91
Tier 2, Over 15 CCF	29.0%	426	223,221	1.91
Unmetered	0.2%	5	5,112	0.91
<b>Single Family Total</b>	55.8%	\$1,047	906,959	\$1.15
<b>Multifamily</b>	14.8%	\$319	305,581	\$1.04
<b>Commercial</b>	29.4%	620	574,395	1.08
<b>Total</b>	100.0%	\$1,986	1,786,935	\$1.11

The figures in column A are from column D in Table 5 – 4. The costs shown in column B are based on the total capacity related costs from column B of Table 5 – 3. Column C is from column A in Table 5 – 2. For example, the proposed rate for Tier 1 includes a capacity component cost of \$0.91 per CCF while the Tier 2 capacity cost is \$1.91 per CCF. This difference reflects the costs associated with providing consumption at second tier and the costs of providing that capacity.

### 5.3.3 Summary of the Consumption Based Unit Costs

Combining the unit costs from the commodity and capacity-supply unit costs result in the basis of the tiered rate pricing. It is important to note that there could be additional costs classified as direct assignment related costs. The direct assignment cost, for example, could be related to conservation and could then be assigned to specific tiers for single family, multifamily and/or commercial customers.

The summary Table 5 – 7 below shows the summation of the costs for each tier / rate. This table sums the costs from Table 5 – 3 column D and Table 5 – 4 column D.

**Table 5-6  
Summary of the Unit Costs for Rate Design**

Reference	A	B	C	D	E
	Commodity Costs (\$/CCF)	Capacity Costs (\$/CCF)	Direct Assignment Costs (\$/CCF)	Total Unit (\$/CCF)	Differential (\$/CCF)
<b>Single Family</b>					
Tier 1, 0 – 15 CCF	\$1.12	\$0.91	\$0.00	\$2.03	
Tier 2, Over 15 CCF	1.12	1.91	0.00	3.02	\$1.00
Unmetered	<u>1.12</u>	<u>0.91</u>	<u>1.00</u>	<u>3.03</u>	
<b>Single Family Total</b>	\$1.12	\$1.15	\$0.00	\$2.27	
<b>Multifamily</b>					
	\$1.12	\$1.04	\$0.00	\$2.16	NA
<b>Commercial</b>	<u>1.12</u>	<u>1.08</u>	<u>0.00</u>	<u>2.20</u>	<u>NA</u>
<b>Total</b>	\$1.12	\$1.11	\$0.00	\$2.23	NA

The results shown in Table 5 – 7 above are the basis for the District’s consumption pricing for the proposed rates. The analysis and costs shown above have been developed to meet the intent of Proposition 218 and recent legal decisions related to developing cost-based water rates.

### 5.3.4 Summary of the Customer (Fixed) Costs

It is also important to note that the customer related costs and the capacity-distribution costs are used to establish the monthly service charge which varies by meter size. As a result, the total customer and capacity-distribution related costs were divided by the number of equivalent meters on the system. An equivalent meter uses the capacity ratio of a 5/8-inch meter to the larger meter sizes to determine the pricing for each meter size. In this way the meter charge reflects the proportion of fixed costs on the system based on the capacity demands the customer can place on the system based on the size of the meter. Shown below in Table 5 – 7 is a summary of the customer related costs and customer charge development.

Table 5-7 Summary of the Customer Charge for Rate Design		
	Current District Ratios	Cost (\$ / Acct. / Mo)
<b>Total Customer Costs</b>		
Total 1" Meter Equiv. <sup>[1]</sup>		17,767
<b>Cost per Equiv. Meter</b>		<b>\$60.12</b>
<b>Proposed Rates</b>		
5/8" & 3/4"	1.00	\$60.12
1"	1.67	100.34
1 1/2"	3.33	200.13
2"	5.33	320.31
3"	10.00	600.99
4"	16.66	1,001.81
6"	33.32	2,002.96
8"	53.31	3,204.89
10"	76.64	4,607.50

[1] – Based on the current District equivalent meter ratios

As indicated in the revenue requirement a rate transition plan was developed to prudently fund the utility's operating and capital infrastructure needs. Provided in Table 5-8 is a summary of the proposed revenue adjustments for the next five-year period.

