

**ORDINANCE NO. 2531**

**AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF REDWOOD CITY AMENDING ARTICLE II (WATER SERVICE AND FACILITY CHARGES) AND ARTICLE IV (WATER FUND) OF CHAPTER 38 OF THE REDWOOD CITY MUNICIPAL CODE, UPDATING THE CITY'S WATER SERVICE CHARGES, AMENDING RESOLUTION NO. 14648, AND RESCINDING RESOLUTION NO. 15546**

**WHEREAS**, the Redwood City Municipal Code Chapter 38 (Water System Regulations), Article II (Water Service and Facilities Charges) imposes water service charges on all customers of the City of Redwood City's ("City") water system; and

**WHEREAS**, the City reviewed its water rates to determine if they are adequate over time to pay for the anticipated increase in wholesale water costs, ongoing maintenance and replacement projects, ongoing operations costs, and any planned capital projects; and

**WHEREAS**, the City submitted a Water Rate Cost-of-Service Study dated October 11, 2023 ("Water Rate Study"), which recommends a revised water rate schedule for Fiscal Years 2023-24 and 2024-25. The Water Rate Study is attached hereto as **Exhibit A** and hereby incorporated by reference; and

**WHEREAS**, pursuant to the provisions of Article XIII D, Section 6, of the California Constitution ("Proposition 218"), prior to extending, imposing or increasing water rates, property owners shall be provided at least 45 days' notice of a public hearing to consider such modifications to the water rates together with an explanation of: (1) the amount of the proposed rates, (2) the basis on which the rates are calculated, (3) the reason for the rate modifications, and (4) the date, time and place of a public hearing to consider the rate modifications, together with an explanation of the rights of property owners to submit written protests to the proposed rate modifications. The proposed rate modifications may not be imposed if, prior to the close of the public hearing, written protests are submitted by a majority of the parcels subject to the modified rates ("majority protest"); and

**WHEREAS**, notice of the public hearing to consider proposed adjustments to the water rates was mailed to property owners of record and customers of record in accordance with Proposition 218; and

**WHEREAS**, the mailed notice of public hearing included a statement that there is a 120-day statute of limitations for challenging the water rates should the proposed water rates be adopted; and

**WHEREAS**, on December 4, 2023, the City Council conducted a public hearing, considered testimony, and at the conclusion of the hearing determined that a majority protest did not exist; and

**WHEREAS**, Government Code section 53756 allows public utility providers to adopt a schedule for inflation and wholesale rate pass-throughs provided they do not apply for more than five-years and that the utility provider gives 30 days written notice to ratepayers each time a pass-through is implemented; and

**WHEREAS**, on June 6, 2005, the City Council adopted Resolution No. 14648, which established a reserve for the Water Enterprise of \$2 million; and

**WHEREAS**, on December 12, 2016, the City Council adopted Resolution No. 15546, which established a revised policy for the pricing of recycled water intended to encourage retrofits of plumbing systems for the continued use of recycled water, and since the policy was adopted, recycled water has become a desirable commodity sought out by the community; and

**WHEREAS**, the water rates are “exempt charges,” within the meaning of Section 1 of Article XIII C of the California Constitution and the Taxpayer Protection and Government Accountability Act (Initiative No. 21-0042) because they are charges that are imposed in accordance with and subject to Article XIII D of the California Constitution.

**NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF REDWOOD CITY DOES ORDAIN AS FOLLOWS:**

**Section 1.** The above recitals are true and correct, and incorporated herein by reference and each is relied upon independently by the City Council for its adoption of the Ordinance.

**Section 2.** The Ordinance has been reviewed with respect to applicability of the California Environmental Quality Act (“CEQA”) and the CEQA Guidelines. The Ordinance is not a project under CEQA Guidelines Section 15378(b)(4) because the Ordinance does not have the potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, as the Ordinance creates government funding mechanisms which do not involve any commitment to any specific project. The Ordinance is also exempt from CEQA as there is no possibility for causing a significant effect on the environment, per CEQA Guideline Section 15061(b)(3). No specific water projects are associated with this Ordinance. The Ordinance is policy-oriented and would create a funding mechanism for the development of future water facilities. When and if specific water projects are developed and proposed for implementation, the environmental impacts of such facilities would be evaluated in accordance with CEQA and City practice.

**Section 3.** The City Council of the City of Redwood City hereby adopts the following Redwood City Municipal Code amendments, by adding the text shown in underline (example) and deleting the text shown in strikeout (~~example~~), as shown below. Wording in brackets ([example]) is informational only and is not to be included in the published ordinance.

A. Article II of Chapter 38 of the Redwood City Municipal Code is hereby retitled and amended as set forth in **Exhibit B**; and

B. Article IV of Chapter 38 of the Redwood City Municipal Code is hereby amended as set forth in **Exhibit C**.

**Section 4.** The City Council finds and determines that, based on the entire record before the City Council, including but not limited to the Water Rate Study and the Staff Report and attachments thereto:

- (1) Revenues derived from the proposed water rates will not exceed the funds required to provide water service, respectively.
- (2) Revenues derived from the proposed water rates will not be used for any purpose other than that for they were imposed.
- (3) The amount of the water rates imposed upon any parcel or person as an incident of property ownership will not exceed the proportional cost of the service attributable to the parcel.
- (4) The water rates are imposed for a service or services that are actually used by, or immediately available to, the owner of the property in question.
- (5) The water rates are not being imposed for general government services.

**Section 5.** The City Council hereby approves and adopts the Water Rate Study attached hereto as **Exhibit A**, which sets forth the basis for the Water Rates.

**Section 6.** The City Council finds that the procedures followed and the water rates referenced herein are in compliance with the California Constitution Article XIII D, Government Code section 53755, and Health and Safety Code section 5471.

**Section 7.** The City Council hereby adopts the water rate schedules in **Exhibit D** attached hereto and incorporated herein by this reference.

**Section 8.** The Water Rates for Fiscal Year 2023-24 will be effective as of February 1, 2024, and the water rates for Fiscal Year 2024-25 will be effective on January 1, 2025.

**Section 9.** Any San Francisco Public Utility Commission (“SFPUC”) increases for wholesale water rate increases, management charges or other charges implemented by the SFPUC prior to January 1, 2027, exceeding \$5.21/hcf may be passed through to water ratepayers, by including the increases in water rates. Pursuant to Government Code section 53756(d), notice must be given at least thirty (30) days prior to any water rate adjustment occurring pursuant to the adopted water rate schedule or as a result of the pass through of SFPUC wholesale rate increases.

**Section 10.** The Water Rates, set forth in **Exhibit D**, may be amended from time to time by ordinance or resolution of the City Council.

**Section 11.** The City Council hereby amends Resolution No. 14648, and approves and adopts a policy to maintain the following Water Enterprise reserve target. The operating reserve component will equal 25% of annual operations and maintenance (O&M) expenses. The capital reserve component will include \$2 million to provide working capital for pay-as-you-go construction projects.

**Section 12.** Resolution No. 15546 adopting a policy for the pricing of recycled water is hereby rescinded.

**Section 13.** If any provision, section, paragraph, sentence or word of this Ordinance, or the application thereof to any person or circumstance, is rendered or declared invalid by any court of competent jurisdiction, the remaining provisions, sections, paragraphs, sentences or words of this Ordinance, and their application to other persons or circumstances, shall not be affected thereby and shall remain in full force and effect and, to that end, the provisions of this Ordinance are severable.

**Section 14.** This Ordinance shall become effective thirty days after the date of its adoption.

**Section 15.** The City Clerk is directed to cause this Ordinance to be published in the manner required by law.

\* \* \*



# CITY OF REDWOOD CITY

## Water Rate Cost-of-Service Study

**Final Report**  
**October 11, 2023**



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# CITY OF REDWOOD CITY

1017 Middlefield Road  
Redwood City, CA 94063



## WATER RATE COST-OF-SERVICE STUDY

*October 11, 2023*

### HF&H CONSULTANTS, LLC

590 Ygnacio Valley Rd, Suite 105  
Walnut Creek, CA 94596



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October 11, 2023

Terence Kyaw  
Public Works Director  
City of Redwood City  
1400 Broadway  
Redwood City, CA 94063

**Subject: Water Rate Cost-of-Service Study – Final Report**

Dear Terence Kyaw:

HF&H is pleased to submit this cost-of-service report to the City of Redwood City (City). The previous rate study was completed in 2016. The current study makes the following recommendations.

- **Revenue increases.** Rate increases are recommended due to increases in the cost of purchased water from the San Francisco Public Utilities Commission (SFPUC) and the need to fund capital improvements, including ongoing repairs and replacements of aging infrastructure. The cost of SFPUC water is nearly 40% of the annual revenue requirement – the largest single expense. Wholesale water rates have increased 27% since 2018 when rates were last increased. Wholesale rates are projected to increase an additional 8% during the five-year planning period (Study Period). The impact of these significant increases in wholesale rates on the revenue requirements over the Study Period cannot be overstated. While the City had the ability to pass through prior, unplanned increases to wholesale rates, this mechanism was never employed. In addition, rate increases are needed to allow the City's Water Enterprise Fund to continue compliance with debt service requirements, to avoid operational cost increases, and the depletion of reserves. Over the next two years, the recommended revenue increases are 8% and 7%.
- **Service Charge rate structure modifications.** We recommend changes to the rate structures applied to Multi Family Residential customers to align with industry practice. The City's approach to treating all water, whether potable or recycled, as one system portfolio, allows for the consolidation of customer classes, affecting both the service charges and the water use charges.
- **Water Use Charge rate structure modifications.** The proposed Single Family Residential tiered rates are restructured based on projected single-family residential demand patterns, which results in adjustments to the current tier breakpoints. We recommend changes to the rate structures applied to Multi Family Residential customers to align with industry practice. We recommend all non-single family residential customers are charged a uniform Water Use Charge rate.
- **Drought Rate Revenue Stabilization Factors (Drought Rate Factors).** The drought rate factors can be adopted as part of the Proposition 218 process. Customer class drought rate factors are applied to the corresponding Water Use Charge rate(s) so that the City can maintain revenue neutrality during drought conditions when customers are required to reduce water use.
- **Pass-through Adjustment.** We recommend that the City incorporate annual pass-through adjustments of the SFPUC water purchase cost into its water use charge rates. Water use charge rates

can be adjusted to track any difference between the SFPUC rates that were included in the analysis and the actual rates adopted each year by SFPUC.

The rates proposed in this report reflect the current and projected cost of providing service for the next two years. We greatly appreciate your assistance in developing the cost-of-service analysis.

Sincerely,

HF&H CONSULTANTS, LLC

Rick Simonson  
Senior Vice President

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## **GLOSSARY**

**AMI** - advanced metering infrastructure.

**AWWA** – American Water Works Association.

**BAWSCA** – Bay Area Water Supply and Conservation Agency.

**Breakpoint** – The volume of water per billing period separating tiers in tiered rate structures.

**City** – City of Redwood City and/or the City’s Water Enterprise

**CCF** – Hundred cubic feet (see HCF below).

**CIP** - Capital Improvement Program.

**Commercial** – Refers to commercial, industrial, and municipal accounts served by the City. Includes all commercial, industrial, municipal, fire, other, and recycled water customers under the proposed Water Use Charge rates.

**Commercial/Multi Family** – Refers to all non-single family residential customers for the purposes of performing the cost-of-service analysis.

**Drought Rate Factors** – Factors applied to Water Use Charge Rates to stabilize revenue to meet the City’s water revenue requirement during periods of conservation when there are significant reductions in water usage, and hence in water revenues.

**DU** – Dwelling Unit, in reference to the number of physical residences served by a Single Family Residential or Multi Family Residential meter.

**EDU** – Equivalent Dwelling Unit, (also referred to as Dwelling Unit Equivalent or (DUE) in the City’s municipal code) in reference to the current Multi-Family Residential rate structure which calculates EDUs based on the number of total dwelling units served by one meter.

**EMU** – Equivalent Meter Unit.

**FY** - Fiscal Year.

**Flat rates** - Fixed charges per account that do not vary based on metered water use. Flat rates are found in unmetered water systems and in wastewater rates. Flat rates are not uniform rates (see below).

**GPD** - Gallons Per Day.

**HCF** - Hundred cubic feet of metered water; 748 gallons; a cube of water 4.6 feet on edge. One HCF per month is about 25 gallons per day.

**Irrigation** – Refers to the current Landscape Irrigation customer class. Includes all potable and recycled water commercial irrigation customers under the proposed rate structure.

**Meter charges** - One-time charges for the purchase of a meter. Meter charges are not Service Charges (see below).

**Multi Family Residential** – Refers to the current Multi Family Residential customer class. Includes all multi-family customer accounts, residential fire service accounts, residential irrigation, and future residential recycled water customers under the proposed Water Use Charge rates.

**O&M** - Operating and Maintenance, in reference to the costs of running facilities.

**PAYGo** - Pay-As-You-Go, in reference to funding capital improvements from cash rather than from borrowed sources such as bonds or loans.

**RWS** – Regional Water System

**Service Charges** – Fixed charges paid per account regardless of the amount of water used. The charge is proportionate to the capacity of the customer’s service, which is the capacity of the pipe connecting from the main to the meter, or the meter, whichever is smaller. This is not applicable to fire services, which are charged according to the size of the connecting pipe, only. Service Charges are not meter charges (see above). The City’s Service Charges are called “Fixed Service Charges.”

**SFPUC** - San Francisco Public Utilities Commission.

**Study Period** – five-year planning period analyzed in this study, which includes fiscal year 2023-24 to fiscal year 2027-28

**SVCW** – Silicon Valley Clean Water, a Joint Powers Authority serving the communities of Belmont, Redwood City, San Carlos, and the West Bay Sanitary District.

**Uniform rates** - Constant charges per unit of water use that do not change depending on the amount used. Uniform rates are not flat rates (see above).

**Water Use Charge Rates** – The product of rates per unit of metered water use multiplied by a customers metered water use during the billing period.

**WSCP** – Water Shortage Contingency Plan.

## **ACKNOWLEDGEMENTS**

### City Council

Jeff Gee, Mayor  
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Alicia C. Aguirre, Councilmember  
Kaia Eakin, Councilmember  
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Elmer Martinez Saballos, Councilmember  
Chris Sturken, Councilmember

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# **LIMITATIONS**

This document was prepared solely for the City of Redwood City in accordance with the contract between the City and HF&H and is not intended for use by any other party for any other purpose.

In preparing this study, we relied on information from the City, which we consider accurate and reliable. Our analysis is based on the best available information at the time of the study.

Rounding differences caused by stored values in electronic models may exist.

This document represents our understanding of relevant laws, regulations, and court decisions but should not be relied upon as legal advice. Questions concerning the interpretation of legal authorities referenced in this document should be referred to a qualified attorney.



# **WATER RATE COST-OF-SERVICE STUDY**

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# I. EXECUTIVE SUMMARY

## BACKGROUND

The City operates and maintains a potable and recycled water distribution system to serve its water users. It is a complex system with varying topography and separate but interconnected pressure zones. As of this study, the City serves 24,479 connections within its service area. The City's water service area covers approximately 17 square miles. The City purchases all its potable water from the San Francisco Public Utilities Commission (SFPUC) Regional Water System (RWS) and is a member of Bay Area Water Supply and Conservation Agency (BAWSCA). The City has also been supplying recycled water to its customers since 2000. As a member of Silicon Valley Clean Water (SVCW), the City receives disinfected tertiary-treated, recycled water for reuse. The infrastructure network includes 259 miles of water mains, 12 active storage reservoirs, 10 booster pump stations, and various assets, such as water meters, fire hydrants, and valves<sup>1</sup>. The SFPUC delivers treated wholesale water to the City from its RWS. This water is delivered through thirteen master meter locations from the SFPUC's transmission pipelines. From these connections, the City reduces pressure and pumps to deliver water to its customers.

The water rates in this study were developed using rate-making principles set forth by the American Water Works Association (AWWA) in *Principles of Water Rates, Fees and Charges* (M1 Manual). This Manual's cost-of-service principles endeavor to distribute costs to customer classes (also referred to as classes) and to individual customers in proportion to customers impacts on the water system. Pursuant to the M1 Manual, rate studies generally contain three elements: (1) a revenue requirements analysis, which determines how much revenue is needed from rates to recover a utility's projected costs; (2) a cost-of-service analysis, which allocates the revenue requirements to the rate components;<sup>2</sup> and (3) a rate design analysis, which determines any modifications that are required to align the rate structure with the cost of service.

Rate studies always include a revenue requirements analysis. A cost-of-service analysis is typically only conducted periodically. It is recommended that a cost-of-service analysis be conducted at least every five years to account for any material differences in the costs of providing service and in the water usage among customer classes, which will affect their respective shares of the cost of service. The City last conducted a cost-of-service study in 2016.

The City requested HF&H to conduct a cost-of-service study to analyze a period of five years (Study Period). However, the City plans to develop a Recycled Water Master Plan that is estimated to be adopted in 2025. While five years of analysis are reported, the projections will likely change due to the Recycled Water Master Plan. Therefore, the City is electing to set water rates for two years and plans to conduct a second rate study to set rates for FY 2025-26 and future years.

<sup>1</sup> 2020 Urban Water Management Plan City of Redwood City published June 2021.

<sup>2</sup> The cost-of-service analysis in the current study tailors the base/extra capacity method to account for unique conditions, circumstances, and factors related to the City's cost of providing water service, which the M1 Manual does not specifically address. The adjustments to the M1 base/extra capacity method of allocating costs are described in more detail in Chapter IV.

Since the previous cost-of-service analysis, changes in demand patterns among customer classes has occurred, which affects the factors that are used to allocate costs. The costs to which the allocation factors are applied also change. Hence, there will be differences between the previous and current cost-of-service analyses. Adjustments are made to reflect the differences and rates are set accordingly.

The cost-of-service analysis proportionately allocates the revenue that is required from rates to the components of the rate structure and to the customer classes. Costs are classified corresponding to the function they serve. Each function's costs are further allocated to each component of the rates in proportion to the level of service required by customers. The levels of service are related to volumes of peak and non-peak demand, infrastructure capacity, and customer service. Ultimately, a cost-of-service analysis ensures that the rates yield charges that are proportional to the cost of providing service to each customer.

The following discussion summarizes HF&H's findings and recommendations.

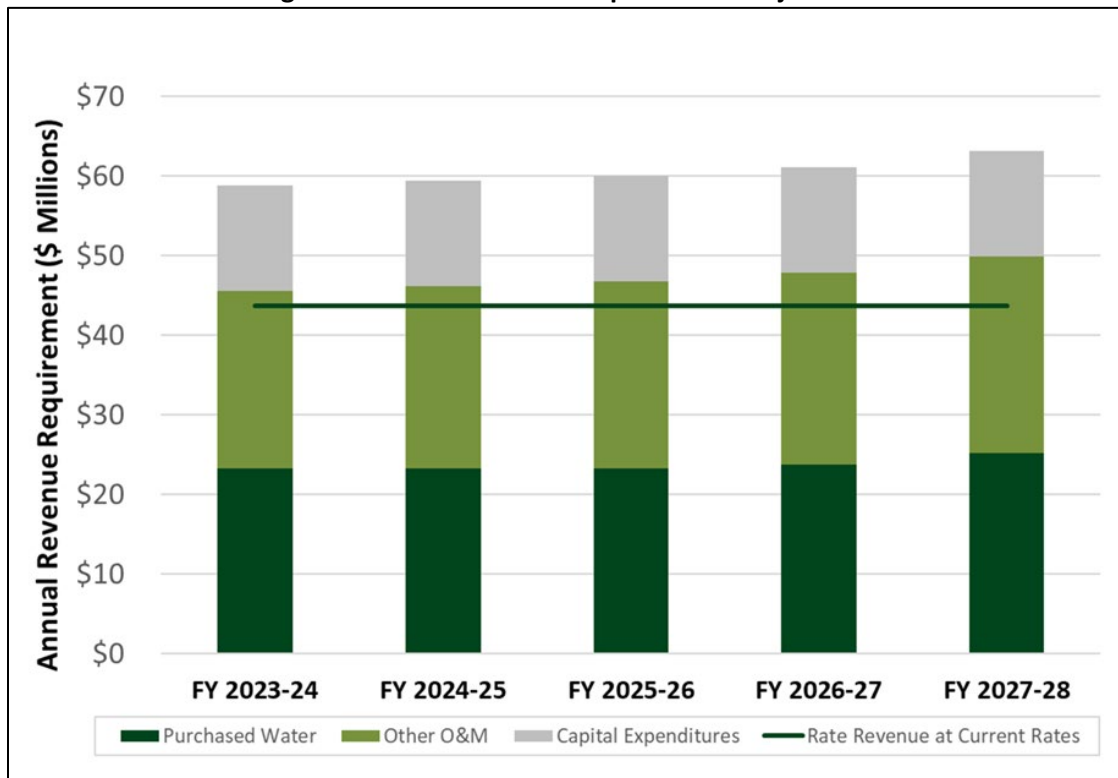
## REVENUE REQUIREMENTS

The revenue requirements were updated to reflect projected customer demands and the costs associated with meeting those demands. The five-year projections are shown in **Figure I-1**.

Over the Study Period, the City's revenue requirement is driven by increases to water purchase costs and capital improvement expenditures. The City's water supply source, SFPUC, intends to raise rates from \$5.21 per hundred cubic feet (HCF)<sup>3</sup> to \$5.63 per HCF over the next five years. On July 1 2022, wholesale rates increased from \$4.10 to \$4.75 per HCF. Rates were increased from \$4.75 to \$5.21 per HCF, on July 1, 2023. Increases to the wholesale rates augment the water purchase expenses over the Study Period. The City's capital improvement plans include an average annual expense of \$13.2 million over the projection period, demonstrating the City's priority to continue to invest in its water system. The bulk of project expenditures are planned to support water main replacement, as well as storage and pumping infrastructure.

<sup>3</sup> HCF (Hundred Cubic Feet) = 748.052 gallons

**Figure I-1. Total Revenue Requirement Projections**



Water Enterprise Expenses	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Purchased Water	\$23,275,500	\$23,275,500	\$23,275,500	\$23,722,247	\$25,151,836
Other O&M	\$22,319,341	\$22,907,924	\$23,513,355	\$24,141,552	\$24,788,876
Capital Expenditures	\$13,249,801	\$13,249,801	\$13,249,801	\$13,249,801	\$13,249,801
<b>Total Revenue Requirement</b>	<b>\$58,844,642</b>	<b>\$59,433,225</b>	<b>\$60,038,656</b>	<b>\$61,113,600</b>	<b>\$63,190,513</b>
<i>Annual Increase</i>		1.0%	1.0%	1.8%	3.4%

Source: Figure III-5.

The rate and revenue increases for FY 2023-24 and FY 2024-25 are shown in **Figure I-2**. The proposed rate increases would become effective on February 1, 2024 for the first year and thereafter on January 1 of each calendar year.

The fiscal year increase in revenue and rate adjustment columns typically do not match because the City implements rate increases mid-fiscal year. Thus, any changes to the rates apply to six months instead of the whole fiscal year period. In effect, the rates of one calendar year are made up of rates set in adjoining fiscal years. In FY 2023-24, the City receives a smaller increase in revenue because of the February 2024 effective date provides only five months of increased revenue instead of six months. The rate increases, beginning January 1, 2025, are applied as equal percentages across the board to all rates.

**Figure I-2. Projected Revenue Increases**

Fiscal Year	Rate Adjustments	Effective Date of Rate Adjustments	Revenue After Rate Adjustments	Fiscal Year Increase in Revenue
Revenue at 2023 Rates			\$43,671,145	
FY 2023-24	8.0%	2/1/2024	\$44,725,844	2.4%
FY 2024-25	7.0%	1/1/2025	\$48,381,821	8.2%

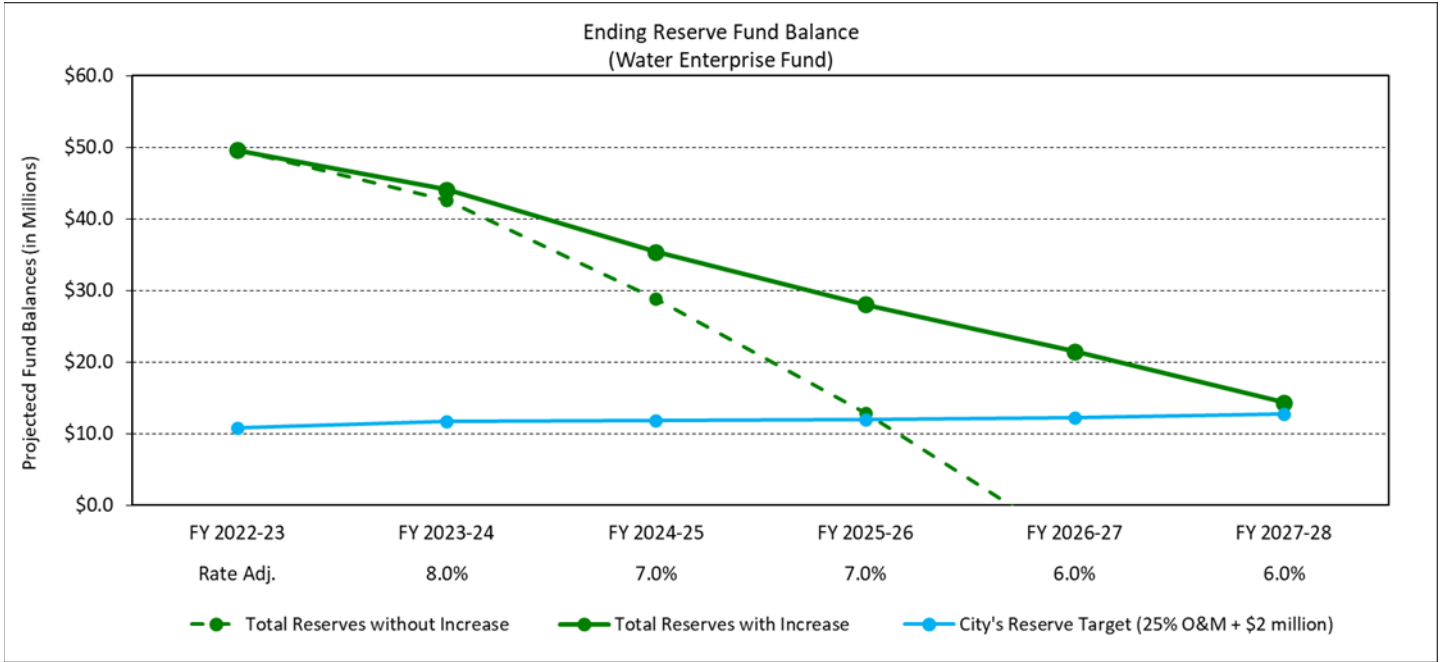
Source: Figure III-7.

As shown in **Figure I-3**, the projected increases in the revenue requirements are balanced with the City’s existing level of reserves. The City’s proposed reserve policy<sup>4</sup> assumes that the target reserve balance is made up of an operating reserve component and a capital reserve component. The operating reserve component will equal 25% of annual operations and maintenance (O&M) expenses. The capital reserve component will include \$2 million to provide working capital for pay-as-you-go construction projects. The sum of these components equals the City’s Reserve Target<sup>5</sup> (blue line). The projected fund balance shows the use of reserves over the Study Period. The use of reserves compensates for the need to charge larger rate increases to customers. The City has not increased rates since 2018. If current rate revenues remain unchanged, the City would require a heavier dependency on Water Enterprise Fund reserves, and reserves would be reduced significantly (dashed green line), falling below a recommended minimum threshold. However, with the proposed rate increases, the projected fund balance (green solid line) remains above the City’s Reserve Target by the end of the Study Period. With these proposed rate increases, debt service coverage remains strong and improves during the five-year period. **Figure I-4** projects debt coverage with the recommended revenue increases, ensuring the City continues to meet the minimum coverage ratio of 1.20.

<sup>4</sup> The Water Enterprise Fund has a formal policy of maintaining two million in reserves. The proposed reserve policy will be recommended for adoption via resolution to Council.

<sup>5</sup> In this study, the City has assumed a working reserve policy that is greater than its existing policy. City staff plans to recommend the working reserve policy be adopted. The proposed reserve policy assumes 25% of annual O&M expenses and \$2 million for capital projects. These reserve levels are in line with the City’s existing policies and industry standards.

**Figure I-3. Projected Year-End Fund Balance**



Source: Figure III-9.

Note: City's Reserve Target is a proposed policy, recommended by City staff.

**Figure I-4. Debt Service Coverage**

	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Rate Revenue w/ Increases	\$44,725,844	\$48,381,821	\$51,768,548	\$55,124,751	\$58,432,236
Non-Operating Income	\$1,345,179	\$1,399,218	\$1,456,936	\$1,512,329	\$1,571,375
Interest Income	\$466,259	\$395,566	\$315,899	\$246,471	\$178,036
<b>Total Funds Available</b>	<b>\$46,537,282</b>	<b>\$50,176,605</b>	<b>\$53,541,383</b>	<b>\$56,883,551</b>	<b>\$60,181,647</b>
O&M Expenses	(\$38,979,812)	(\$39,482,090)	(\$40,004,436)	(\$40,994,442)	(\$42,989,092)
Net Revenue	\$7,557,470	\$10,694,514	\$13,536,947	\$15,889,109	\$17,192,555
Debt Service	\$3,969,863	\$3,976,813	\$3,978,163	\$3,978,913	\$3,974,463
<b>Debt Coverage Ratio</b>	<b>1.90</b>	<b>2.69</b>	<b>3.40</b>	<b>3.99</b>	<b>4.33</b>

Source: Figure III-8.

## RATE STRUCTURE

### Current Rate Structure

The City's current rate structure is composed of two components: Service Charges and Water Use Charges.

#### Current Service Charges

The Service Charges<sup>6</sup> are fixed rates that are charged on a dwelling unit basis for Residential (single family and multi-family residences) customers and on a fixed rate graduated in proportion to the capacity of the

<sup>6</sup> The service is the connection between the public water system and the property served. The service includes the pipes, valves, and meter set (i.e., box, lid, yoke, meter, valve); in some cases, there are multiple meters. The service

service provided for Non-Residential (commercial, municipal, industrial, other, recycled water, and irrigation) customers. Residential customers are billed on a bi-monthly<sup>7</sup> basis by dwelling unit (DU) or equivalent dwelling unit (EDU) while non-residential, Commercial and irrigation customers are billed on a monthly basis. **Figures I-5 and I-6** summarizes the current Service Charges and Fire Service Charges.

**Figure I-5. Current Service Charges**

Service Charges	
Customer Class	Current Rates
<b>Single Family Residential</b>	<i>Bi-monthly per DU</i>
	\$59.04
<b>Multi Family Residential</b>	<i>Bi-monthly per EDU</i>
5/8" Meters	\$59.04
3/4" Meters	\$59.04
1" Meters	\$59.04
1.5" Meters	\$59.04
2" Meters	\$59.04
3" Meters	\$59.04
4" Meters	\$59.04
6" Meters	\$59.04
8" Meters	\$59.04
10" Meters	\$59.04
<b>Commercial</b> (including Landscape Irrigation, Recycled Water)	<i>Monthly per Meter</i>
5/8" Meters	\$29.52
3/4" Meters	\$44.28
1" Meters	\$73.80
1.5" Meters	\$147.60
2" Meters	\$236.16
3" Meters	\$442.80
4" Meters	\$738.00
6" Meters	\$1,476.00
8" Meters	\$1,476.00
10" Meters	\$1,476.00

Source: Figure IV-1.

is installed at the property owner's expense. After the meter is purchased and installed, customers pay Service Charge rates. The terminology in this report refers to the capacity of the service and the capacity of the meter interchangeably.

<sup>7</sup> Bi-monthly periods assume a billing period of 60 days.

**Figure I-6. Current Fire Service Charges (\$/month)**

Meter Size	Current Rates
1" Meters	\$16.00
2" Meters	\$32.00
3" Meters	\$48.00
4" Meters	\$64.00
6" Meters	\$96.00
8" Meters	\$128.00
10" Meters	\$160.00
12" Meters	\$192.00

Source: Figure IV-2.

### **Current Water Use Charge Rates**

The Water Use Charge Rates are the product of rates per unit of metered water use multiplied times the metered water use during the specified billing period. Water is metered in “units” of HCF of metered water use, whereby one unit or HCF equals 748 gallons. Water Use Charge rates are charged to four separate customer classes, Residential, Commercial, Landscape Irrigation, and Recycled Water customers.

For Residential customers, the Water Use Charge rates consist of four tiers that charge higher rates as the level of consumption increases. The tiers are specific to the number of equivalent dwelling units served by the parcel. Single Family Residential accounts serve one dwelling unit and are considered 1.0 EDU. Similarly, Multi Family customer accounts serving 2-9 dwelling units count each dwelling unit as 1.0 EDU. However, Multi Family customer accounts serving 10-59 dwelling units count each dwelling unit as 0.75 EDU and accounts serving more than 60 dwelling units count each dwelling unit as 0.5 EDU. The volume of water in each tier corresponds to the number of EDU calculated for each account.

For Commercial and Recycled Water customers, the Water Use Charge rate is a uniform rate<sup>8</sup> per HCF of metered water use. All customers pay the same per HCF of water use, and recycled water customers’ rate is a lower rate than potable customers’ rates.

For Landscape Irrigation customers, the Water Use Charge rates are based on a three-tiered, budget-based structure that charge higher rates as the level of water use relative to the customers water budget increases. **Figure I-7** reflects all current rates, excluding a recycled water discount.

All components of the rate structure were reviewed, including the composition of the customer classes, the structures of the Service Charges and Water Use Charges, and the need for Drought Rate Factors.

<sup>8</sup> This report distinguishes between *uniform* rates and *flat* rates. Uniform rates are constant charges per unit of water use that do not change depending on the amount used. Flat rates are fixed amounts that do not vary based on metered water use. Flat rates are most commonly used in unmetered water systems and for residential wastewater rates.

**Figure I-7. Current Water Use Charge Rates**

<b>Water Use Charges</b>	
<b>Single Family Residential</b>	
<b>Current Tiers</b>	<b>Current Rates</b>
Tier 1 (0-8 hcf)	\$6.13
Tier 2 (9-20 hcf)	\$7.35
Tier 3 (21-40 hcf)	\$10.20
Tier 4 (41+ hcf)	\$13.45
<b>Multi Family Residential</b>	
<b>Usage</b>	<b>Current Rates</b>
Tier 1 (0-8 hcf)	\$6.13
Tier 2 (9-20 hcf)	\$7.35
Tier 3 (21-40 hcf)	\$10.20
Tier 4 (41+ hcf)	\$13.45
<b>Commercial</b>	
<b>Usage</b>	<b>Current Rates</b>
All Water Use	\$7.35
<b>Landscape Irrigation</b>	
<b>Usage</b>	<b>Current Rates</b>
Under 100% Budget	\$7.35
101%-200% Budget	\$10.20
Over 200% Budget	\$13.45
<b>Recycled Water</b>	
<b>Usage</b>	<b>Current Rates</b>
All Water Use	\$7.35

Source: Figure IV-3.

### **Proposed Service Charge Rates**

Currently, about 36% of the rate revenue is generated by the current Service Charges. For a Single Family Residential bill of average bi-monthly water use (14 HCF), the Service Charge represents nearly 39% of the total bill.

Adjustments in FY 2023-24 are recommended to re-align the Service Charge rates with the cost-of-service. Revenues from the proposed Service Charges would continue to generate 36% of the overall rate revenue. This level of revenue from Service Charges will continue to provide adequate revenue stability when combined with the relatively fixed revenue from non-seasonal (base) water demand.

The City is moving toward a methodology of one water system. Two sources of water – potable and recycled – supply the City’s water system. The use of recycled water reduces the need to purchase potable water. Therefore, the City’s water system can be thought of as an integrated system. As a result, all water, whether potable or recycled, will be considered as part of the same water supply portfolio. This means existing customer classes can be consolidated. We recommend the City modify the customer classes and Service Charge rate structures as follows:

1. Consolidate all Residential Irrigation customers under the Multi Family Residential customer class, subject to the same Multi Family Residential Service Charges and Consumption Charges.
2. Consolidate all Commercial Irrigation and Recycled Water customers under the Commercial customer class, subject to the same Commercial Service Charges and Consumption Charges.
3. Revise the Multi Family Residential Service Charge structure to a bi-monthly charge based on the meter capacity. This change in the rate structure aligns with the methodology used for Commercial Service Charges. As such, the charge is graduated in proportion to the capacity of the service and not the number of dwelling units served.

### **Summary of Proposed Service Charge Rates**

**Figure I-8** summarizes the current and proposed rates to re-align with the cost of service. The proposed rates would become effective February 1, 2024 and January 1, 2025.

With the recommended increases and realignment to the cost-of-service, revenues from the Service Charges would increase 8.7% with twelve months of rate increase applied. The rebalancing of rates means twelve-month revenues collected from the Service Charges billed to Single Family Residential customers would increase. The revenues collected from the Service Charges billed to Commercial, Multi-Family, Irrigation, and Recycled Water (Commercial/Multi Family) would decrease. After the first year, all Service Charge rates would increase uniformly according to the recommended revenue increase of 7% (effective January 1, 2025).

**Figure I-8. Current and Proposed Service Charge Rates**

Service Charges			
Customer Class	Current	FY 2023-24 eff. 2/1/2024	FY 2024-25 eff. 1/1/2025
<b>Single Family Residential</b>	<i>Bi-monthly per DU</i>	<i>Bi-monthly per DU</i>	
	\$59.04	\$76.72	\$82.09
<b>Multi Family Residential (including Residential Irrigation)</b>	<i>Bi-monthly per EDU</i>	<i>Bi-monthly per Meter</i>	
5/8" Meters	\$59.04	\$76.72	\$82.09
3/4" Meters	\$59.04	\$105.30	\$112.67
1" Meters	\$59.04	\$162.46	\$173.83
1.5" Meters	\$59.04	\$305.38	\$326.76
2" Meters	\$59.04	\$476.88	\$510.26
3" Meters	\$59.04	\$1,262.94	\$1,351.35
4" Meters	\$59.04	\$2,163.32	\$2,314.75
6" Meters	\$59.04	\$4,592.92	\$4,914.42
8" Meters	\$59.04	\$8,022.96	\$8,584.57
10" Meters	\$59.04	\$12,024.68	\$12,866.41
<b>Commercial (including Commercial Irrigation)</b>	<i>Monthly per Meter</i>	<i>Monthly per Meter</i>	
5/8" Meters	\$29.52	\$38.36	\$41.05
3/4" Meters	\$44.28	\$52.65	\$56.34
1" Meters	\$73.80	\$81.23	\$86.92
1.5" Meters	\$147.60	\$152.69	\$163.38
2" Meters	\$236.16	\$238.44	\$255.13
3" Meters	\$442.80	\$631.47	\$675.67
4" Meters	\$738.00	\$1,081.66	\$1,157.38
6" Meters	\$1,476.00	\$2,296.46	\$2,457.21
8" Meters	\$1,476.00	\$4,011.48	\$4,292.28
10" Meters	\$1,476.00	\$6,012.34	\$6,433.20

Source: Figure V-4.

**Figure I-9** summarizes the current and proposed fire service charges. The existing structure requires no adjustment. Therefore, the rates shown are based on an 8% increase applied to current rates for FY 2023-24, effective February 1, 2024, followed by a 7% increase applies to rates, effective January 1, 2025.

**Figure I-9. Current and Proposed Fire Service Charge Rates**

Meter Size	Current Rates	FY 2023-24	FY 2024-25
		eff 2/1/2024	eff. 1/1/2025
1" Meters	\$16.00	\$17.28	\$18.49
2" Meters	\$32.00	\$34.56	\$36.98
3" Meters	\$48.00	\$51.84	\$55.47
4" Meters	\$64.00	\$69.12	\$73.96
6" Meters	\$96.00	\$103.68	\$110.94
8" Meters	\$128.00	\$138.24	\$147.92
10" Meters	\$160.00	\$172.80	\$184.90
12" Meters	\$192.00	\$207.36	\$221.88

Source: Figure V-5.

### **Proposed Water Use Charge Rates**

About 64% of the current water rate revenue is generated by the Water Use Charges.

Adjustments in FY 2023-24 are recommended to re-align the Water Use Charge rates with the cost-of-service. These adjustments would allow the City to continue to generate 64% of the overall rate revenue from the Water Use Charges. The rates will continue to provide adequate revenue stability, as the fixed revenue from the annualized winter water use provides additional revenue stability to the revenues received via the fixed Service Charges.

Based on industry practice and customer water use patterns, we recommend changes to the structure used for Water Use Charge rates assigned to Multi Family Residential customers. The recommended modification to change to a uniform rate would align the City with the Commercial rate structure. Further, the change in structure would align with other neighboring agencies, as shown in **Figure I-10**.