Table 5-8 Five-Year Rate Transition Plan				
FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
9.5%	9.5%	9.5%	9.5%	9.5%

While the revenue requirement analysis resulted in the proposed revenue transition plan, it does not take into consideration the proportional distribution of costs between the customer classes of service. In developing the final rates, the cost of service results, and specifically the average unit costs, were the basis for the proposed rates in year 1 of the proposed rate setting period.

## 5.4 Present and Proposed Rates

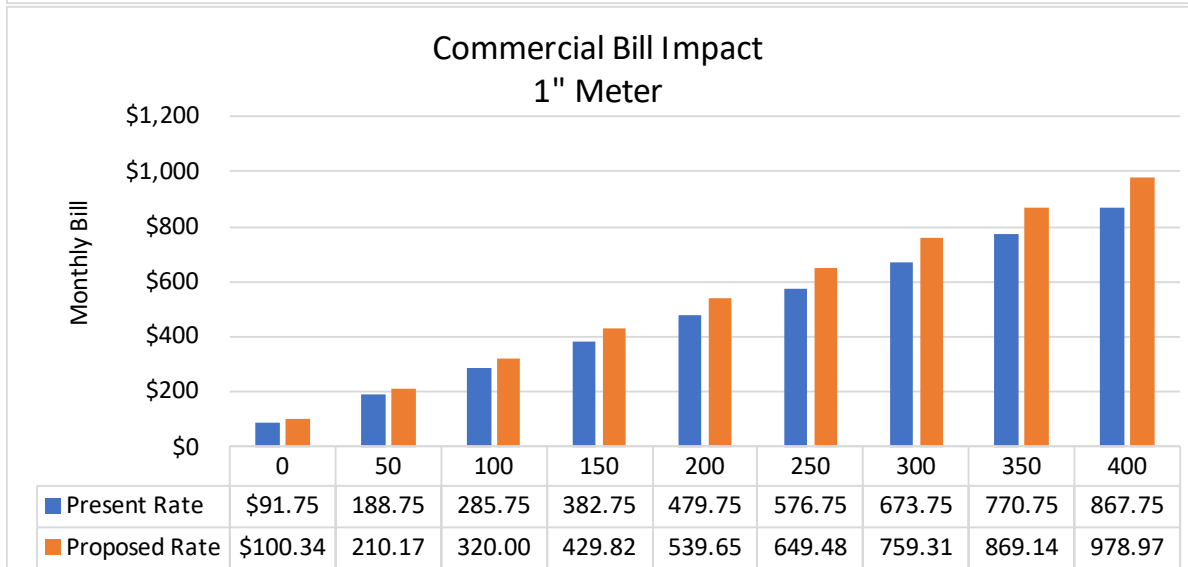
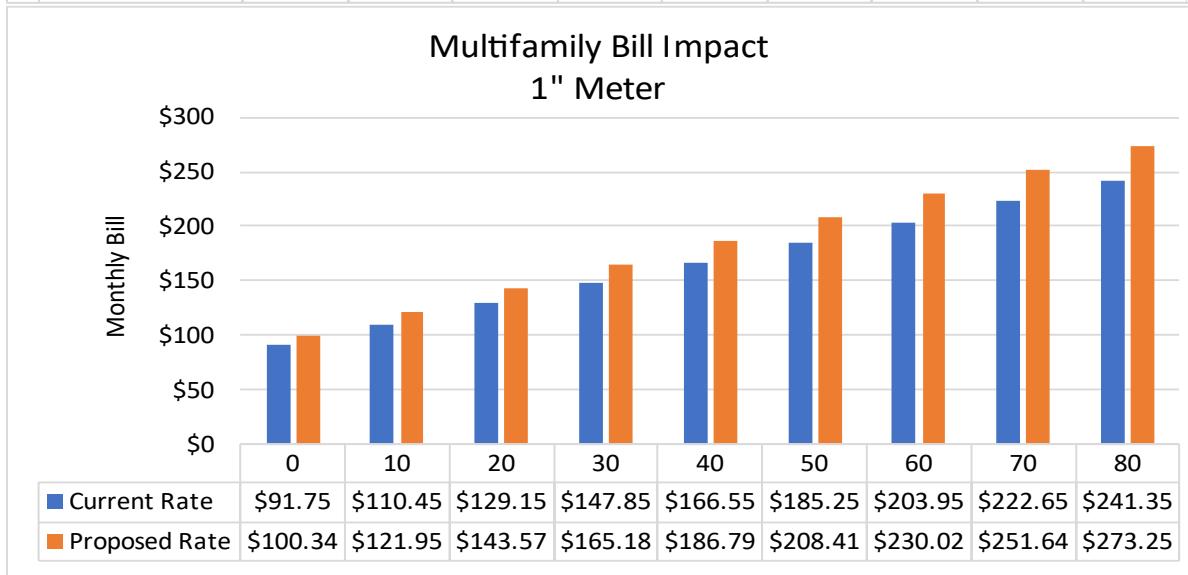