**Figure I-10. Survey of Multi Family Water Rate Structures**

Multi Family		
Agency	Fixed Charges	Consumption Charges
<b>Redwood City (Proposed)</b>	Meter Size	Uniform
Belmont	Meter Size	Tiered
Foster City	Meter Size	Tiered
San Carlos, San Mateo (CalWater)	Meter Size	Uniform
San Carlos (Mid-Pen)	Meter Size	Tiered
Menlo Park	Meter Size	Tiered
Hillsborough	Meter Size	Uniform
Daly City	Meter Size	Tiered
Burlingame	Meter Size	Uniform
NCCWD	Meter Size	Uniform
East Palo Alto	Meter Size	Uniform
Palo Alto	Meter Size	Uniform
Millbrae	Meter Size	Uniform
Westborough Water District	Meter Size	Uniform
Mountain View	Meter Size	Tiered
San Bruno	Meter Size	Uniform
Montara	Meter Size	Combination
Brisbane	Meter Size	Tiered

Source: Figure IV-4.

Changing Multi Family Use Charges to a uniform rate structure would reduce the number of customers and water use considered in tiered rate structure analysis. Based on this change and shifts in demand patterns since the last cost-of-service analysis was completed for the City, we recommend changes in the breakpoints between the tiers in the Water Use Charge structure. The recommended bi-monthly breakpoints of 8, 20, and 40 HCF would shift to 10, 14, and 20 HCF.

Since the City provides water through one integrated system of potable and recycled water, it is moving toward rates that reflect the realities of the system. As a result, all water, whether potable or recycled, will be considered as part of the same system portfolio. Along with consolidation of customer classes, we recommend revising Non-Residential rate structures. The Landscape Irrigation (Irrigation) Consumption Charge structure can be revised to a uniform rate that matches the Commercial Water Use Charge rate. Also, the Recycled Water Use Charge can be set equal to the Commercial Water Use Charge rate.

We recommend implementing Drought Rate Factors that could be applied to the Water Use Charge rates during water shortages to compensate for changes in water use and varying levels of discretionary water use among the Residential and Non-Residential customer classes. There should be a Drought Rate Factor corresponding to each reduction stage in the City's *Water Shortage Contingency Plan*, which contains conservation requirements for each stage of water shortage. The Drought Rate Factors are designed only to offset the amount of revenue shortfall caused by conservation in effect in the City during the specific water shortage stage, state mandated reductions in the level of potable water usage, or other natural disaster or event that results in a water shortage and an unforeseen drop in water demand. As such, they are revenue neutral and not a means to increase rate revenue beyond the amount that would have been generated under non-water shortage conditions.

**Figure I-11** summarizes the Drought Rate Factors that correspond to the water shortage stages in the City's *Water Shortage Contingency Plan*. The Water Use Charge rates derived in this study accounted for changes to water use driven by the current water shortage. However, if the City experiences a water shortage beyond the level of water use projected, the normal-year Water Use Charge rates would be multiplied times the corresponding Drought Rate Factor to determine the Water Use Charge rates.

For example, if customers are required to cut back 20% (a Stage 2 water shortage), a Drought Rate Factor of 1.047 would be multiplied times the then-current Water Use Charge rates that are in effect for Single Family Residential customers (summarized in **Figure I-4**). If the water shortage stage increased to 40%, a Drought Rate Factor of 1.124 would be multiplied times the then-current Water Use Charge rates. If the water shortage stage then decreased to 30%, the Drought Rate Factor would be reduced from 1.124 to 1.080.

The formula<sup>9</sup> for calculating Drought Rate Factors corresponding to other levels of cutback is provided in Chapter V of this study. The Drought Rate Factors only apply to the tiered and uniform Water Use Charge rates and not to Service Charge rates, which are independent of water demand. Revenue from Service Charges is not influenced by water demand and is therefore unaffected by conservation or fluctuations in customer demand.

**Figure I-11. Drought Rate Factors**

Class	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
	Shortage	Shortage	Shortage	Shortage	Shortage	Shortage
	Up to	Up to	Up to	Up to	Up to	Up to
	(10% Reduction)	(20% Reduction)	(30% Reduction)	(40% Reduction)	(50% Reduction)	(55% Reduction)
Single Family	1.021	1.047	1.080	1.124	1.182	1.222
Multi-Family	1.014	1.031	1.051	1.074	1.101	1.121
Commercial	1.018	1.039	1.064	1.096	1.135	1.162
Irrigation	1.046	1.118	1.250	1.571	3.420	n/a

Source: Figure V-14.

**Summary of Water Use Charge Rates**

**Figure I-12** summarizes the current and proposed Water Use Charge rates. The proposed rate analysis was derived using FY 2021-22 and FY 2022-23 water demand patterns. More detail is discussed in the Demand Projections section of Section III of this report.

For the proposed, tiered Water Use Charge rates for the Residential class, the number of tiers remains the same, however the breakpoints have been adjusted. The Tier 1 breakpoint is increasing, thus, compressing the width of Tier 2. Tier 3 also compresses, reflecting the increased levels of conservation by the Single Family Residential customers. Overall, the more water a Residential customer uses, the greater the increase to the Water Use Charge portion of their bill.

<sup>9</sup> Following **Figure V-13** of this study.

With the recommended increases and realignment to the cost-of-service, revenues from the Water Use Charges would increase 9.2% with twelve months of rate increase applied. The adjustments to the uniform Water Use Charge rate for the Multi Family Residential, Commercial, and Irrigation customer classes would collectively increase twelve-month revenues by more than 18% to re-align with the cost-of-service. After the first year, all Water Use Charge rates would increase uniformly according to the recommended revenue increases of 7%, effective January 1, 2025.

**Figure I-12. Current and Proposed Water Use Charge Rates**

<b>Water Use Charges</b>				
<b>Single Family Residential</b>				
<b>Current Tiers</b>	<b>Current Rates</b>	<b>Proposed Tiers</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
Tier 1 (0-8 hcf)	\$6.13	Tier 1 (0-10 hcf)	\$6.45	\$6.90
Tier 2 (9-20 hcf)	\$7.35	Tier 2 (11-14 hcf)	\$7.37	\$7.89
Tier 3 (21-40 hcf)	\$10.20	Tier 3 (15-20 hcf)	\$9.63	\$10.30
Tier 4 (41+ hcf)	\$13.45	Tier 4 (21+ hcf)	\$14.57	\$15.59
<b>Multi Family Residential (including Residential Fire)</b>				
<b>Current Tiers</b>	<b>Current Rates</b>	<b>Usage</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
Tier 1 (0-8 hcf)	\$6.13	All Water Use	\$7.92	\$8.47
Tier 2 (9-20 hcf)	\$7.35			
Tier 3 (21-40 hcf)	\$10.20			
Tier 4 (41+ hcf)	\$13.45			
<b>Commercial - Includes Commercial, Industrial, Other, Municipal, Commercial Fire</b>				
<b>Usage</b>	<b>Current Rates</b>	<b>Usage</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
All Water Use	\$7.35	All Water Use	\$7.92	\$8.47
<b>Landscape Irrigation</b>				
<b>Usage</b>	<b>Current Rates</b>	<b>Usage</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
Under 100% Budget	\$7.35	All Water Use	\$7.92	\$8.47
101%-200% Budget	\$10.20			
Over 200% Budget	\$13.45			

Source: Figure V-11.

## **II. INTRODUCTION**

### **STUDY PURPOSE**

The purpose of this study is to conduct a cost-of-service analysis that will determine rates that proportionally recover the cost of providing the City's water service. Toward that end, the cost-of-service analysis determines how much revenue should be generated by each component of the rate structure so that rate payers within each customer class are charged for their proportionate share of the cost of providing service on a parcel basis. The cost-of-service analysis is tailored specifically to the City's customer classes and the rate structures that are appropriate for each class.

### **STUDY PROCESS**

In 2022, the City requested HF&H Consultants (HF&H) to perform a cost-of-service study to set water rates for FY 2023-24 and FY 2024-25. A ten-year analysis provided support for long-term planning. However, the City plans to develop a Recycled Water Master Plan that is estimated to be adopted in 2025. With the significant changes anticipated, the City is electing to set rates for two years. Therefore, while five years of analysis are reported, the projections will likely change due to the Recycled Water Master Plan. The City plans to conduct a second rate study to set rates for FY 2025-26 and future years.

The primary goal of this study is to ensure that rates continue to reflect the current cost of providing water service. A comprehensive rate study comprises three steps: 1) revenue requirement projections; 2) cost-of-service analysis; and 3) rate design. Revenue requirement projections identify how much revenue is needed from rates. The cost-of-service analysis determines how much of the revenue should come from the fixed and variable charges. This step also confirms the proportionate amount to be paid by each customer class. The final step, rate design, establishes the structure of the fixed service charges and the variable volume charges for each customer class.

The cost-of-service analysis was conducted following industry practices promulgated by the American Water Works Association.<sup>10</sup> At the outset of the analysis, the types of customer classes were reviewed, as were the types of rate structures that are appropriate to the City's customer class.

### **REPORT ORGANIZATION**

The report is divided into the following sections: Revenue Requirements, Cost-of-Service Analysis, Rate Design, and Customer Bill Impacts.

A Glossary of technical terms and acronyms is provided following the Table of Contents.

<sup>10</sup> *Principles of Water Rates, Fees, and Charges*. American Water Works Association Manual M1. 2017.

### III. REVENUE REQUIREMENTS

The revenue requirements analysis starts by determining the FY 2023-24 revenue requirements based on the budgeted O&M and capital expenditures. Revenue requirements for each fiscal year are then projected over the Study Period. Revenue increases needed to cover the projected revenue requirements are then determined.

#### DEMAND PROJECTIONS

The revenue requirements projected during the Study Period are based on the City’s unique circumstances. Projected customer demand is particularly significant because it affects certain variable expenses such as the cost of purchased water as well as the revenue from water sales. Customer demand depends on the types of customers, the nature of their demands, the trends in their water use, growth, and climate, among others.

The City consists of single-family residences, multi-family residences, commercial (including schools), industrial, municipal, irrigation, and even recycled water customers. While single-family residential water use currently accounts for 47% of the total water use, future growth depends on development of multi-family and mixed-use retail. The service area is largely developed, but the City’s General Housing Element identifies plans for more housing to meet future population growth. For purposes of this rate study, no growth in water demand nor in growth of accounts was assumed. Connection fee revenue from growth is assumed, but the City did not estimate increased operational costs or supply costs explicitly due to growth.

Water demand projections used in this study are shown in **Figure III-1**. Projections are based on the two-year average of billing data from FY 2021-22 to FY 2022-23.

**Figure III-1. Five-Year Modeled Demand Projections**

Customer Class	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Multi Family Residential	790,781	790,781	790,781	790,781	790,781
Commercial	636,936	636,936	636,936	636,936	636,936
Commercial Irrigation	354,096	354,096	354,096	354,096	354,096
Residential Irrigation	188,564	188,564	188,564	188,564	188,564
Single Family Residential	1,723,268	1,723,268	1,723,268	1,723,268	1,723,268
Commercial Recycled	9,176	9,176	9,176	9,176	9,176
<b>Annual Water Use (HCF)</b>	<b>3,702,820</b>	<b>3,702,820</b>	<b>3,702,820</b>	<b>3,702,820</b>	<b>3,702,820</b>

#### REVENUE REQUIREMENT ASSUMPTIONS AND PROJECTIONS

Expense projections combined with contributions to reserves become the revenue requirements. The City’s operating and capital budgets were relied on for FY 2023-24 expenses in the first-year revenue requirement. The assumptions shown in **Figure III-2** were used to project revenue requirements through FY 2027-28.

**Figure III-2. Projection Assumptions**

Assumptions	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
General Inflation	Per Budget	3.00%	3.00%	3.00%	3.00%
Salaries and Wages	Per Budget	4.00%	4.00%	4.00%	4.00%
Benefits	Per Budget	4.00%	4.00%	4.00%	4.00%
Construction Cost Inflation	Per Budget	3.74%	3.74%	3.74%	3.74%
Utilities	Per Budget	7.00%	7.00%	7.00%	7.00%
Interest on Fund Balance	1.00%	1.00%	1.00%	1.00%	1.00%
SFPUC Cost of Purchased Water	\$5.21	\$5.21	\$5.21	\$5.31	\$5.63
SFPUC Cost of Purchased Water %	Per Budget	0.00%	0.00%	1.92%	6.03%

### **SFPUC Purchased Water Costs**

The City is entirely reliant on the SFPUC for its water supply. As a member of BAWSCA, the City’s water supply expenses are driven by two usage-based rates: 1) SFPUC’s annual rate and 2) BAWSCA’s bond surcharge rate <sup>11</sup> . The SFPUC provided notice to increase the previous rate of \$4.75 per HCF to \$5.21 per HCF beginning July 1, 2023. Further, the SFPUC’s notice forecasted rates would increase to \$5.31 per HCF by FYE 2027, and \$5.63 per HCF by FYE 2028.

Beginning FYE 2014, the BAWSCA bond surcharge rate was added so that each agency could pay its proportionate share of debt issuance based on purchased water have increased as bonds have been sold to fund the WSIP projects. The bond surcharge rate has been factored into the projections of water supply costs in this analysis.

Since 1984, the SFPUC’s wholesale rates have been set in compliance with rate-making agreements. The agreements contain provisions that annually reconcile projected expenses and demands with actual expenses and demands. The difference is rolled forward into the ensuing year’s rates. In this way, both the SFPUC and the BAWSCA 26 wholesale customers are protected. However, it also means that the annual adjustment can either increase or decrease rates, which leads to some short-term volatility in the wholesale rates that can accentuate annual rate fluctuations.

The rising SFPUC rates and current BAWSCA bond surcharge rate were built into the revenue requirement projections. The cost of SFPUC water is nearly 40% of the annual revenue requirement – the largest single item. The impact of these significant increases in wholesale rates on the revenue requirements over the study period cannot be overstated.

### **Other Operations and Maintenance Expenses**

This cost category includes direct salaries and benefits, materials and services, contract services, and overhead. These expenses are projected to increase gradually at about 3% during the projection period, according to City estimates.

<sup>11</sup> The SFPUC also charges a fixed service charge, currently 2% of total purchased water costs, which is not impacted by the amount of water the City purchases.

## Debt Service

The City has three outstanding bond obligations. The annual debt service is approximately \$3.9 million. The outstanding bonds are identified in **Figure III-3**. Each refunding bond was used to refinance existing debt service issued in 2005, 2006, and 2007. In each instance, the original debt service funded capital projects related to the recycled water system, retrofitting irrigation systems, installing artificial surfaces for athletic fields in the City, and system-wide repair and replacement of Enterprise facilities. Although these projects were constructed and are in service, the debt service on these bonds will continue beyond the Study Period.

**Figure III-3. Current Annual Debt Service**

Current Debt	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Series 2013 Refunding Bonds	\$2,061,000	\$2,060,750	\$2,062,500	\$2,061,000	\$2,061,250
Series 2015 Refunding Bonds	\$1,418,444	\$1,420,644	\$1,421,244	\$1,420,244	\$1,418,294
Series 2017 Refunding Bonds	\$490,419	\$495,419	\$494,419	\$497,669	\$494,919

## Capital Expenditures

Even though the City has constructed facilities to provide water service, these facilities will depreciate and eventually need to be replaced. It is unrealistic to think that the system has already been built and paid for and that there will be no future capital costs. The City has in place a Water Master Plan to address long-term capital projects via its Capital Improvement Program (CIP). Based on this Plan, the revenue requirement projections show an increased level of funding in FYE 2024 needed to support the capital improvement program, which contains approximately \$75.3 million in cash-funded capital projects<sup>12</sup> over the Study Period as shown in **Figure III-4**.

Concurrently the City is conducting a separate study to update its water connection fees. The connection fee revenues shown in **Figure III-4** assume the new connection fees will be implemented in 2024. As a result, the average annual expenditure of \$13.2 million is the net amount that is contributed from rate revenues beginning in FYE 2024. This amount will be funded on a pay-as-you-go (PAYGo) basis.

<sup>12</sup> This figure assumes an annual inflation factor of 3.74% beginning FY 2024-25, based on the ten-year compound annual growth rate of the Engineering New Record Construction Cost Index for San Francisco.

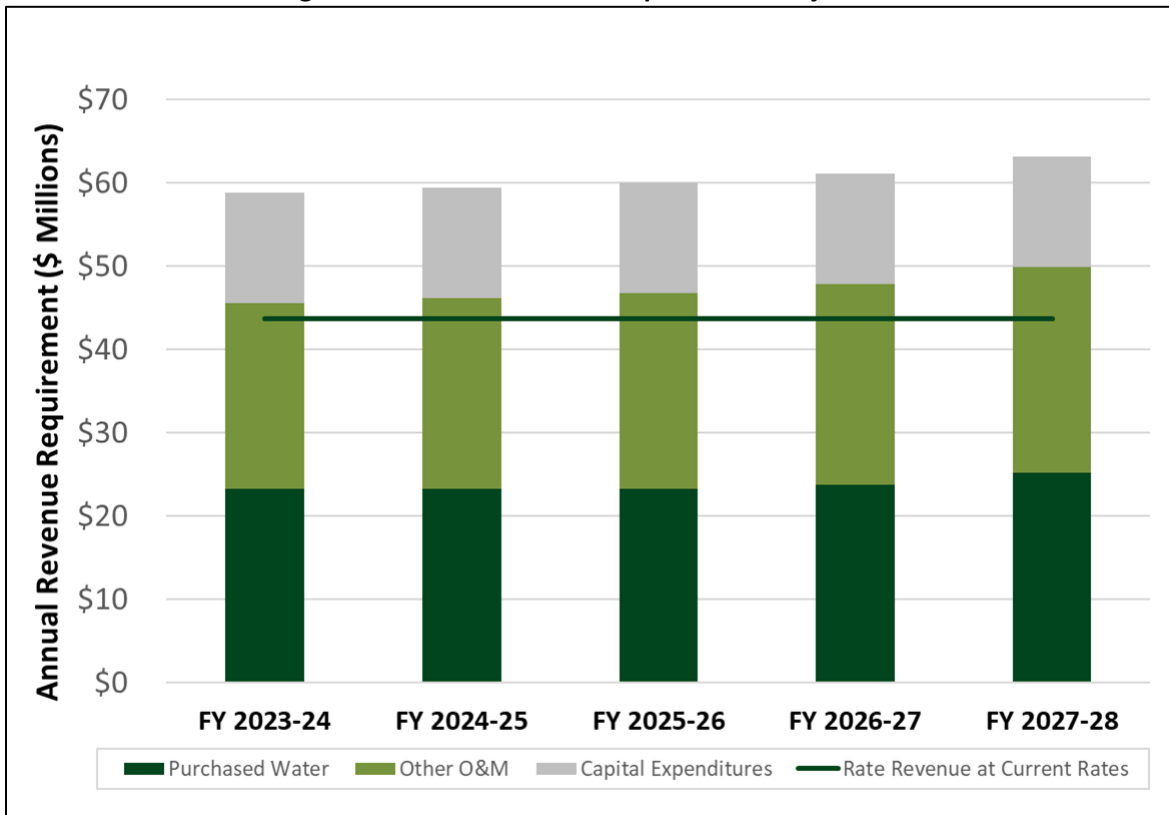
**Figure III-4. Projected Capital Improvement Program**

<b>Water Enterprise CIP</b>	<b>FY 2023-24</b>	<b>FY 2024-25</b>	<b>FY 2025-26</b>	<b>FY 2026-27</b>	<b>FY 2027-28</b>
Downtown Recycled Water Dist. Phase 2C Ext.	\$1,500,000	\$3,000,000	\$3,000,000	\$3,000,000	\$3,000,000
Finance & Human Resources Software	\$0	\$0	\$0	\$0	\$0
Main City Recycled Water Tank & Pump Station	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Cathodic Protection Program	\$200,000	\$100,000	\$100,000	\$100,000	\$100,000
Distribution System Replacement Program	\$1,000,000	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000
Pump Station & Tank Rehab/Replacement	\$1,000,000	\$3,000,000	\$3,000,000	\$3,000,000	\$4,000,000
Recycled Water Quality Improvements	\$200,000	\$0	\$0	\$0	\$0
Water System Seismic Improvement Program	\$2,000,000	\$500,000	\$500,000	\$500,000	\$500,000
Potable Water Projects	\$0	\$0	\$0	\$0	\$0
Recycled Water Projects	\$0	\$0	\$0	\$0	\$0
<b>Water Enterprise CIP Subtotal</b>	<b>\$7,900,000</b>	<b>\$15,100,000</b>	<b>\$15,100,000</b>	<b>\$15,100,000</b>	<b>\$16,100,000</b>
Construction Cost Index	0.00%	3.74%	7.62%	11.65%	15.83%
<b>Total Inflated CIP</b>	<b>\$7,900,000</b>	<b>\$15,664,954</b>	<b>\$16,251,046</b>	<b>\$16,859,066</b>	<b>\$18,648,101</b>
Less Total Connection Fees	<b>(\$1,426,133)</b>	<b>(\$2,994,062)</b>	<b>(\$2,163,033)</b>	<b>(\$1,219,878)</b>	<b>(\$1,271,056)</b>
<b>Net PAYGo CIP</b>	<b>\$6,473,867</b>	<b>\$12,670,892</b>	<b>\$14,088,013</b>	<b>\$15,639,188</b>	<b>\$17,377,045</b>

Note: Connection Fees based on preliminary analysis conducted by HF&H.

The major expenses described above that comprise the revenue requirements are shown in **Figure III-5**. Wholesale water is the largest individual cost among these three cost categories. In the City’s case nearly 40% of its revenue requirement is for the cost of water, which will vary in direct proportion to demand. Current rate revenues of \$43.3 million are insufficient to meet projected expenses. The City faces a growing deficit over the Study Period.

Figure III-5. Total Revenue Requirement Projections



Water Enterprise Expenses	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Purchased Water	\$23,275,500	\$23,275,500	\$23,275,500	\$23,722,247	\$25,151,836
Other O&M	\$22,319,341	\$22,907,924	\$23,513,355	\$24,141,552	\$24,788,876
Capital Expenditures	\$13,249,801	\$13,249,801	\$13,249,801	\$13,249,801	\$13,249,801
<b>Total Revenue Requirement</b>	<b>\$58,844,642</b>	<b>\$59,433,225</b>	<b>\$60,038,656</b>	<b>\$61,113,600</b>	<b>\$63,190,513</b>
<i>Annual Increase</i>		1.0%	1.0%	1.8%	3.4%

Source: Data from City's FY 2023-24 Budget.

## RESERVES

Rates need to generate enough revenue to cover unfunded annual operating and capital expenses. However, rates are not set to exactly match cash expenditures because the timing of cash expenditures can fluctuate. If rates were set to exactly match expenditures, rates would also fluctuate. To avoid increasing and decreasing rates from year to year, reserves are used to cover the difference so that rate increases are smooth and gradual.

The City's current level of reserves has enabled it to maintain a strong credit rating, which reduces its financing costs. The City uses its reserves to stabilize rates against annual fluctuations in capital expenditures, variances between projected and actual water demands, and unanticipated expenditures and other expenditure variances. In some years, there is surplus revenue that is available to replenish reserves. In other years, reserves are drawn down to cover the cost of service.

Rates are set to generate a constant level of revenue to maintain reserves at adequate levels. At the same time that revenue from rates is added to reserves, reserves are drawn down to fund capital projects whose costs vary from year to year. In effect, reserves are used to buffer rates from varying levels of capital expenditures and unforeseen variances in operating expenditures. For the most part, however, the variances are due to capital projects (see **Figure III-4**).

Reserves are required to stabilize rates and to provide for contingencies. Reserves can be drawn on in years when the City's Water Enterprise Fund experiences above average costs and augmented during years when costs are below average. The City's reserves are used for operating and capital purposes. Each of these purposes has its own requirements that lead to a minimum and optimum target balance. Rates must be set so that the fund balance achieves the target balance.

### **Current Policy**

The City has an existing policy to maintain \$2 million in reserves. This threshold is less than industry practice, which recommends a minimum balance sufficient to manage monthly cash flow needs. For reference, the *monthly* average of the City's FY 2023-24 revenue requirement before capital expenditures is \$3.8 million. Therefore, it is recommended the City increase the reserve threshold of its existing policy.

### **City Proposed Policy**

In this study, the City has assumed a working reserve policy that is greater than its existing policy. City staff plans to recommend the working reserve policy be adopted. The proposed reserve policy assumes 25% of annual O&M expenses and \$2 million for capital projects.

The operating component of the reserves provides working capital for month-to-month O&M expenses. With sufficient working capital, the City can operate without cash flow constraints. This proposed reserve policy tracks with HF&H's recommendation of a minimum operating reserve that is equal to at least 1.5 times the billing frequency (or three months in the City's case). The City's reserves should never drop below this minimum balance.

The capital improvement component of the reserves provides cash funding for the City's capital improvement program. The fund balance needs to be sufficient to pay contractors and purchase materials without delays caused by cash flow limitations. The City's proposed reserve policy assumes the minimum reserve balance is \$2 million. Given the City's plans to fund an average of \$13.2 million in capital projects per year with rate revenues, this component is necessary.

## **REVENUE INCREASES**

Rates are set to generate sufficient revenue to cover annual expenses. In addition, rates are set to maintain adequate reserves. The revenue from rates does not need to match each year's revenue requirement. For example, the annual increases in the revenue requirements shown at the bottom of **Figure III-5** are different from the revenue increases in **Figure III-6**. Annual fluctuations in revenue requirements are typically uneven because they are harder to control, whereas it is desirable to have smooth annual increases in rates. The annual differences cause the fund balance to fluctuate from year to year.

Revenue increases were derived to cover the City’s Enterprise costs and to maintain adequate reserves. **Figure III-6** summarizes the projected revenue from current rates, annual revenue requirements, annual variances, and the rate increases necessary to cover the City’s costs.

**Figure III-6. Rate Increase Calculations**

	Projected				
	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Revenue from Current Rates	\$43,283,075	\$43,283,075	\$43,283,075	\$43,283,075	\$43,283,075
Revenue Requirement	(\$58,844,642)	(\$59,433,225)	(\$60,038,656)	(\$61,113,600)	(\$63,190,513)
Non-Operating Revenue	\$1,345,179	\$1,399,218	\$1,456,936	\$1,512,329	\$1,571,375
Use of Reserves	\$10,295,248	\$0	\$0	\$0	\$0
Net Revenue Requirement	(\$47,204,214)	(\$58,034,008)	(\$58,581,720)	(\$59,601,271)	(\$61,619,138)
Revenue Surplus/(Shortfall)	(\$3,921,140)	(\$14,750,933)	(\$15,298,646)	(\$16,318,197)	(\$18,336,063)
<b>Proposed Rate Increase</b>	<b>8%</b>	<b>7%</b>	<b>7%</b>	<b>6%</b>	<b>6%</b>

Rate increases account for rate revenue and future revenue requirements. The revenue requirement (shown in greater detail in **Figure III-5**) increases due to increasing water supply costs and capital expenditures. **Figure III-7** summarizes the resulting annual increases in rates and revenues from the proposed service and water use charges. The fiscal year increase in revenue and rate adjustment columns typically do not match, as the City implements rate increases mid-fiscal year. Thus, any changes to the rates apply to six months instead of the whole fiscal year period. In effect, the rates of one calendar year are made up of rates set in adjoining fiscal years. In FY 2023-24, the City receives a smaller increase in revenue because the February 2024 effective date provides only five months of increased revenue instead of six months. It is assumed that the rate increases for FY 2024-25 will occur on January 1, 2025.

**Figure III-7. Projected Revenue Increases**

Fiscal Year	Rate Adjustments	Effective Date of Rate Adjustments	Revenue After Rate Adjustments	Fiscal Year Increase in Revenue
Revenue at 2023 Rates			\$43,671,145	
FY 2023-24	8.0%	2/1/2024	\$44,725,844	2.4%
FY 2024-25	7.0%	1/1/2025	\$48,381,821	8.2%

The rates are derived in Chapter V. With these rate increases, the Enterprise is able to pay for its annual O&M and capital expenses, maintain adequate debt service coverage, and maintain adequate reserves, as further discussed below.

## DEBT COVERAGE

**Figure III-8** shows the debt service coverage provided by the revenue increases in **Figure III-7**. The City is required to maintain a minimum coverage ratio of 1.20. A higher ratio provides a greater margin of safety to bondholders and enhances the credit rating on bonds. Moreover, a higher credit rating benefits rate payers by reducing the cost of borrowing.

**Figure III-8. Debt Service Coverage**

	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Rate Revenue w/ Increases	\$44,725,844	\$48,381,821	\$51,768,548	\$55,124,751	\$58,432,236
Non-Operating Income	\$1,345,179	\$1,399,218	\$1,456,936	\$1,512,329	\$1,571,375
Interest Income	\$466,259	\$395,566	\$315,899	\$246,471	\$178,036
Total Funds Available	\$46,537,282	\$50,176,605	\$53,541,383	\$56,883,551	\$60,181,647
O&M Expenses	(\$38,979,812)	(\$39,482,090)	(\$40,004,436)	(\$40,994,442)	(\$42,989,092)
Net Revenue	\$7,557,470	\$10,694,514	\$13,536,947	\$15,889,109	\$17,192,555
Debt Service	\$3,969,863	\$3,976,813	\$3,978,163	\$3,978,913	\$3,974,463
<b>Debt Coverage Ratio</b>	<b>1.90</b>	<b>2.69</b>	<b>3.40</b>	<b>3.99</b>	<b>4.33</b>

The increasing debt coverage ratio tells an incomplete narrative. Rate revenue increases are recommended to account for increasing O&M and capital costs. However, in **Figure III-8**, the net revenue reflects only the difference between O&M expenses and rate revenues, and does not account for \$13.2 million in annual capital expenses, as well. The rate revenue increases and resulting debt coverage ratio increases are necessary to ensure the City meets both its growing O&M and capital expenses, shown in **Figure III-5**.

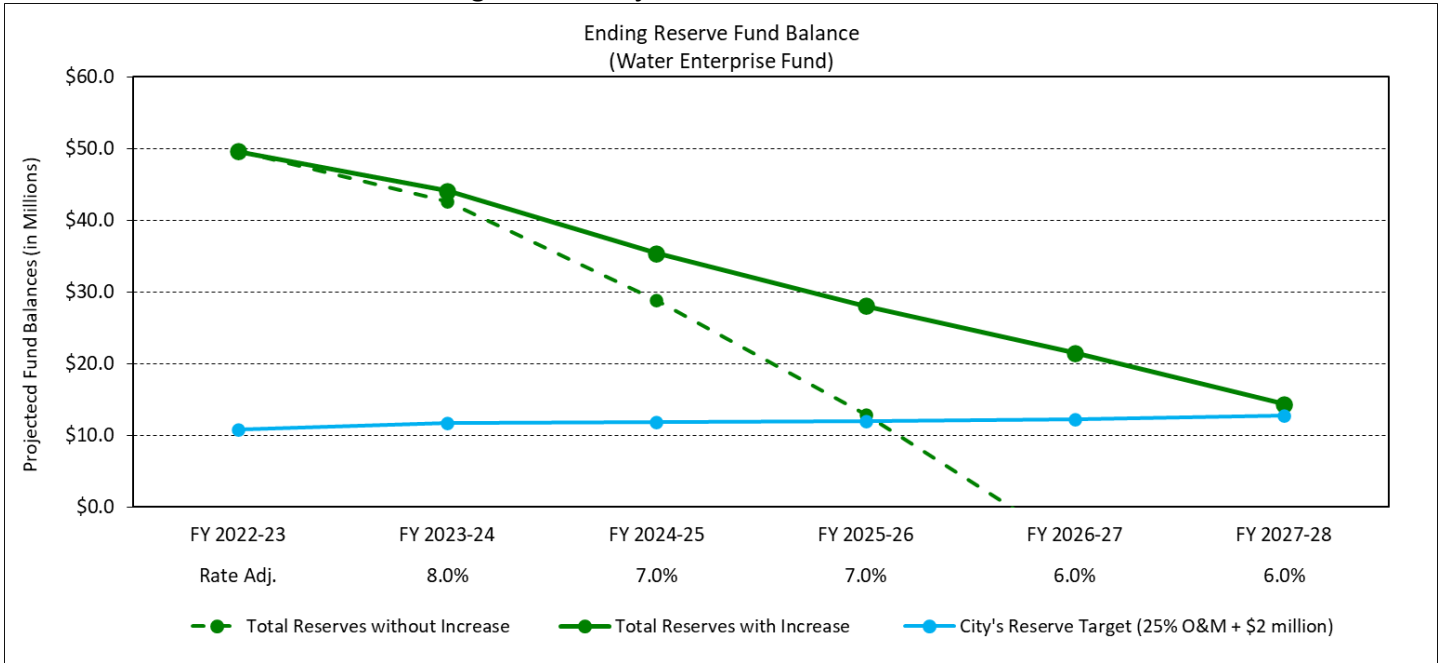
## RESERVE FUND BALANCE

**Figure III-9** shows the annual fluctuations (solid green line) in the fund balance that are caused by the differences between the revenue requirement and revenue from rates with the rate increases; the dashed green line is the projected fund balance without rate increases. The revenue and rate increases in **Figure III-7** were derived to balance increasing rates while maintaining a level of reserves that continues to meet the City's reserve target (blue line) by FY 2027-28. Over the Study Period, the Water Enterprise projects to utilize \$35.3 million from current reserves, while continuing to meet its debt coverage requirements and the City's reserve target. Maintaining a fund balance above or equal to the City's reserve target helps to protect the City's credit rating, which lowers the cost of financing, thereby benefiting rate payers.

As shown in **Figure III-9** by the dashed green line, without revenue increases, the FY 2022-23 year-end fund balance of \$49.6 million is projected to drop below the City's reserve target. With rate increases, the reserve balance (solid green line) decreases more gradually over the Study Period, as the City uses reserves to fund the projected revenue requirement. The recommended rate increases are balanced with the use of reserves. Reserves help offset the increased costs projected, reducing the potential for larger increases to be borne by ratepayers.

By the end of FY 2024-25, with recommended increases, the Water Enterprise Fund reserve balance projects to be \$35.4 million. At that time the City will have developed a Recycled Water Master Plan and can reassess the fiscal health of the Enterprise to determine what level of future increases are necessary.

**Figure III-9. Projected Year-End Fund Balance**



Note: City's Reserve Target is a proposed policy, recommended by City staff.

# IV. COST-OF-SERVICE ANALYSIS

## GENERAL APPROACH

### Base/Extra Capacity Method

The revenue requirement analysis establishes how much revenue is required from rates. The next step in the analysis is determining the cost of service. Cost-of-service analysis is used to derive rates that proportionally allocate the cost of service. The cost-of-service analysis performed in this study follows a procedure described by the AWWA, which is referred to as the “base/extra capacity method.” This method allocates the revenue requirements to the components of the rate structure.

The base/extra capacity method in the AWWA M1 Manual contains three categories: base, maximum day, and maximum hour. Base capacity is determined by the average daily flow during the year. The average daily flow determines how much base capacity is needed to provide that flow. Maximum day capacity is determined by the flow on the maximum day of the year. In other words, the maximum day capacity is greater than the base capacity, including the base capacity plus the additional capacity needed to provide for the maximum day flow of the year. Maximum hour capacity is determined by the flow during the maximum hour on the maximum day. In other words, the maximum hour capacity is greater than the maximum day capacity by the amount of peak hour that occurs during the maximum day flow.

We have refined AWWA’s version of the base/extra capacity method. What AWWA considers “base” capacity is not purely base capacity because AWWA defines “base” as average day capacity. Average day capacity includes average peaking, which is greater than how “base” is defined in this report. In this report, “base” demand does not include peaking. We have introduced a fourth category that corresponds to base demand with no peaking, which we call Base Day. This Base Day demand is derived from average winter demand, when there is the least amount of peaking. Hence, in addition to Average Day, Maximum Day, and Maximum Hour categories, we have added Base Day. We have calculated the proportional cost of providing service for each of these four categories in this report.

For purposes of this study, the base/extra capacity method is first used for allocating the cost of service to the fixed and variable rate components. It is also used for determining the tiered Water Use Charge rates. It was appropriate to refine the base/extra capacity method in this way to address the specific circumstances within the City to ensure that rates were derived that are proportional to the cost of providing service.

The cost of serving customers depends not only on the total volume of water used but also on the rate of use.<sup>13</sup> The rate of use (i.e. peaking) influences the design of the system, as well. Thus, peaking demand placed on the system affects operational costs to maintain the water system, as well as the level of capital investment required to construct the water system. Assets such as pumps, reservoirs, tanks, valves, and pipelines are sized using design requirements governed by levels of peaking demand. Therefore, levels of peaking demand (e.g. Maximum Day and Maximum Hour flows) play a primary role in determining the size and level of investment in a water system. The AWWA base/extra capacity method recognizes these

<sup>13</sup> *Principles of Water Rates, Fees, and Charges*. American Water Works Association Manual M1. 2017.

principles. The industry practice to allocate expenses to “cost components on the basis of operating considerations or design capacity of each facility” requires that peaking expenses be allocated to customers who contribute to peaking demand.

## **CUSTOMER CLASSES**

The cost-of-service analysis distributes the revenue requirements among customer classes in proportion to their service requirements. There is no industry standard that specifies which customer classes should be used. The law allows utilities to exercise discretion in determining the appropriate customer classes provided the rates yield charges that are proportional to the cost of providing service for each category. As a result, the base/extra capacity method needs to be tailored to the customer classes.

The City currently has multiple customer classes: Single Family Residential, Multi Family Residential, Commercial, Irrigation, and Recycled Water. These classes were last reviewed as part of the previous cost-of-service study in 2016. The contrast in customer classes stems from the typical pattern of usage by each class. Residential use varies according to indoor and outdoor needs throughout the year, producing periods of peak demands for which the system must be designed to meet. However, due to smaller dwelling units and outdoor areas, Multi Family Residential use per dwelling unit during peaking periods is less than Single Family Residential customers. Non-Residential customers use produces fewer peak periods due to less homogenous use. Irrigation customers use depends on the demands of what is being irrigated. As such, irrigation customers can place both seasonal demands and peaking demands on the system.

## **CURRENT RATE STRUCTURE**

There is no industry standard that specifies what rate structure must be used. The law allows utilities to exercise discretion in determining their rate structure as long as the rates yield charges that are proportional to the cost of providing the service. As a result, the base/extra capacity method needs to be tailored to the rate structure under consideration.

In the City’s case, its current water rate structure consists of a fixed Service Charge component and a variable Water Use Charge component. The use of a pair of Service and Water Use Charges is the most common standard in the industry.

The current rates for the Service and Water Use Charge rates are dependent on each customer class. The Service Charge is billed based on the number of dwelling units or the size of the meter. Billing based on meter size reflects a charge that is graduated in proportion to the capacity of the service (i.e., meter-size), which is an industry standard for metered water systems. As the name implies, this charge is related to the customer’s service, which provides a fixed, upper limit on the amount of capacity that is available in the water system.

The Service Charges are fixed rates that are charged on a dwelling unit basis for Residential (single family and multi-family residences) customers and on a fixed rate graduated in proportion to the capacity of the service provided for Non-Residential (commercial, municipal, industrial, other, recycled water, and irrigation) customers. Residential customers are billed on a bi-monthly<sup>14</sup> basis by dwelling unit (DU) or equivalent dwelling unit (EDU) while non-residential, Commercial and irrigation customers are billed on a monthly basis.

<sup>14</sup> Bi-monthly periods assume a billing period of 60 days.

**Figures IV-1 and IV-2** summarize the current Service Charges and Fire Service Charges. Note, Customers with a separate meter for fire flow are billed a separate Fire Service Charge per meter. The charge is graduated in proportion to the capacity of the service (i.e., meter-size), which is an industry standard for metered water systems.

**Figure IV-1. Current Service Charges**

<b>Service Charges</b>	
<b>Customer Class</b>	<b>Current Rates</b>
<b>Single Family Residential</b>	<i>Bi-monthly per DU</i>
	\$59.04
<b>Multi Family Residential</b>	<i>Bi-monthly per EDU</i>
5/8" Meters	\$59.04
3/4" Meters	\$59.04
1" Meters	\$59.04
1.5" Meters	\$59.04
2" Meters	\$59.04
3" Meters	\$59.04
4" Meters	\$59.04
6" Meters	\$59.04
8" Meters	\$59.04
10" Meters	\$59.04
<b>Commercial</b> (including Landscape Irrigation, Recycled Water)	<i>Monthly per Meter</i>
5/8" Meters	\$29.52
3/4" Meters	\$44.28
1" Meters	\$73.80
1.5" Meters	\$147.60
2" Meters	\$236.16
3" Meters	\$442.80
4" Meters	\$738.00
6" Meters	\$1,476.00
8" Meters	\$1,476.00
10" Meters	\$1,476.00

**Figure IV-2. Current Fire Service Charges (\$/month)**

Meter Size	Current Rates
1" Meters	\$16.00
2" Meters	\$32.00
3" Meters	\$48.00
4" Meters	\$64.00
6" Meters	\$96.00
8" Meters	\$128.00
10" Meters	\$160.00
12" Meters	\$192.00

The Water Use Charge Rates are the product of rates per unit of metered water use multiplied times the metered water use during the specified billing period. Water is metered in “units” of HCF of metered water use, whereby one unit or HCF equals 748 gallons. Water Use Charge rates are charged to four separate customer classes, Residential, Commercial, Landscape Irrigation, and Recycled Water customers.