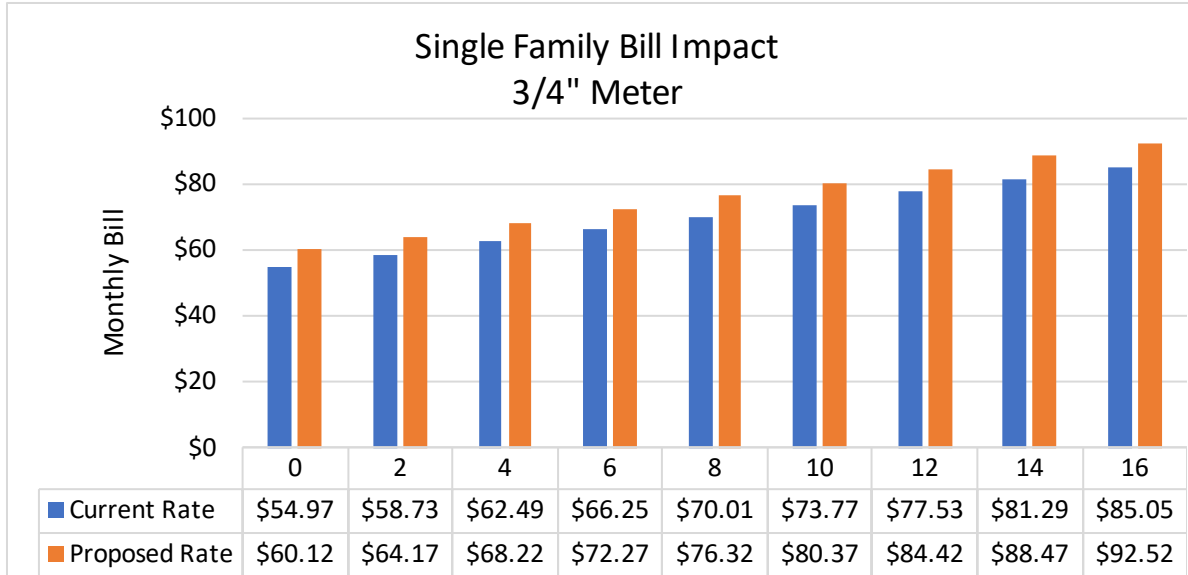
Given the development of the unit costs for rate design purposes, the next step is to develop the proposed rates for the next five-year period. As a note, the proposed rates are being developed for the test year FY 2025 based on the unit costs as discussed in the cost of service section and above discussion in this section of this report based on generally accepted cost of service principles. The proposed rates in subsequent years are based on the annual rate revenue adjustment as noted in the revenue requirement analysis and summarized in Table 5-8.