For Residential customers, the Water Use Charge rates consist of four tiers that charge higher rates as the level of consumption increases. The tiers are specific to the number of equivalent dwelling units served by a meter/account. Single Family Residential accounts serve one dwelling unit and are considered 1.0 EDU. Similarly, Multi Family customer accounts serving 2-9 dwelling units count each dwelling unit as 1.0 EDU. However, Multi Family customer accounts serving 10-59 dwelling units count each dwelling unit as 0.75 EDU and accounts serving more than 60 dwelling units count each dwelling unit as 0.5 EDU. The volume of water in each tier corresponds to the number of EDU calculated for each account.

For Commercial and Recycled Water customers, the Water Use Charge rate is a uniform rate<sup>15</sup> per HCF of metered water use. All customers pay the same per HCF of water use, and recycled water customers’ rates are lower rate than potable customers’ rates.

For Landscape Irrigation customers, the Water Use Charge rates are based a three-tiered, budget-based structure that charge higher rates as the level of water use relative to the customers water budget increases. **Figure IV-3** reflects all current Water Use Charge rates, excluding a recycled water discount.

<sup>15</sup> This report distinguishes between *uniform* rates and *flat* rates. Uniform rates are constant charges per unit of water use that do not change depending on the amount used. Flat rates are fixed amounts that do not vary based on metered water use. Flat rates are most commonly used in unmetered water systems and for residential wastewater rates.

**Figure IV-3. Current Water Use Charge Rates**

<b>Water Use Charges</b>	
<b>Single Family Residential</b>	
<b>Current Tiers</b>	<b>Current Rates</b>
Tier 1 (0-8 hcf)	\$6.13
Tier 2 (9-20 hcf)	\$7.35
Tier 3 (21-40 hcf)	\$10.20
Tier 4 (41+ hcf)	\$13.45
<b>Multi Family Residential</b>	
<b>Usage</b>	<b>Current Rates</b>
Tier 1 (0-8 hcf)	\$6.13
Tier 2 (9-20 hcf)	\$7.35
Tier 3 (21-40 hcf)	\$10.20
Tier 4 (41+ hcf)	\$13.45
<b>Commercial</b>	
<b>Usage</b>	<b>Current Rates</b>
All Water Use	\$7.35
<b>Landscape Irrigation</b>	
<b>Usage</b>	<b>Current Rates</b>
Under 100% Budget	\$7.35
101%-200% Budget	\$10.20
Over 200% Budget	\$13.45
<b>Recycled Water</b>	
<b>Usage</b>	<b>Current Rates</b>
All Water Use	\$7.35

## **SERVICE CHARGE MODIFICATIONS**

As stated previously, the City has an integrated water system that supplies both potable and recycled water. As a result, all water, whether potable or recycled, will be considered as part of the same system portfolio. This means existing customer classes can be consolidated. In addition, Multi Family Residential service charges are recommended to be based on the size of the meter serving the account. This change in the rate structure aligns with the methodology used for Commercial Service Charges. As such, the charge is graduated in proportion to the capacity of the service and not the number of dwelling units served. Instead, costs driven by the number of dwelling units served will be recovered through the Water Use Charges.

Our recommended modifications are as follows:

1. Consolidate all Residential Irrigation customers under the Multi Family Residential customer class, subject to the same Multi Family Residential Service Charges and Consumption Charges.

2. Consolidate all Commercial Irrigation and Recycled Water customers under the Commercial customer class, subject to the same Commercial Service Charges and Consumption Charges.
3. Revise the Multi Family Residential Service Charge structure to a bi-monthly charge based on the meter capacity.

## CONSUMPTION CHARGE MODIFICATIONS

Volume charges can be structured in a variety of ways: uniform, increasing block, decreasing block, seasonal, etc. The appropriate type of Water Use Charge rate structure depends on the customer classes. Generally speaking, increasing block tiered rates are most suitable for homogeneous classes of customers with similar water uses and demand patterns (including similar peaking demand patterns), such as single-family residential customers. These customers are a homogeneous class that uses water for indoor and outdoor needs and not for other purposes, such as providing services or for commercial production.

Tiered rates are not as suitable for non-single family residential customer classes, which may be a combination of customers that use very little or a lot of water, whose demand patterns may range from constant to summer season only, and whose types of water use vary widely (e.g., part of a product such as beverages, for cleaning, for irrigation). For non-single family residential customers, demand patterns are not limited to the number of occupants and size of irrigated landscape. Their water use may have very little discretionary use.

The City should continue to charge tiered rates for Single Family Residential and uniform rates for Commercial Consumption Charges. The design of these rates is further discussed in Chapter V of this report.

The City's shift to all water being part of one system portfolio allows for simplification of the current Irrigation rates.

Our recommended modifications are as follows:

1. Revise the Multi Family Residential Consumption Charge structure to a uniform rate that matches the Commercial Consumption Charge. This reflects that water use is individual to each account and not directly correlated to the number of dwelling units served. Further, the individual demands of each dwelling unit results in a use per Multi Family Residential account with inconsistent water use patterns that are more conducive to a uniform rate. The recommended modifications to the existing Multi Family Residential rate structures would align the City with other neighboring agencies, as shown in **Figure IV-4**.

**Figure IV-4. Survey of Multi Family Water Rate Structures**

Multi Family		
Agency	Fixed Charges	Consumption Charges
<b>Redwood City (Proposed)</b>	Meter Size	Uniform
Belmont	Meter Size	Tiered
Foster City	Meter Size	Tiered
San Carlos, San Mateo (CalWater)	Meter Size	Uniform
San Carlos (Mid-Pen)	Meter Size	Tiered
Menlo Park	Meter Size	Tiered
Hillsborough	Meter Size	Uniform
Daly City	Meter Size	Tiered
Burlingame	Meter Size	Uniform
NCCWD	Meter Size	Uniform
East Palo Alto	Meter Size	Uniform
Palo Alto	Meter Size	Uniform
Millbrae	Meter Size	Uniform
Westborough Water District	Meter Size	Uniform
Mountain View	Meter Size	Tiered
San Bruno	Meter Size	Uniform
Montara	Meter Size	Combination
Brisbane	Meter Size	Tiered

2. Revise the Irrigation Consumption Charge structure to a uniform rate that matches the Commercial Consumption Charge.
3. As part of consolidating customer classes, revise the Recycled Water Use Charge so that it is set equal to the Commercial Consumption Charge.

Although the City has different pressure zones, we do not recommend that the City charge rates by zone. The City’s water facilities are an integral distribution network, not a series of isolated zones served by separately dedicated reservoirs, pumps, and distribution pipelines. Water facilities are designed as integral networks that balance pressures and keep water from stagnating. Water that is pumped to the highest zones not only benefits customers in the highest zones but can also benefit customers in lower zones to which the water also flows.

The cost-of-service analysis determines how much of the revenue requirement should be recovered from the fixed Service Charges and the variable Consumption Charges for each customer class.

## **COST-OF-SERVICE ALLOCATIONS**

As the name implies, cost-of-service analysis is a process of determining how much services cost. To provide water service, infrastructure must be constructed, operated, and maintained, which must be paid for from cash or debt. The type and size of infrastructure depends on how much service customers require. Water systems are designed to provide sufficient capacity to meet customer demands for service whenever, wherever, and for as long as demanded.

Although each customer places unique demands on the system, water system design is based on the maximum or peak demand for service placed on the system by all customers during the peak demand period. The size of the infrastructure that is needed will depend on the maximum demand. Higher demands will obviously require larger, more costly infrastructure as well as increased operating and O&M costs. Here, the goal of a cost-of-service analysis is to allocate the cost of the capacity to meet the peak demand in proportion to how much of the capacity is required by each customer. The proportions correspond to the maximum amount of capacity provided by the infrastructure. This means that customers that place greater demands on the infrastructure – customers with greater service needs (i.e., higher peak demands) – will be apportioned a greater share of the operating and capital costs of the infrastructure required to meet that demand.

It is important to realize that once the peak demand is used to design the infrastructure, the capacity is available at all times, not just during peak demands. The capacity is available for the potential peak when it occurs. During off-peak demands, the same facilities are being used, but the capital cost of the facilities is determined by the peak demand only, and it is the peak demand that is used to allocate costs. Note that the costs are not allocated only to those who peak. Those who do not peak as much are also using the same facilities. Consequently, they are allocated a share of the costs of the facilities in proportion to their contribution to the peak demand, even though their contribution may be significantly less.

### **Analytical Procedure**

The cost-of-service analysis in this study involved a series of four steps that allow for reasonable cost allocations (see **Figure II-1**). Costs must first be classified according to the associated function. Functions provide the level of service required by customers. The cost of functions can be allocated in proportion to the service provided.

1. **Service function cost classification** – Revenue requirements are summarized by service function cost categories, which is needed for allocating costs that will be used for calculating rates. (See **Figure IV-4**.)
2. **Demand service function allocation percentages** – Base and extra capacity allocation factors are needed to apportion costs related to the demand service functions and to customer classes. (See **Figure IV-5** and **Figure IV-7**.)
3. **Service function allocations** – Costs from Step 1 are allocated to the demand and customer service functions from Step 2. The demand service function costs are further allocated among the demand service levels. (See **Figure IV-6**.)
4. **Customer class allocations** – The costs allocated to the demand service function in Step 3 are further apportioned between the two customer classes. (See **Figure IV-8**.)

This sequence of steps is further explained below. The steps constitute the cost-of-service analysis, which converts the revenue requirement for FY 2023-24 in **Figure IV-4** into the eventual cost of service for setting Service Charge rates and Water Use Charge rates in **Figure IV-10**.

### **Service Function Cost Classification**

After determining a utility's revenue requirements, the cost-of-service analysis begins by aligning the budget items with the associated function. For example, some cost items are related to functions that support the ability to meet base and peak water demands while other costs are incurred to provide

customer service. In other words, “function” refers to the type of operational activity or capital cost needed to provide service. Organizing the budget by functions correlates budget items with the rate that will fund the cost.

For both indoor and outdoor water use, customers expect water to be available when they want it. The service they receive ranges from non-seasonal demand for essential indoor uses (Base Day) to discretionary peak hour outdoor water use and irrigation demands (Maximum Hour). To provide this “readiness to serve,” the City’s water system needs to have pipes, pumps, and storage reservoirs that are sized and operated to transmit and distribute water whenever it is needed. As previously mentioned, the capacity required to provide the required flows for facilities as well as the elevation differentials within the pressure zone determine how reservoirs, valves, and appurtenances are designed. Water main design is also influenced by the number of connections along a pipeline. Peak demands create larger flows for which larger and more costly infrastructure is needed and for which there are more operations and maintenance costs.

The service functions for each cost category determine how the capital and O&M costs are allocated. The service functions fall into two categories based on the Enterprise’s chart of accounts:

- **Demand service function** - functions related to delivering water to customers at varying levels of demand. These costs will be recovered from the proposed Water Use Charges.
- **Customer service function** - functions related to customer service. These costs will be recovered from the proposed Service Charges.

### Demand Service Function

There are five demand service functions beginning with the origin of the water through pipelines that convey the water to pumps that lift the water for storage until customers demand it. In describing each of these demand service functions, the corresponding allocation factors are indicated. The definition of each demand service function allocation factor is provided below in the discussion under Demand Service Function Allocation Factors.

- **Water Purchases** – The City does not have its own surface water or groundwater resources; the City is not supplied by lakes, river diversions, or wells. Instead, the City purchases treated water from the SFPUC. The cost of its water supply is included in the cost paid to the SFPUC, which is the City’s single largest O&M expense. This cost category is allocated to customers in proportion to their Base Day demand. Base Day costs vary with the total quantity of water used and are independent of rates of demand.
- **Tank & Pump Station O&M** – Water is pumped throughout the system to service demand. Supply reservoirs are located at high points in the system so that water can flow to customers by gravity as demanded. Water fills the reservoirs from pump stations at a fairly steady rate compared to the outflow to customers, which occurs at the peak hour of the peak day. The O&M costs, such as tank maintenance and pump station operations, are allocated in proportion to Maximum Hour demands.
- **Transmission** – Pipelines 12” and larger in diameter convey water from the SFPUC’s master meters to the City’s pumps, which lift the water to supply reservoirs. These 12” or larger pipes are

sized for Maximum Day demands. The O&M costs to inspect, repair, and maintain transmission lines are allocated in proportion to Maximum Day demands.

- **Distribution – Demand** – Water flows out of reservoirs to the customer tap through distribution pipelines (less than 12” inches in diameter). Unplanned repairs occur in reaction to distribution main breaks, to minimize interruptions to supplying demand. Water quality testing is performed to ensure safety and compliance as water travels through the distribution system. The distribution system is sized for peak hour flows. Therefore, higher peaking demand requires larger infrastructure, which in turn results in costlier materials and more staff time to service the larger system components. In the same manner that running a vehicle at maximum horsepower shortens the life of the asset, running distribution pumps at a higher pressure to service higher peaking demand yields a similar outcome. Greater stress placed on a pump or a segment of distribution pipeline shortens the life of the asset. Therefore, the O&M costs applicable to satisfying demand and delivery of water are allocated in proportion to Maximum Hour demands, to account for the maximum level of peaking demand placed on the system. The Maximum Hour flow is based on the Maximum Day flow (i.e., Maximum Hour flow is deemed to be 2.12 times Maximum Day flow based on City demand data. In addition, greater peaking demand places larger amounts of stress on the distribution system assets.

#### **Fire Flow Cost Allocations**

The distribution system also includes hydrants for fire suppression. The design of the distribution system to meet peak hour demands provides the capacity that is also required for fire flows. *The capacity for fire protection is not the governing criterion for designing the distribution system.* The distribution system was not sized for fire flows with the expectation that the fire flow would be sufficient to meet Maximum Hour demands. Hence, there are no identifiable extra costs to allocate to a separate charge for fire service. The costs of providing water capacity and water for fire service is part of all water rates (\$53750.5).

In systems where the cost of fire flow capacity is significant enough to track, the cost is often either combined with the customer capacity component of the Service Charge or with the Maximum Hour costs.

In systems where there are separate charges for fire flow capacity, it is often a nominal administrative charge because the capacity is already recovered from service or volume charges.

- **Water Resources Management** – Costs in this category center on the City’s water conservation program. The City must continue to meet evolving state-issued water efficiency standards and regulations. To meet efficiency standards, customers are expected to use water judiciously. Customers placing greater demands on the system, using water in a less-efficient manner, should pay to support conservation programs. Thus, O&M costs applicable to conservation are allocated to the Maximum Hour category so that customers proportionate share of fiscal responsibility increases with peaking demand.

### **Customer Service Function**

There are seven customer service functions. Each of these functions includes costs that are not related to rates of flow.

- **Customer Services** – This administrative expense services customer accounts. These costs are independent of rates of flow and are apportioned on the basis of the number of meters.

- **Distribution – Capacity** – A portion of the O&M costs attributable to maintaining existing capacity of the system, such as uni-directional flushing, hydrant maintenance, and valve maintenance, are services that are performed for the benefit of all customers. These activities are performed to ensure the system can serve the capacity for which it was designed. Maintenance of the distribution system benefits all customers and ensures existing capacity can be served. Costs are allocated based on the capacity corresponding to each meter served.
- **Revenue Services** – This administrative expense includes the expenses incurred for processing meter reads and other billing activities. These costs are independent of rates of flow and are apportioned on the basis of the number of meters served.
- **Capital Expenses** – Investments in the Enterprise infrastructure are necessary to ensure existing levels of service are maintained. In addition, capital projects allow for expansion of the system’s capacity to support growth. Costs are allocated based on the capacity corresponding to each meter served.
- **Administrative Support Services** – As an Enterprise, the City benefits from general governmental services paid by the General Fund. This category of expenses includes the Enterprise’s reimbursement to the general fund for its proportional share of expenses related to services provided by the City Attorney, City Manager’s Office, City Council, use of government facilities, and other overhead benefits. These costs are independent of rates of flow and are apportioned on the basis of the number of meters served.
- **Non-Operating Revenue** – Revenue from miscellaneous fees and fire service revenues benefit rate payers by reducing the net amount of expenses that rates need to cover. These costs are independent of rates of flow and are apportioned on the basis of the number of meters.
- **Reserves** – Similar to non-operating revenue, rate payers benefit from the Enterprise’s use of reserves. In FY 2023-24, the planned use of \$10.3 million in reserves will help offset the need for larger rate increases to meet growing expenses. As a result, the City can charge rate payers less than the total revenue requirement and phase in rates over time to reduce impacts to rate payers. These costs are independent of flow, but are apportioned using a composite allocation of all other functions analyzed. This is shown in more detail in **Figure IV-9**. Reductions to rates are intended to benefit customers by reducing the Service Charges and the Water Use Charges assessed.

**Figure IV-5** shows the classification of the budgeted operating and capital expenses and non-operating revenues by function.

**Figure IV-5. Revenue Requirements Summary by Function (FY 2023-24)**

FY 2023-24 Revenue Requirement	
<b>O&amp;M Expenses</b>	
65145-SFWD Water Purchases	\$23,605,500
65142-Water Customer Services	\$2,824,731
65144-Water Supply and Distribution	
Tank & Pump Station O&M	\$2,084,809
Transmission	\$1,273,126
Distribution - Demand	\$8,088,918
Distribution - Capacity	\$3,900,000
65146-Water Resource Management	\$1,651,167
61410-Revenue Services	\$2,046,863
Total Allocable O&M	\$45,475,114
<b>Capital Expenses (PAYGo)</b>	\$13,249,801
<b>Subtotal - O&amp;M and Capital</b>	\$58,724,915
<b>Unallocated O&amp;M</b>	
61710-Administrative Support Services	\$119,727
<b>Administrative Costs</b>	\$119,727
<b>Subtotal O&amp;M, Capital, Non-Operating</b>	\$58,844,642
<b>Non-Operating Revenue</b>	(\$1,345,179)
<b>Transfers to/(from) Reserves</b>	(\$10,295,248)
<b>Total Revenue Requirement</b>	<b>\$47,204,215</b>

Note: Rounding differences caused by stored values in electronic models may exist.

Once the costs are organized by service function, it is possible to allocate them based on the allocation percentages that correspond to each service function. The allocation percentages are derived from the units of service associated with each service function.

### **Demand Service Function Allocation Factors**

A cost-of-service analysis categorizes costs between the demand and customer service functions. Within the demand service function, further allocations are made to varying levels of service ranging from base, non-seasonal, indoor demand, which are the least discretionary, to the highest level of seasonal peak demand for outdoor water use and irrigation during the peak hour of the peak day, which are the most discretionary. With these further allocations, rates can be designed for each customer class's Water Use Charges.

The costs allocated to the customer service function are differentiated between those that are related to accounts and those that are related to capacity. Those two categories are used in deriving the Service Charges.

As described below, there are four levels of demand used for the demand service function cost-of-service analysis. For purposes of analysis, the demand for Irrigation, Commercial, Multi-Family, and Recycled Water customers were grouped into one category, “Commercial/Multi Family” as shown in the following tables.

### **Base Day Demand**

Base Day demand is the average daily demand in the lowest billing period of the year when most of the water use is for indoor needs and when there is the least irrigation and peaking. If there were no seasonal peaking, the City’s facilities could be designed for Base Day demand, which is only 34% of the current peak demand (refer to **Figure IV-7**).

### **Average Day demand**

Average Day demand includes Base Day demand plus average seasonal peaking. The value is the average of FY 2021-22 and FY 2022-23 customer billing data. The City’s Average Day demand represents only 47% of the current peak demand.

### **Maximum Day demand**

Maximum Day demand includes Average Day demand plus peak day demand in the irrigation season. The total value is based on systemwide flow data maintained by the City via Advanced Metering Infrastructure (AMI) data. Maximum Day demand for each customer class was prorated from the total Maximum Day demand using Average Day demands for the two customer classes. If peaking did not exceed Maximum Day demand, the City’s facilities could be sized at 70% of current peak demands.

### **Maximum Hour demand**

Maximum Hour demand represents the Maximum Hour demand on the Maximum Day. The total value is based on systemwide flow data maintained by the City via Advanced Metering Infrastructure (AMI) data. Maximum Hour demand for each customer class was prorated from the total Maximum Hour demand using Average Day demands for the two customer classes.

Allocation percentages were calculated for each demand service level using load factors derived from customer billing data for FY 2021-22 and FY 2022-23 (Base and Average Day) and customer class flow data (Maximum Day and Maximum Hour). Load factors are the ratio of higher levels of demand to the Base Day demand. **Figure IV-6** summarizes the units of service and load factors for each of the service levels based on FY 2021-22 and FY 2022-23 data.

### **Load Factors**

The load factors are the ratio of the flows for the peak service levels (i.e., Average Day, Maximum Day, and Maximum Hour) compared to the Base Day, non-seasonal flow. The load factors represent how much higher Average Day, Maximum Day, and Maximum Hour flows are compared with Base Day demand.