The proposed rates reflect the results of the revenue requirement and cost of service analysis. Provided below in Table 5 - 9 is a summary of the current and proposed rates for the District's customers. As noted, the proposed rates in are based on the previously discussed unit costs.

<b>Table 5-9 Current and Proposed Rates</b>						
	<b>Current Rates</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>
<b>Monthly Charge by Meter Size</b>						
5/8" & 3/4"	\$54.97	\$60.12	\$65.83	\$72.08	\$78.93	\$86.43
1"	91.75	100.34	109.87	120.31	131.74	144.25
1 1/2"	183.00	200.13	219.14	239.96	262.76	287.72
2"	292.89	320.31	350.74	384.06	420.54	460.49
3"	549.55	600.99	658.09	720.61	789.06	864.02
4"	916.06	1,001.81	1,096.98	1,201.20	1,315.31	1,440.27
6"	1,831.51	2,002.96	2,193.24	2,401.59	2,629.75	2,879.57
8"	2,930.56	3,204.89	3,509.35	3,842.74	4,207.80	4,607.54
10"	4,213.11	4,607.50	5,045.21	5,524.50	6,049.33	6,624.02
<b>Unmetered Customers</b>						
Single Family	\$69.70	\$75.98	\$83.20	\$91.11	\$99.76	\$109.24
Duplex	115.74	126.17	138.15	151.29	165.66	181.39
Triplex	157.24	171.41	187.69	205.54	225.05	246.43
Four-plex	203.43	221.76	242.83	265.92	291.16	318.83
Additional Multifamily Units (>4 Units)	34.09	37.16	40.69	44.56	48.79	53.43
Commercial	100.92	110.01	120.46	131.92	144.44	158.17
<b>Commodity Charges (\$/CCF)</b>						
<b>Single Family</b>						
0 - 15 CCF	\$1.88	\$2.03	\$2.22	\$2.43	\$2.66	\$2.91
15 + CCF	2.87	3.02	3.31	3.63	3.97	4.35
<b>Multi-Family</b>						
All Consumption	\$1.87	\$2.16	\$2.37	\$2.59	\$2.84	\$3.11
<b>Commercial</b>						
All Consumption	\$1.94	\$2.20	\$2.41	\$2.63	\$2.88	\$3.16

It is important to note that the bill impacts will not only vary between customer classes, as the cost of service results show cost differences, but also customers in the same class. This is due to the tier pricing being based on the costs associate with the District's costs and allocated based on a snapshot of consumption characteristics. Shown below are typical customer bill impacts; these are not meant to be prescriptive for projecting a customers' bill impact but rather representative.





## 5.5 Summary of the Proposed Rate Revenues

The rates for each customer class of service meet the results of the revenue requirement and cost of service results. Provided in Table 5 - 10 is a summary of the revenue targets based on the revenue requirement and cost of service analyses for the FY 2025 proposed rate adjustment.

	Present Revenue	Allocated Revenue	Proposed Revenue
Single Family	\$10,078	\$11,123	\$10,977
Multifamily	2,089	2,262	2,319
Commercial	<u>3,175</u>	<u>3,414</u>	<u>3,515</u>
<b>Total</b>	<b>\$15,342</b>	<b>\$16,799</b>	<b>\$16,811</b>

The proportional distribution of costs to the customer classes of service is based on District budgeted O&M expenses as well as capital projects as identified in the revenue requirement analysis. Additionally, actual consumption data was used from FY 2025 to distribute costs to specific customer classes and tiers, where applicable. Any discrepancy in the summation of the totals are due to rounding. A more detailed analysis of the projection of the proposed revenues is included within the Technical Appendix of this report in Exhibit 15.

This concludes the discussion of the proposed water rates. Detailed exhibits for the various rate designs are included within the water technical appendices.

## 5.6 Water Rate Study Recommendations

Based on the results of the water rate study, HDR recommends the following:

- Revenue adjustments are necessary to prudently fund operating and capital renovation and replacement expenses.
- Water revenues should be adjusted 9.5% annually in FY 2025 through FY 2029.
- The proposed rates reflect the results of the cost of service analysis and the proportional distribution of costs to the customer classes of service.
- Prior to the end of the financial planning projected period, the District should complete a review of the water revenue levels and costs at that time.

## 5.7 Summary of the Water Rate Study

This completes the comprehensive water rate study for the South Tahoe Public Utility District. This study has provided a comprehensive review and development of cost-based and proportional water rates for the District. Adoption of the proposed water rates will allow the District to meet its current and projected water system financial obligations for the time period reviewed based on the assumed customer growth, capital plan and deferred capital, and inflationary increases in operating costs. Should these assumptions change, the proposed rate adjustments may also need to be revised to reflect the current conditions.



# Technical Appendix

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