**Figure IV-6. Service Level Demands and Load Factors**

	Levels of Demand			
	Base Day	Average Day	Maximum Day	Maximum Hour
<b>Demand by Customer Category</b>				
Commercial/MF	3,810	5,423	8,643	9,066
Single Family	3,483	4,721	6,514	12,465
Total	7,293	10,145	15,157	21,531
<b>Ratio of Flows to Average Day</b>				
Commercial/MF	0.70	1.00	1.59	1.67
Single Family	0.74	1.00	1.38	2.64
Total	0.72	1.00	1.49	2.12
Level of Service	7,293	10,145	15,157	21,531
Average Day Demand	10,145	10,145	10,145	10,145
<b>Ratio of Level of Service to Average Day</b>	<b>0.72</b>	<b>1.00</b>	<b>1.49</b>	<b>2.12</b>

Note: Daily totals are shown

The load factors indicate how much additional capacity is required to supply higher levels of service and serve as the source of the allocation percentages that are needed to allocate costs. They are derived in **Figure IV-7**. For example, the Average Day load factor for the system is 1.00. Of that total 1.00 load, 0.28 is in excess of Base Day demand and is related to the Average Day peak, which is 28% of the total Average Day load (i.e.,  $0.28/1.00 = 28\%$ ). For purposes of allocating costs associated with meeting Average Day demands, 28% is allocated to the Average Day service and 72% is allocated to the Base Day service.

**Figure IV-7. Demand Service Levels**

Allocation Basis	Load Factors	Demand Service Levels				Totals
		Base Day	Average Day	Maximum Day	Maximum Hour	
<b>Base Day</b>	<b>0.72</b>	0.72				0.72
<i>Allocation %</i>		100%				100%
<b>Average Day</b>	<b>1.00</b>	0.72	0.28			1.00
<i>Allocation %</i>		72%	28%			100%
<b>Maximum Day</b>	<b>1.49</b>	0.72	0.28	0.49		1.49
<i>Allocation %</i>		48%	19%	33%		100%
<b>Maximum Hour</b>	<b>2.12</b>	0.72	0.28	0.49	0.63	2.12
<i>Allocation %</i>		34%	13%	23%	30%	100%

Maximum Day demand includes Base Day, Average Day, and Maximum Day components. And Maximum Hour demand has all four service levels of demand. While system capacity is essentially designed to meet

peak demands, and peak users should assume cost responsibility for the capacity required to serve this peak demand, it is important to understand that the cost of facilities that are sized for peak demands is not borne by only customers that peak, all levels of demand utilize the facility.

Using distribution pipelines as an example, they are sized to meet Maximum Hour demands. Even though they are sized for the highest level of service, lower peak demands are also accommodated by these pipelines. Hence, the cost of the pipelines is not allocated 100% to the Maximum Hour service level. The cost is apportioned across the lower service levels, too. Thus, the costs of peaking are shared by all customers and not exclusively allocated to those who peak the most.

### Service Function Allocations

All allocation factors employed in the cost-of-service allocation exercise are shown in **Figure IV-8**.

**Figure IV-8. Cost Allocation Factors**

System-Wide Cost Allocation Factors	Demand Services				Customer Services		Total
	Base Day	Average Day	Maximum Day	Maximum Hour	Service	Capacity	
<u>Demand Services</u>							
Base Day	100.0%						100.0%
Average Day	71.9%	28.1%					100.0%
Max Day	48.1%	18.8%	33.1%				100.0%
Max Hour	33.9%	13.2%	23.3%	29.6%			100.0%
<u>Customer Services</u>							
Capacity						100.0%	100.0%
Services					100.0%		100.0%
<u>Composite Allocations</u>							
Exp Composite	48.0%	3.1%	5.4%	5.9%	8.5%	29.1%	100.0%

Note: Service is interchangeable with meter. Charges are assessed per meter, independent of the level of capacity provided by the meter.

The revenue requirements in **Figure IV-5** are allocated to the demand and customer service functions in **Figure IV-9**, using the calculated factors from **Figure IV-8**. The resulting allocations indicate that about 64% of the revenue requirement is attributable to the demand service function and 36% to the customer service function. As previously mentioned, the Water Use Charge rates are designed to recover the costs allocated to the demand service function and the Service Charge rates are designed to recover the customer service function costs.

**Figure IV-9. Service Function Allocations**

	FY 2023-24 Revenue Requirement	Allocation Factor	Consumption Charge				Service Charge	
			Base Day	Average Day	Maximum Day	Maximum Hour	Service	Capacity
<b>O&amp;M Expenses</b>								
65145-SFWD Water Purchases	\$23,605,500	Base Day	\$23,605,500	\$0	\$0	\$0	\$0	\$0
65142-Water Customer Services	\$2,824,731	Services	\$0	\$0	\$0	\$0	\$2,824,731	\$0
65144-Water Supply and Distribution								
Tank & Pump Station O&M	\$2,084,809	Max Hour	\$706,202	\$276,090	\$485,335	\$617,182	\$0	\$0
Transmission	\$1,273,126	Max Day	\$612,611	\$239,500	\$421,015	\$0	\$0	\$0
Distribution - Demand	\$8,088,918	Max Hour	\$2,740,017	\$1,071,210	\$1,883,067	\$2,394,624	\$0	\$0
Distribution - Capacity	\$3,900,000	Capacity	\$0	\$0	\$0	\$0	\$0	\$3,900,000
65146-Water Resource Management	\$1,651,167	Max Hour	\$559,312	\$218,663	\$384,385	\$488,808	\$0	\$0
61410-Revenue Services	\$2,046,863	Services	\$0	\$0	\$0	\$0	\$2,046,863	\$0
Total Allocable O&M O&M Composite	\$45,475,114		\$28,223,643 62.1%	\$1,805,463 4.0%	\$3,173,801 7.0%	\$3,500,613 7.7%	\$4,871,594 10.7%	\$3,900,000 8.6%
<b>Capital Expenses (PAYGo)</b>	\$13,249,801	Capacity	\$0	\$0	\$0	\$0	\$0	\$13,249,801
<b>Subtotal - O&amp;M and Capital</b>	\$58,724,915		\$28,223,643	\$1,805,463	\$3,173,801	\$3,500,613	\$4,871,594	\$17,149,801
		% of Consumption	76.9%	13.5%	11.1%	4.2%		
		% of total	48.1%	3.1%	5.4%	6.0%	8.3%	29.2%
<b>Unallocated O&amp;M</b>								
61710-Administrative Support Services	\$119,727	Services	\$0	\$0	\$0	\$0	\$119,727	\$0
<b>Administrative Costs</b>	\$119,727		\$0	\$0	\$0	\$0	\$119,727	\$0
<b>Subtotal O&amp;M, Capital, Non-Operating Expense Composite</b>	\$58,844,642		\$28,223,643 48.0%	\$1,805,463 3.1%	\$3,173,801 5.4%	\$3,500,613 5.9%	\$4,991,321 8.5%	\$17,149,801 29.1%
<b>Non-Operating Revenue</b>	(\$1,345,179)	Services	\$0	\$0	\$0	\$0	(\$1,345,179)	\$0
<b>Transfers to/(from) Reserves</b>	(\$10,295,248)	Exp Composite	(\$4,937,908)	(\$315,877)	(\$555,277)	(\$612,455)	(\$873,264)	(\$3,000,468)
<b>Total Revenue Requirement</b>	\$47,204,215		\$23,285,735	\$1,489,586	\$2,618,524	\$2,888,158	\$2,772,878	\$14,149,333
						<b>\$30,282,003</b>	<b>\$2,772,878</b>	<b>\$14,149,333</b>
						% of Net Revenue Requirement <b>64.2%</b>		<b>35.8%</b>
						Consumption Charge COS		Service Charge COS

Figure IV-10 summarizes the small shift in the Service Charge revenues from the Water Use Charge revenues to align with the cost-of-service. The exercise performed in Figure IV-9 indicates Service Charge revenues will remain at 36% of total rate revenues, while Water Use Charge revenues will remain at 64%.

**Figure IV-10. Cost-of-Service Revenue Summary**

Components of Rate Structure	Revenue at Current Rates		Cost of Service FY 2023-24		Difference COS Minus Current	
<b>Single Family</b>						
Consumption Charge Revenue	\$14,508,080	68%	\$14,611,865	62%	\$103,785	0.7%
Fixed Service Charge Revenue	\$6,858,441	32%	\$8,911,480	38%	\$2,053,039	29.9%
<b>Subtotal - Single Family</b>	\$21,366,521	100%	\$23,523,345	100%	\$2,156,824	10.1%
<b>Commercial/Multi Family</b>						
Consumption Charge Revenue	\$13,211,637	60%	\$15,670,138	66%	\$2,458,501	18.6%
Fixed Service Charge Revenue	\$8,704,917	40%	\$8,010,732	34%	(\$694,185)	-8.0%
<b>Subtotal - Commercial</b>	\$21,916,554	100%	\$23,680,870	100%	\$1,764,316	8.1%
<b>Total</b>						
Consumption Charge Revenue	\$27,719,717	64%	\$30,282,003	64%	\$2,562,286	9.2%
Fixed Service Charge Revenue	\$15,563,357	36%	\$16,922,211	36%	\$1,358,854	8.7%
<b>Total</b>	\$43,283,075	100%	\$47,204,215	100%	\$3,921,140	9.1%

Note: Commercial/Multi Family includes all Commercial, Multi-Family, Irrigation, and Recycled Water customers.

### Customer Class Allocations

The customer service function is independent of the customer class. Once its allocation is derived, rates for the Service Charges are derived without any further allocation to customer classes. The demand service function requires further allocations to customer classes in designing rates. When separate customer classes exist, the cost of service must be allocated proportionately to each class. **Figure IV-11** derives the cost of service for the City’s two customer classes. The revenue requirement for each demand service function is apportioned between the Single Family Residential and Commercial/Multi Family customer classes based on the corresponding annual demand in units of service (i.e., flows) for each customer class. The portion of the revenue requirement to be recovered via the City’s Water Use Charges (\$30,282,003) is allocated to the two customer classes according to their proportionate shares of daily demand. Because of the higher peaking demands of the Single Family Residential customer class, the Single Family Residential customer class is allocated a larger proportion of peaking costs (Maximum Day, Maximum hour). The resulting total allocations serve as the entry point for design of the Water Use Charges, discussed in Chapter V.

**Figure IV-11. Customer Class Allocations for Demand Service Levels**

<b>Consumption Charge Cost of Service</b>	<b>Base Day</b>	<b>Average Day</b>	<b>Max Day</b>	<b>Max Hour</b>	<b>Total</b>
Operations & Maintenance	\$28,223,643	\$1,805,463	\$3,173,801	\$3,500,613	\$36,703,520
Capital Expenses (PayGo)	\$0	\$0	\$0	\$0	\$0
Non-Operating Revenue	\$0	\$0	\$0	\$0	\$0
Transfers to/(from) Reserves	(\$4,937,908)	(\$315,877)	(\$555,277)	(\$612,455)	(\$6,421,517)
<b>Total Consumption Charge COS</b>	<b>\$23,285,735</b>	<b>\$1,489,586</b>	<b>\$2,618,524</b>	<b>\$2,888,158</b>	<b>\$30,282,003</b>
<b>Units of Service - Daily Demand (hcf)</b>					
Single Family	3,483	4,721	6,514	12,465	
Commercial/Multi Family	3,810	5,423	8,643	9,066	
	7,293	10,145	15,157	21,531	
<b>Proportional Allocation Factors</b>					
Single Family	47.76%	46.54%	42.98%	57.89%	
Commercial/Multi Family	52.24%	53.46%	57.02%	42.11%	
	100.00%	100.00%	100.00%	100.00%	
<b>Customer Class Allocations</b>					
Single Family	\$11,121,287	\$693,243	\$1,125,344	\$1,671,992	\$14,611,865
Commercial/Multi Family	\$12,164,449	\$796,342	\$1,493,181	\$1,216,167	\$15,670,138
	<b>\$23,285,735</b>	<b>\$1,489,586</b>	<b>\$2,618,524</b>	<b>\$2,888,158</b>	<b>\$30,282,003</b>

## V. RATE DESIGN

The City has historically charged water customers the combination of a fixed Service Charge and a variable Water Use Charge based on metered water use. As previously discussed, this is a common set of charges that is prevalent throughout the water industry. This chapter explains the derivation of the Water Use and Service Charge rates that reflect the projected cost of service.

### SERVICE CHARGE DESIGN

Service Charge rates are fixed rates that are billed each billing period to recover the cost of the service functions. The cost-of-service analysis determined how much of the revenue requirement is attributable to the customer service function. The function has two components – customer services and customer capacity – each of which is itemized in the cost-of-service analysis in **Figure V-1**. Costs attributable to customer services are allocated to customers in proportion to the number of meters. Costs attributable to customer capacity are allocated to customers in proportion to the capacity of their services. The sum of the two components equals the Service Charge rate per connection.

**Figure V-1** lists the units of service corresponding to each of the cost components. The 23,644<sup>16</sup> services are used for apportioning the customer services cost component.

Capacity costs associated with the distribution system are apportioned among the connections in proportion to the capacity associated with each connection. Connections are converted to Equivalent Meter Units (EMUs) to apportion the customer capacity cost component. An EMU represents the number of 5/8-inch meters to which a larger meter is equivalent. For example, a 1-inch meter provides 2.50 times as much capacity as a 5/8-inch meter. The capacity multipliers are based on the meter data provided by the City of the manufacturer's nominal capacity. For larger sized meters, the City uses multiple types, such as displacement, turbine, or compound. All Single Family Residential customers were assumed to have a 5/8" meter based on the current rate structure which bills a fixed bi-monthly charge based on the smallest level of capacity (5/8"). The meter ratings used reflect the nominal capacity of the most commonly used meter type available for each size. The 240 ¾"-inch meters equal 360 EMUs. There are 41,251 total EMUs. In effect, the 23,644 services of assorted sizes have the equivalent capacity as 41,251 5/8-inch meters.

<sup>16</sup> This total includes only potable and recycled water meters. All fire service meters have been excluded.

**Figure V-1. Service Charge Units of Service**

Service Size	Meter		Capacity	EMUs
	Services	Ratings (gpm) <sup>1</sup>	Multiplier	
	a	b	c = b ÷ 20	a * c
5/8" Meters	21,156	20	1.00	21,156
3/4" Meters	187	30	1.50	281
1" Meters	748	50	2.50	1,870
1.5" Meters	450	100	5.00	2,250
2" Meters	794	160	8.00	6,352
3" Meters	223	435	21.75	4,850
4" Meters	71	750	37.50	2,663
6" Meters	0	1,600	80.00	0
8" Meters	4	2,800	140.00	560
10" Meters	3	4,200	210.00	630
	<b>23,644</b>			<b>41,251</b>

<sup>1</sup>Capacity multiplier assumes 5/8" meter = 1 EMU = 20 gallons per minute.

**Figure V-2** derives the unit costs for the customer accounts and customer capacity cost components. Each service is allocated \$9.77 per month for the customer service cost component. That amount represents the costs the City incurs to maintain each meter regardless of the capacity of the service (e.g., customer billing, administration overhead). Each service is also allocated \$28.58 per month per EMU. That amount represents a portion of the cost of providing distribution system capacity for each account, and increases based on the capacity of the meter.

**Figure V-2. Service Charge Unit Costs**

FY 2023-24 Customer Service Expenses	Customer Service Component	Customer Capacity Component	Total
O&M Expenses	\$4,871,594	\$3,900,000	\$8,771,594
Capital Expenses (PAYGo)	\$0	\$13,249,801	\$13,249,801
Admin Support Svcs	\$119,727	\$0	\$119,727
Non-Operating Revenue	(\$1,345,179)	\$0	(\$1,345,179)
Transfer (from) Reserves	(\$873,264)	(\$3,000,468)	(\$3,873,732)
<b>Total FY 2023-24</b>	<b>\$2,772,878</b>	<b>\$14,149,333</b>	<b>\$16,922,211</b>
<b>Units of Service</b>	<b>23,644</b>	<b>41,251</b>	
	Service	EMUs	
Annual Unit Cost	\$117.28	\$343.00	
<b>Monthly Unit Cost</b>	<b>\$9.77</b>	<b>\$28.58</b>	
	per Service	per EMU	

Source: Customer Service Expenses from Figure IV-8; Units of Service from Figure V-2.

**Figure V-3** combines the customer service and capacity components into a single Service Charge for each size service and compares proposed rates to the current rates.

**Figure V-3. Proposed Monthly Service Charge Rates – FY 2023-24**

Service Size	Service Component (\$/mo.)	Capacity Component			COS Service Charges (\$/mo.)	Total Current Charge	\$ Difference
		\$/EMU	Capacity Multiplier	Capacity Total			
	<b>a</b>	<b>b</b>	<b>c</b>	<b>d = b * c</b>	<b>e = a + d</b>		
5/8" Meters	\$9.77	\$28.58	1.00	\$28.58	\$38.36	\$29.52	\$8.84
3/4" Meters	\$9.77	\$28.58	1.50	\$42.88	\$52.65	\$44.28	\$8.37
1" Meters	\$9.77	\$28.58	2.50	\$71.46	\$81.23	\$73.80	\$7.43
1.5" Meters	\$9.77	\$28.58	5.00	\$142.92	\$152.69	\$147.60	\$5.09
2" Meters	\$9.77	\$28.58	8.00	\$228.67	\$238.44	\$236.16	\$2.28
3" Meters	\$9.77	\$28.58	21.75	\$621.69	\$631.47	\$442.80	\$188.67
4" Meters	\$9.77	\$28.58	37.50	\$1,071.89	\$1,081.66	\$738.00	\$343.66
6" Meters	\$9.77	\$28.58	80.00	\$2,286.69	\$2,296.46	\$1,476.00	\$820.46
8" Meters	\$9.77	\$28.58	140.00	\$4,001.71	\$4,011.48	\$1,476.00	\$2,535.48
10" Meters	\$9.77	\$28.58	210.00	\$6,002.57	\$6,012.34	\$1,476.00	\$4,536.34

Source: Figures V-1 and V-2.

Note: Rounding differences caused by stored values in electronic models may exist.

With the proposed rates, all meter sizes would see an increase. The increase in rates reflects the 8.7% increase to service charge revenues calculated in **Figure IV-10**. Rates also reflect revised capacity multipliers, based on updated meter rating information provided by the City. Currently meters 6" and larger are charged the same rate. Under the proposed rates, customers with an 8" or 10" meter would pay more in proportion to the additional capacity provided by these larger meters.

**Figure V-4** shows the proposed two-year schedule of Service Charge rates. **Figure V-5** shows the proposed two-year schedule of Fire Service Charge rates that are proposed to be increased based on the revenue increases recommended in Chapter III, as the rate structure is not being recommended for adjustment.

**Figure V-4. Current and Proposed Service Charge Rates**

<b>Service Charges</b>			
<b>Customer Class</b>	<b>Current</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
<b>Single Family Residential</b>	<i>Bi-monthly per DU</i>	<i>Bi-monthly per DU</i>	
	\$59.04	\$76.72	\$82.09
<b>Multi Family Residential (including Residential Irrigation)</b>	<i>Bi-monthly per EDU</i>	<i>Bi-monthly per Meter</i>	
5/8" Meters	\$59.04	\$76.72	\$82.09
3/4" Meters	\$59.04	\$105.30	\$112.67
1" Meters	\$59.04	\$162.46	\$173.83
1.5" Meters	\$59.04	\$305.38	\$326.76
2" Meters	\$59.04	\$476.88	\$510.26
3" Meters	\$59.04	\$1,262.94	\$1,351.35
4" Meters	\$59.04	\$2,163.32	\$2,314.75
6" Meters	\$59.04	\$4,592.92	\$4,914.42
8" Meters	\$59.04	\$8,022.96	\$8,584.57
10" Meters	\$59.04	\$12,024.68	\$12,866.41
<b>Commercial (including Commercial Irrigation)</b>	<i>Monthly per Meter</i>	<i>Monthly per Meter</i>	
5/8" Meters	\$29.52	\$38.36	\$41.05
3/4" Meters	\$44.28	\$52.65	\$56.34
1" Meters	\$73.80	\$81.23	\$86.92
1.5" Meters	\$147.60	\$152.69	\$163.38
2" Meters	\$236.16	\$238.44	\$255.13
3" Meters	\$442.80	\$631.47	\$675.67
4" Meters	\$738.00	\$1,081.66	\$1,157.38
6" Meters	\$1,476.00	\$2,296.46	\$2,457.21
8" Meters	\$1,476.00	\$4,011.48	\$4,292.28
10" Meters	\$1,476.00	\$6,012.34	\$6,433.20

**Figure V-5. Current and Proposed Fire Service Charge Rates**

<b>Meter Size</b>	<b>Current Rates</b>	<b>FY 2023-24 eff 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
1" Meters	\$16.00	\$17.28	\$18.49
2" Meters	\$32.00	\$34.56	\$36.98
3" Meters	\$48.00	\$51.84	\$55.47
4" Meters	\$64.00	\$69.12	\$73.96
6" Meters	\$96.00	\$103.68	\$110.94
8" Meters	\$128.00	\$138.24	\$147.92
10" Meters	\$160.00	\$172.80	\$184.90
12" Meters	\$192.00	\$207.36	\$221.88

## WATER USE CHARGE DESIGN

As previously discussed, the City’s Water Use Charges are different for its customer classes. For purposes of rate design, all customer classes are categorized as Single Family Residential and Commercial/Multi Family.

### Single Family Residential Water Use Charges

The City’s Single Family Residential customers are currently charged a four-tier increasing block rate structure.<sup>17</sup> The structure is a series of blocks of water whose unit cost increases with each block. The structure is “progressive” in the sense that water is billed sequentially by block up to the highest block. It is not the case that all of the water is billed at the rate for the highest block. All metered water use is at least billed the Tier 1 rate. Water use beyond Tier 1 is only billed the Tier 2 rate for the volume of water allocated to Tier 2, and water use beyond the volume of water allocated to Tier 2 is billed at the Tier 3 rate, and so forth.

Increasing block rates have become more common as the need has grown to set rates that more precisely recover the cost of service. As previously discussed, increasing block rates continue to be well suited for the City’s Residential customer class.

When increasing block rates are implemented, the number of tiers must be determined. There is no absolute industry standard or law that prescribes how many tiers must be used. Judgment that is supported by facts is allowed. However, no matter how many tiers are used, the rates should yield charges that do not exceed the proportional cost of service.

### Breakpoints Between Tiers

The base/extra capacity cost-of-service analysis leads to four distinct services defined by the functions performed by facilities that are designed to provide the services. Each service has an average flow that can be used as the division (i.e., “breakpoint”) between each service, as shown in **Figure V-6**.

**Figure V-6. Breakpoint Locations – Single Family Residential**

Flow per Customer (hcf per month)	Demand Service Levels			
	Base Day	Average Day	Maximum Day	Maximum Hour
hcf per day	3,483	4,721	6,514	12,465
hcf per month	104,500	141,638	195,418	-
# of Dwelling Units (DU)	19,361	19,361	19,361	-
Average flow per DU (hcf/mo)	5	7	10	11+
Average flow per DU (hcf/bi-mo)	10	14	20	21+

Source: HCF per day from Figure IV-3. Bi-monthly bills calculated from Residential meter counts provided by City staff in September 2023.

<sup>17</sup> For simplicity, we use the term “tiered rates” synonymously with “increasing block rates.” “Inclining block rates” is commonly used for “increasing block rates.” However, because an incline can slope both up or down, it is ambiguous in this context and therefore is not used in this study.

The averages for Base Day, Average Day, and Maximum Day yield the following breakpoints for a 60-day period:

- Tier 1/Tier 2 breakpoint – 10 HCF (125 GPD) per bi-monthly period.
- Tier 2/Tier 3 breakpoint – 14 HCF (175 GPD) per bi-monthly period.
- Tier 3/Tier 4 breakpoint – 20 HCF (250 GPD) per bi-monthly period.

### **Rates Per Tier**

With breakpoints that correspond to the service levels in the cost-of-service analysis, it is possible to calculate the rate per tier by dividing the cost of service per tier by the water demand in each tier. The resulting rates represent the *unit cost* of service for each tier.<sup>18</sup>

**Figure V-7** shows the calculations of the incremental cost per tier. The costs in each column were determined in **Figure IV-11**, such that the allocation of \$14,611,865 is distributed to the four demand service levels. Using the Base Day service function as an example, it can be seen how much of the revenue requirement is recovered from Tier 1. The \$11,121,287 in **Figures IV-11 and Figure IV-7** includes the costs that were directly attributable to the Base Day service function plus the Base Day service function's share of costs attributable to higher levels of service. The Base Day cost of service is 76% of the aggregated amount of \$14,611,865 in **Figure IV-11** that is allocated to the Single Family Residential Water Use Charge. All of the water sold, including water in Tiers 2, 3, and 4, benefits from the Tier 1 costs and shares in paying them. Dividing the Base Day costs by the total demand of 1,723,268 HCF in **Figure V-7** yields a Tier 1 rate of \$6.45 per HCF.

Demand that does not exceed the 10 HCF Tier 1 breakpoint is only charged the Tier 1 rate. Demand that does not exceed Tier 1 is not responsible for the additional costs of peaking that were allocated to the higher service levels. These additional peaking costs are both the initial capital cost, the subsequent rehabilitation and renewal costs, and the operations and maintenance costs for larger pipelines, additional pumps, and larger reservoirs. Bills that exceed Tier 1 pay additional rate increments. The next increment of demand is responsible for the costs allocated to Average Day service, \$693,243 in **Figure IV-11**. This increment of cost is divided by the demand that exceeds Tier 1, 758,177 HCF, resulting in an incremental Tier 2 rate of \$0.91 per HCF (**Figure V-7**).

The calculations of the Tier 3 and Tier 4 rate increments proceed similarly. The incremental rate for Tier 3 and Tier 4 is much higher than Tier 2. This is due to more costs being spread over a smaller volume of water use. For example, the \$1,125,344 in **Figure IV-11** allocated to the Maximum Day service level is allocated to 496,463 HCF while the \$1,671,992 allocated to the Maximum Hour service level is allocated only to the highest 363,207 HCF. These levels of use create the need for these increments of peak capacity. To meet this peak demand, storage reservoirs distribution pipelines must be sized appropriately.

<sup>18</sup> In this report, "rates" and "unit costs" are synonymous.

**Figure V-7. Incremental Unit Cost – Single Family Residential**

Residential COS per Unit	Base Day	Average Day	Maximum Day	Maximum Hour	Total
<b>Residential COS - Consumption</b>	<b>\$11,121,287</b>	<b>\$693,243</b>	<b>\$1,125,344</b>	<b>\$1,671,992</b>	<b>\$14,611,865</b>
Demand Per Tier					
Tier 1 (0-10 hcf)	965,090				
Tier 2 (11-14 hcf)	261,715	261,715			
Tier 3 (15-20 hcf)	157,832	157,832	157,832		
Tier 4 (21+ hcf)	338,631	338,631	338,631	338,631	
Total hcf per Tier	1,723,268	758,177	496,463	363,207	
<b>Cost-of-Service per Unit (hcf)</b>	<b>\$6.45</b>	<b>\$0.91</b>	<b>\$2.27</b>	<b>\$4.94</b>	

Source: Cost of service from Figures IV-10. Demand per tier from City's FY 2021-22 and FY 2022-23 billing data.

The incremental rates are additive. In other words, demand in Tier 1 only pays the Base Day rate. Demand in Tier 2 pays the Base Day rate plus the Average Day increment, and so forth through Tiers 3 and 4. Adding the increments yields the rates per tier, which are summarized in **Figure V-8**. Clearly, as demand progresses through the tiers, the additional costs of peaking are allocated to recover the cost of the higher levels of service.

**Figure V-8. Calculation of Proposed Water Use Charge Rates – Single Family Residential**

Proposed Rates	Base Day	Average Day	Maximum Day	Maximum Hour	Total
Tier 1 (0-10 hcf)	\$6.45				<b>\$6.45</b>
Tier 2 (11-14 hcf)	\$6.45	\$0.91			<b>\$7.37</b>
Tier 3 (15-20 hcf)	\$6.45	\$0.91	\$2.27		<b>\$9.63</b>
Tier 4 (21+ hcf)	\$6.45	\$0.91	\$2.27	\$4.94	<b>\$14.57</b>

Source: Figure V-2.

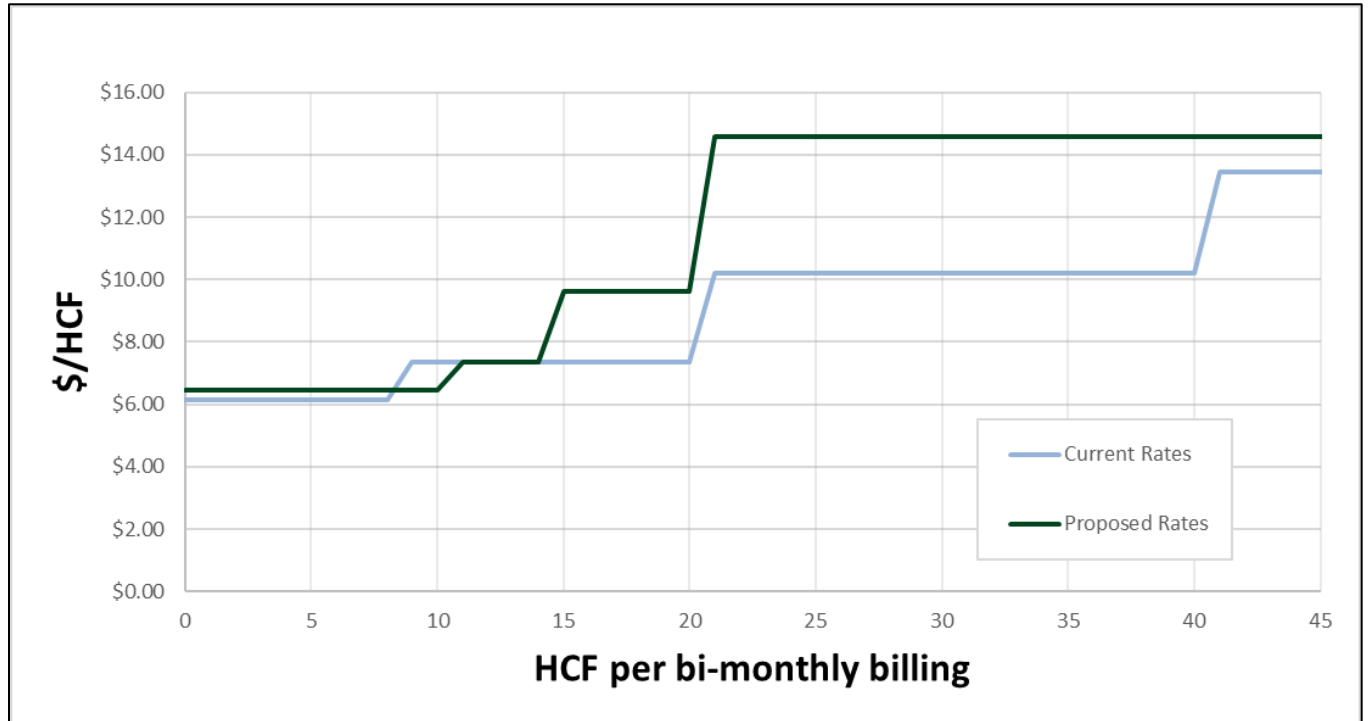
Note: Rounding differences caused by stored values in electronic models may exist

**Figure V-9** graphically compares the current structure with approved breakpoints with the proposed rate structure and breakpoint adjustments. Note that nearly two-thirds of the bills (67% of the total bills) are within the first two proposed tiers. In other words, only slightly more than one-third of the bills reflect above average water use.

The proposed breakpoints align rates with the current level of demand Single Family Residential customers place on the system. Under the current rate structure, Multi Family Residential consumption was also factored into the current tier breakpoints. Changing Multi Family Use Charges to a uniform rate structure would reduce the number of customers and water consumption considered in tiered rate structure analysis. Based on this change and shifts in demand patterns since the last cost-of-service analysis was completed, we recommend changes in the breakpoints between the tiers in the Water Use Charge structure. The recommended bi-monthly breakpoints of 8, 20, and 40 HCF would shift to 10, 14, and 20 HCF. Under the proposed adjustments, the Tier 1/Tier 2 breakpoint would increase from 8 HCF to 10 HCF. However, the Tier 2/Tier 3 breakpoint would contract from 20 HCF to 14 HCF. Also, the Tier 3/Tier 4 breakpoint

would contract from 40 HCF to 20 HCF. Customers with bills reflecting 21 HCF of water use who were paying Tier 3 rates would now pay Tier 4 rates. Further impacts to customers because of recommended adjustments will be discussed in Chapter VI.

**Figure V-9. Single Family Residential Use Charge Structure Comparison**



### Commercial/Multi Family Water Use Charges

We recommend the City apply the same uniform rate structure for all Commercial, Multi-Family, Irrigation, and Recycled Water customers. The proposed adjustment for FY 2023-24 is intended to increase the uniform rate to re-align with the cost of service for this customer class. Of the total revenue requirement for FY 2023-24, \$15,670,138 was allocated to this customer class. The uniform rate is derived by dividing this class’s share of the FY 2023-24 revenue requirement by the class’s projected annual demand based on FY 2021-22 and FY 2022-23 City billing data in **Figure V-10**.

**Figure V-10. Calculation of Commercial/Multi Family Uniform Consumption Charge**

Commercial/Multi Family Rev. Req.	\$15,670,138
Annual water use (hcf)	1,979,552
<b>Average \$ per hcf</b>	<b>\$7.92</b>

Source: Revenue requirement from Figure IV-10.  
Projected demand from City’s FY 2021-22 and FY 2022-23 billing data.

### Water Use Charges Summary

The two-year schedule of proposed Water Use Charges for Single Family Residential, Multi Family Residential, Commercial, and Irrigation customers is shown in **Figure V-11**.

**Figure V-11. Current and Proposed Water Use Charge Rates**

<b>Water Use Charges</b>				
<b>Single Family Residential</b>				
<b>Current Tiers</b>	<b>Current Rates</b>	<b>Proposed Tiers</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
Tier 1 (0-8 hcf)	\$6.13	Tier 1 (0-10 hcf)	\$6.45	\$6.90
Tier 2 (9-20 hcf)	\$7.35	Tier 2 (11-14 hcf)	\$7.37	\$7.89
Tier 3 (21-40 hcf)	\$10.20	Tier 3 (15-20 hcf)	\$9.63	\$10.30
Tier 4 (41+ hcf)	\$13.45	Tier 4 (21+ hcf)	\$14.57	\$15.59
<b>Multi Family Residential (including Residential Fire)</b>				
<b>Current Tiers</b>	<b>Current Rates</b>	<b>Usage</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
Tier 1 (0-8 hcf)	\$6.13	All Water Use	\$7.92	\$8.47
Tier 2 (9-20 hcf)	\$7.35			
Tier 3 (21-40 hcf)	\$10.20			
Tier 4 (41+ hcf)	\$13.45			
<b>Commercial - Includes Commercial, Industrial, Other, Municipal, Commercial Fire</b>				
<b>Usage</b>	<b>Current Rates</b>	<b>Usage</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
All Water Use	\$7.35	All Water Use	\$7.92	\$8.47
<b>Landscape Irrigation</b>				
<b>Usage</b>	<b>Current Rates</b>	<b>Usage</b>	<b>FY 2023-24 eff. 2/1/2024</b>	<b>FY 2024-25 eff. 1/1/2025</b>
Under 100% Budget	\$7.35	All Water Use	\$7.92	\$8.47
101%-200% Budget	\$10.20			
Over 200% Budget	\$13.45			

Further impacts to customers because of recommended adjustments will be discussed in Chapter VI.

### **Drought Rate Factors**

During prolonged shortages, customers are required to conserve or even ration their water use. The magnitude of the water savings can significantly reduce water sales revenue from quantity charges.

The City requested HF&H to calculate a set of Drought Rate Factors that would be applied to the rates for the Water Use Charges and implemented during declared water shortage stages in accordance with the City’s Water Shortage Contingency Plan (WSCP), state mandated reductions in the level of water usage, or other natural disaster or event that results in a water shortage and an unforeseen drop in water demand that requires reductions in water use.

As part of this study to calculate the Drought Rate Factors, it is proposed that the shortage reductions will vary by customer class, based on their respective abilities to conserve water. A customer classes’ ability to conserve is directly related to the proportion of their current water use which is highly discretionary

and considered a non-beneficial use (e.g., water used for landscape purposes, “outdoor” water use) and less discretionary use for health and safety (e.g., water used for cooking, cleaning, bathing, “indoor” water use). Each class’s reduction will be determined by reducing their proportion of water that is for “outdoor” water use (seasonal water use) 3.0 times more than their “indoor” (average winter water use) water use. As described in more detail under “Implementation” at this end of this section, the calculated factors will be applied to each tier of the Water Use Charge Rates. The higher rates will generate the revenue which was lost due to conservation and has been calculated to keep the City revenue neutral so they can cover the portion of fixed costs which have paid through the Water Use Charge Rates

**Analysis**

Based on FY 2021-22 and FY 2022-23 metered water use data, the resulting reductions are summarized in **Figure V-12**. The reductions shown represent the customer class reductions required to achieve the reduction associated with each shortage stage. The customer class reductions are greater or less than the overall average for each stage depending on how much of each class’s water demand is seasonal.

**Figure V-12. WSCP Required Water Use Reductions by Class**

Class	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
	Shortage Up to	Shortage Up to	Shortage Up to	Shortage Up to	Shortage Up to	Shortage Up to
	(10% Reduction)	(20% Reduction)	(30% Reduction)	(40% Reduction)	(50% Reduction)	(55% Reduction)
Single Family	10%	19%	29%	38%	48%	52%
Multi-Family	7%	13%	20%	27%	33%	38%
Commercial	8%	16%	24%	32%	40%	45%
Irrigation	18%	37%	55%	74%	92%	100%

**Figure V-13** shows the calculation of each customer class’s respective shortage reduction required during each shortage stage. The annual demand for each class is separated into indoor and outdoor water use where indoor water use is defined as the period from January through February multiplied times 6 to get the annualized indoor water use over 12 months. Subtracting indoor water use from the total annual water use determines the seasonal outdoor water use.

The percentage reductions for each customer class required to achieve the overall reduction for a particular stage are derived so that outdoor water use is reduced 3.0 times indoor water use. In a Stage 1 shortage, a 6.2% reduction in indoor water use and a 18.5% reduction in outdoor water use are required to achieve an overall 10% reduction. Applying the same reduction factors to each class results in different overall reductions for the class based on the relative proportions of their indoor and outdoor water use. In each stage reduction each customer class is required to conserve different percentages. This is because of the variation in water use patterns among the customer classes.

**Figure V-13. Calculation of Shortage Reductions by Stage and Customer Class**

10% Shortage Level 1 Reduction (up to 10% reduction)									
Class	Baseline Annual Demand (HCF)			Reductions					
	Total	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Total	Total
Single Family	1,723,268	1,253,995	469,273	6.2%	18.5%	77,260	86,737	163,997	10%
Multi-Family	790,781	756,078	34,703	6.2%	18.5%	46,583	6,414	52,997	7%
Commercial	636,936	539,160	97,776	6.2%	18.5%	33,218	18,072	51,290	8%
Irrigation	551,835	-	551,835	0.0%	18.5%	-	101,997	101,997	18%
<b>Total</b>	<b>3,702,820</b>	<b>2,549,233</b>	<b>1,153,587</b>			<b>157,061</b>	<b>213,221</b>	<b>370,282</b>	<b>10.0%</b>
20% Shortage Level 2 Reduction (up to 20% reduction)									
Class	Baseline Annual Demand (HCF)			Reductions					
	Total	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Total	Total
Single Family	1,723,268	1,253,995	469,273	12.3%	37.0%	154,520	173,474	327,994	19%
Multi-Family	790,781	756,078	34,703	12.3%	37.0%	93,166	12,829	105,994	13%
Commercial	636,936	539,160	97,776	12.3%	37.0%	66,436	36,145	102,581	16%
Irrigation	551,835	-	551,835	0.0%	37.0%	-	203,995	203,995	37%
<b>Total</b>	<b>3,702,820</b>	<b>2,549,233</b>	<b>1,153,587</b>			<b>314,122</b>	<b>426,442</b>	<b>740,564</b>	<b>20.0%</b>
30% Shortage Level 3 Reduction (up to 30% reduction)									
Class	Baseline Annual Demand (HCF)			Reductions					
	Total	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Total	Total
Single Family	1,723,268	1,253,995	469,273	18.5%	55.4%	231,780	260,212	491,991	29%
Multi-Family	790,781	756,078	34,703	18.5%	55.4%	139,748	19,243	158,991	20%
Commercial	636,936	539,160	97,776	18.5%	55.4%	99,655	54,217	153,871	24%
Irrigation	551,835	-	551,835	0.0%	55.4%	-	305,992	305,992	55%
<b>Total</b>	<b>3,702,820</b>	<b>2,549,233</b>	<b>1,153,587</b>			<b>471,183</b>	<b>639,663</b>	<b>1,110,846</b>	<b>30.0%</b>
40% Shortage Level 4 Reduction (up to 40% reduction)									
Class	Baseline Annual Demand (HCF)			Reductions					
	Total	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Total	Total
Single Family	1,723,268	1,253,995	469,273	24.6%	73.9%	309,040	346,949	655,988	38%
Multi-Family	790,781	756,078	34,703	24.6%	73.9%	186,331	25,657	211,988	27%
Commercial	636,936	539,160	97,776	24.6%	73.9%	132,873	72,289	205,162	32%
Irrigation	551,835	-	551,835	0.0%	73.9%	-	407,990	407,990	74%
<b>Total</b>	<b>3,702,820</b>	<b>2,549,233</b>	<b>1,153,587</b>			<b>628,244</b>	<b>852,884</b>	<b>1,481,128</b>	<b>40.0%</b>
50% Shortage Level 5 Reduction (up to 50% reduction)									
Class	Baseline Annual Demand (HCF)			Reductions					
	Total	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Total	Total
Single Family	1,723,268	1,253,995	469,273	30.8%	92.3%	385,913	433,252	819,166	48%
Multi-Family	790,781	756,078	34,703	30.8%	92.3%	232,681	32,039	264,720	33%
Commercial	636,936	539,160	97,776	30.8%	92.3%	165,925	90,271	256,196	40%
Irrigation	551,835	-	551,835	0.0%	92.3%	-	509,477	509,477	92%
<b>Total</b>	<b>3,702,820</b>	<b>2,549,233</b>	<b>1,153,587</b>			<b>784,519</b>	<b>1,065,039</b>	<b>1,849,559</b>	<b>50.0%</b>
55% Shortage Level 6 Reduction (up to 55% reduction)									
Class	Baseline Annual Demand (HCF)			Reductions					
	Total	Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Total	Total
Single Family	1,723,268	1,253,995	469,273	34.6%	100.0%	434,339	469,273	903,612	52%
Multi-Family	790,781	756,078	34,703	34.6%	100.0%	261,879	34,703	296,582	38%
Commercial	636,936	539,160	97,776	34.6%	100.0%	186,746	97,776	284,522	45%
Irrigation	551,835	-	551,835	0.0%	100.0%	-	551,835	551,835	100%
<b>Total</b>	<b>3,702,820</b>	<b>2,549,233</b>	<b>1,153,587</b>			<b>882,964</b>	<b>1,153,587</b>	<b>2,036,551</b>	<b>55.0%</b>

The service charges are fixed and generate 36% of the total rate revenue regardless of shortages. The remaining 64% of revenue is generated by the volumetric rates. In deriving the Drought Rate Factors, the factors will only apply to the volumetric rates because short-term reductions in water use correlate with

short-term fluctuations in variable costs. Conversely, short-term reductions in water use would not affect fixed costs, or costs that would require a long-term change in customer demand (e.g. population decline) to be affected. Each customer class has its own set of Drought Rate Factors corresponding to its reduction in each stage of shortage.

The formula for the Drought Rate Factors comprises conservation and variable cost components. The conservation component adjusts to account for the required reduction in water demand. A portion, not all, of the costs (e.g., power, water purchases) covered by Water Use Charge rates are variable and will not be incurred when less water is used during short-term demand reductions. To ensure the Drought Rate Factors do not result in excess revenue collection, the variable cost component of the calculation reduces the factor to account for the portion of variable costs, which is covered by the quantity charges, and will not be incurred when demand decreases.

The Drought Rate Factors are the product of the conservation component multiplied by the variable cost component. Each component is defined as follows:

**Drought Rate Factor** = Conservation Component multiplied times Variable Cost Component, where

**Conservation Component** =  $1/(1 - a)$ , where

$a$  = required percentage reduction, which varies by customer class.

**Variable Cost Component** =  $(b - (c * a))/b$ , where

$a$  = required percentage reduction, which varies by customer class.

$b$  = percentage of revenue from total service charges and volumetric rates for all customer classes that is attributable to volumetric rates, an amount that is 64% based on the cost-of-service analysis.

$c$  = percentage of total revenue requirement covered by service charges and volumetric rates that varies based on fluctuations in demand, an amount that is currently 51%.<sup>19</sup>

The following example illustrates how the formula determined the 1.047 Drought Rate Factor in **Figure V-14** for the Single Family Residential customer class in a Stage 2 shortage in which an overall conservation goal of 20% is required.

**Conservation Component:**  $1/(1 - a) = 1/(1 - 0.19033) = 1.23507$ , where

$a$  = required percentage reduction is 19.033% for the Residential customer class (see **Figure V-13** where a rounded 19% is shown).

**Variable Cost Component:**  $(b - (c * a))/b = (0.6415 - (0.5124 * 0.19033))/0.6415 = 0.84796$ , where

<sup>19</sup> The cost of SFPUC water is the largest example of a variable cost, which varies with water demand.

$a = 19.033\%$  reduction for Residential customers in a Stage 1 shortage.

$b = 64.15\%$  of total rate revenue is generated by quantity charges; and

$c = 51.24\%$  of revenue requirement is related to variable costs.

**Drought Rate Factor** =  $1.23507 * 0.84796 = 1.047$ , as it is shown in **Figure V-14**.

The Single Family Residential Water Use Charge rates in effect under non-shortage conditions would be multiplied by 1.047 to derive the quantity charge rates to be in effect during a Stage 2 water shortage. **Figure V-14** shows the Drought Rate Factors that would be applied to the rates that would normally be in effect absent declared shortages.

**Figure V-14. Drought Rate Factors by WSCP-Defined Shortage Stage**

Class	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
	Shortage Up to	Shortage Up to	Shortage Up to	Shortage Up to	Shortage Up to	Shortage Up to
	(10% Reduction)	(20% Reduction)	(30% Reduction)	(40% Reduction)	(50% Reduction)	(55% Reduction)
Single Family	1.021	1.047	1.080	1.124	1.182	1.222
Multi-Family	1.014	1.031	1.051	1.074	1.101	1.121
Commercial	1.018	1.039	1.064	1.096	1.135	1.162
Irrigation	1.046	1.118	1.250	1.571	3.420	n/a

**Implementation**

The recommended Drought Rate Factors in **Table V-14** are implemented only during periods of declared water shortage emergencies. Once a mandatory shortage is declared, the City Council has discretion to enact Drought Rate Factors corresponding to the level of shortage reduction implemented using the factors provided in **Table V-14** or calculated using the formula for a specific level of reduction. The adjustments can go in either direction from stage to stage depending on whether the level of reduction is increasing or decreasing during the shortage. At least 30 days prior to making the adjustment, notice must be provided to rate payers, which can be included in the customer’s bills. No protest process is required. These adjustments would be temporary, and rates would return to the regular schedule at the conclusion of the water shortage emergency.

The Drought Rate Factors could be applied when the City requires its customers to reduce water use. At such times, the Drought Rate Factors would be multiplied times the Water Use Charge rates proposed in the current rate study. These proposed Water Use Charge rates are based the specific demand projections for each year listed in **Figure III-1**. The City can choose to enact Drought Rate Factors when the water emergency demand levels will fall short of the respective year of modeled demand.

The Drought Rate Factors only apply to the tiered and uniform Water Use Charge rates and not to Service Charge rates, which are independent of water demand. The Drought Rate Factors are multiplied times the non-water shortage, normal-year Water Use Charge rates proposed in this report. The Drought Rate Factors would be adopted as part of the rate notification in the Proposition 218 implementation process. Once adopted, the City could apply the Drought Rate Factors as needed during conservation stages.

As a further example, **Figure V-15** has Water Use Charge rates after applying the Drought Rate Factors to the rates proposed for 2024. The table shows the proposed rates followed by the rates that correspond to each stage of conservation.

**Figure V-15. Sample Rates With Drought Rate Factors – FY 2023-24 Rates**

Water Emergency Shortage Stage	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	
	10%	20%	30%	40%	50%	>50%	
Single Family Drought Rate Factors	1.021	1.047	1.080	1.124	1.182	1.222	
Multi-Family Drought Rate Factors	1.014	1.031	1.051	1.074	1.101	1.121	
Commercial Drought Rate Factors	1.018	1.039	1.064	1.096	1.135	1.162	
Irrigation Drought Rate Factors	1.046	1.118	1.250	1.571	3.420	n/a	
<b>Proposed 2024 Rates</b>	<b>Rates With Drought Rate Factors Applicable to % Reductions</b>						
<b>Single Family</b>							
Tier 1	\$6.45	\$6.59	\$6.76	\$6.97	\$7.25	\$7.63	\$7.88
Tier 2	\$7.37	\$7.53	\$7.72	\$7.96	\$8.28	\$8.71	\$9.01
Tier 3	\$9.63	\$9.83	\$10.09	\$10.40	\$10.82	\$11.39	\$11.77
Tier 4	\$14.57	\$14.88	\$15.26	\$15.74	\$16.37	\$17.23	\$17.80
<b>Multi-Family</b>	\$7.92	\$8.03	\$8.17	\$8.32	\$8.50	\$8.72	\$8.88
<b>Commercial</b>	\$7.92	\$8.06	\$8.23	\$8.43	\$8.68	\$8.99	\$9.21
<b>Irrigation</b>	\$7.92	\$8.28	\$8.85	\$9.90	\$12.44	\$27.09	N/A

Note that if reductions in water use are higher or lower than the specified stages set in the WSCP due to state mandated reductions in the level of potable water usage, or other natural disaster or event that results in a water shortage and an unforeseen drop in water demand, the Drought Rate Factors will be adjusted in accordance with the formula above.

### Pass-Through Adjustment

The cost of SFPUC water is the single largest component of the City’s revenue requirements. Because the City has no control over the SFPUC’s wholesale water rate, this cost is simply passed through to the City’s customers. The SFPUC provides projections of its future wholesale water rates, which are built into the rate projections in this study. The SFPUC updates its projections each year as part of the rate-making process legally prescribed in the wholesale Water Supply Agreement. California Government Code Section 53756 authorizes water suppliers to adjust their rates in response to changes in pass-through costs. We recommend that the City incorporate annual pass-through adjustments in its volumetric rates.

Each year the City should determine how much, if any, pass-through adjustment is required as soon as the SFPUC submits its updated wholesale rates, which is typically in April or May each year. The wholesale rate used for the projections in this study should be compared with the updated rate and the difference

either added or subtracted from the City's Water Use Charge rates for Residential and Non-Residential customers. The wholesale rates per HCF used in this study<sup>20</sup> are as follows:

FY 2023-24 – \$5.21  
FY 2024-25 – \$5.21  
FY 2025-26 – \$5.21  
FY 2026-27 – \$5.31  
FY 2027-28 – \$5.63

For example, if the updated SFPUC rate for FY 2023-24 is \$5.31, the \$0.10 difference should be added to the Water Use Charge rates charged to Residential and Non-Residential water customers. If the updated SFPUC rate is less than the foregoing rates, the difference should be subtracted from the City's volumetric rates. In other words, the adjustment should be made in either direction.

The pass-through adjustment acts similarly to the Drought Rate Factors, and can be incorporated into the Proposition 218 notice. The pass-through adjustment allows the City to adjust Water Use Charge rates to track any difference between the SFPUC rates that were included in the analysis and the actual rates adopted each year by SFPUC. The pass-through adjustment can also be made by providing 30-day notice in the customer bills without triggering the need for a Proposition 218 protest process.

<sup>20</sup> Rates included in letter from SFPUC to Nicole Sandkulla RE: Fiscal Year 2023-24 Wholesale Water Rates Notice, dated April 6, 2023.

# VI. CUSTOMER BILL IMPACTS

In the previous chapter, the Volume and Service Charge structures were compared for the current and proposed rates. A further understanding of the differences between the two structures can be gained by comparing bills based on both rate structures.

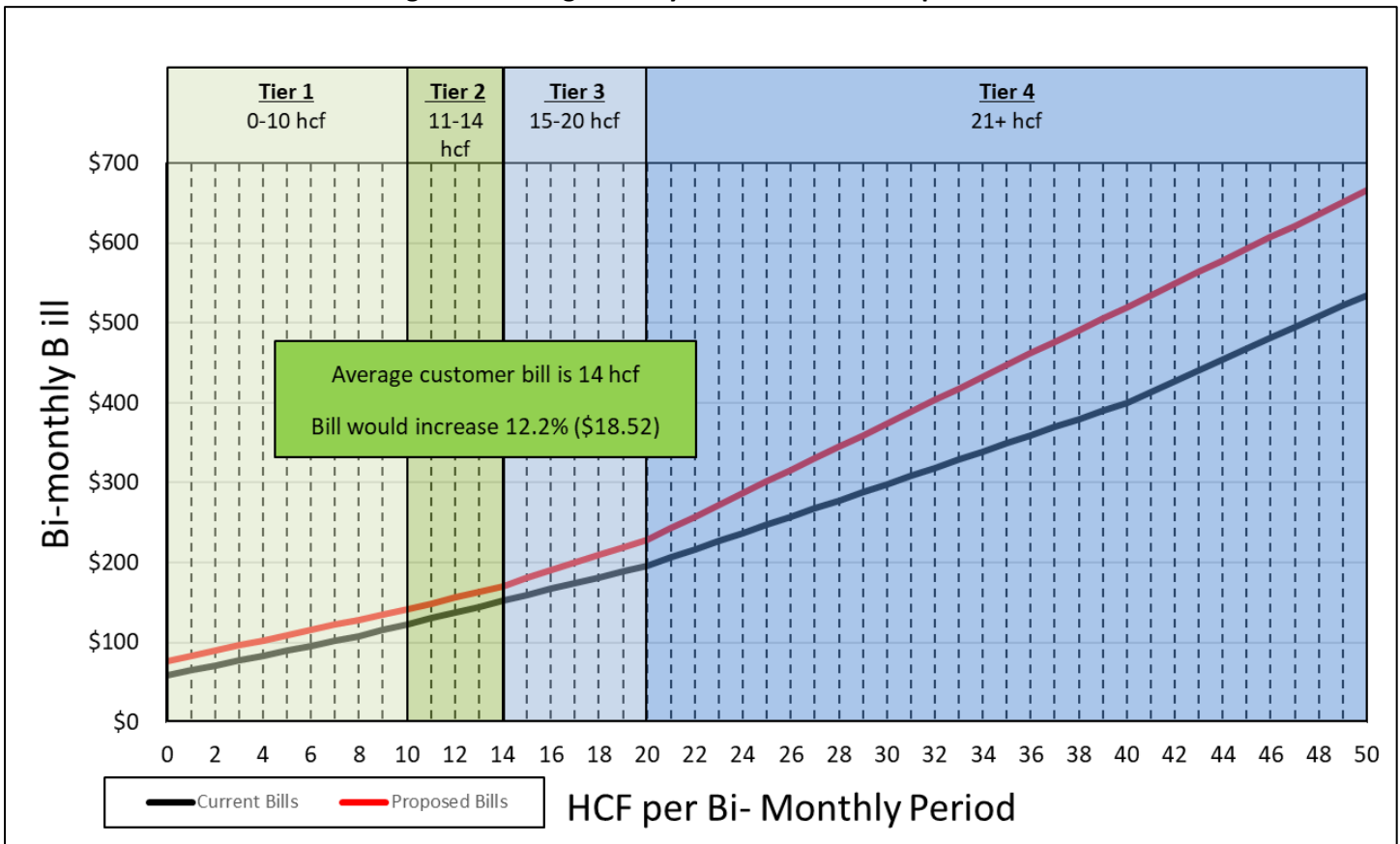
## BILL COMPARISON

### Single Family Residential Bills Under Proposed Rates

Customers pay the sum of the Service Charge corresponding to the capacity of their service plus a Water Use Charge for water use during the billing period.

**Figure VI-1** provides perspective on the impact of the proposed (red line) and current rates (blue line). This graph plots bills across a range of water use. The top of the graph indicates the ranges of demand corresponding to the tiers developed in the cost-of-service analysis. Customers can expect an increase for a given level of water use when the proposed rate structure line is above the current rate structure line.

**Figure VI-1. Single Family Residential Bill Comparison**



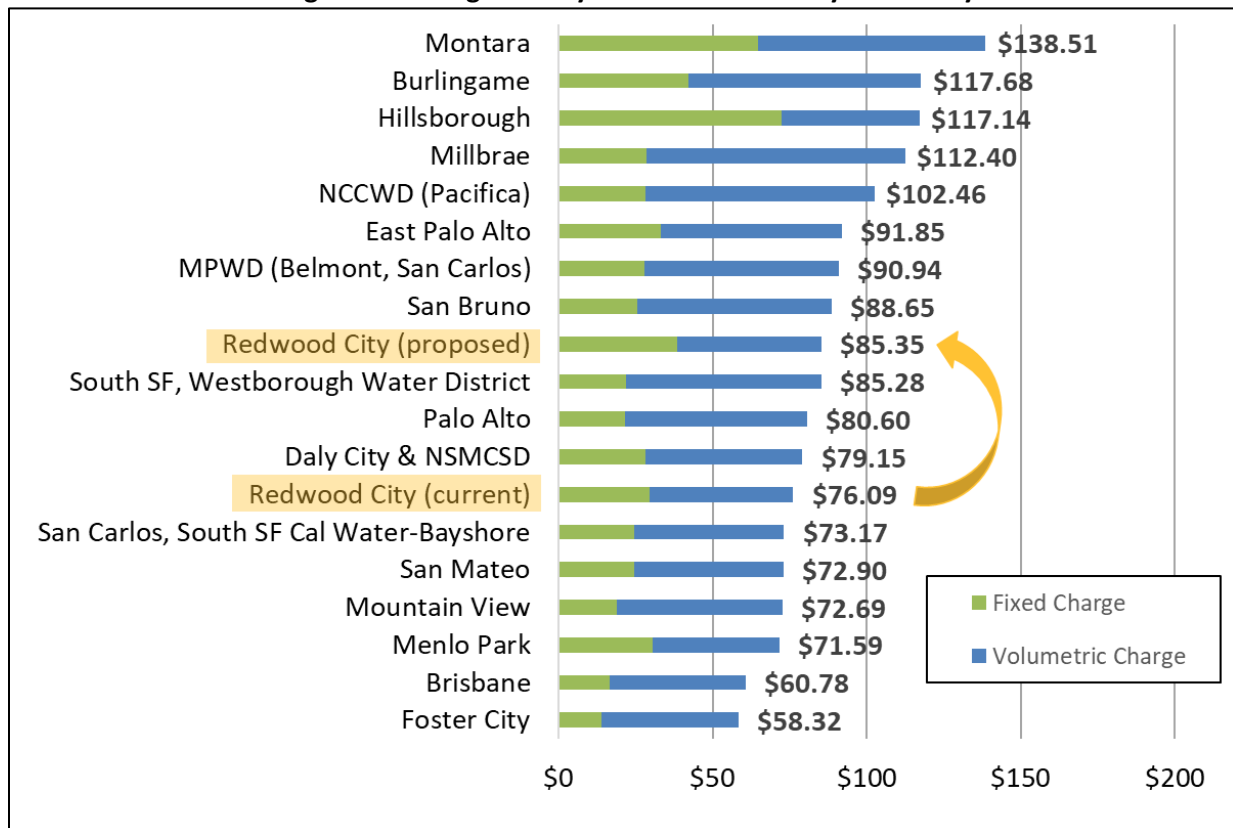
Source: City billing data for FY 2021-22 and FY 2022-23.

The scale of the graph makes it difficult to discern the variance between bills at current rates and proposed rates for customers falling within the Tier 1 or Tier 2 range. Customers using 10 HCF (Tier 1) or less will see a bill increase ranging from \$17.68 to \$20.24, depending on the specific level of water use. Customers using between 11 and 14 HCF (Tier 2) will see a bill increase ranging from \$18.46 to \$18.52, depending on the specific level of water use. Since 67% of residential bills report water use equal to or less than 14 HCF, then the majority of bi-monthly bills will increase by no more than \$20.24. Customers using between 15 and 20 HCF (Tier 3) will see a bill increase ranging from \$20.80 to \$27.64, depending on the specific level of water use. Based on prior billing data, this is applicable to approximately 15% of all bills. Customers using at least 21 HCF (Tier 4) will see a minimum increase of \$29.92. The increase from the current bill grows as water use increases beyond 21 HCF. For example, an account using 23 HCF would see an increase of \$45.31 while a customer using 30 HCF would see an increase of \$75.90. For reference, customers with Tier 4 water use would account for 18% of bills. Further, almost 93% of bills report water use less than or equal to 30 HCF. The extraordinary water users represent a small fraction of the service population that should pay more for the peaking demands placed on the system.

### Neighboring Agency Comparison

The bill for average water use by a Single Family household in Redwood City was compared to a water bill subject to neighboring agency rates in **Figure VI-2**. For a monthly comparison, the average bi-monthly water use of 14 HCF was halved to 7 HCF to calculate the Volumetric charge. The bi-monthly Service Charge was halved to calculate the Fixed Charge. With the recommend increases, the customer bill for average water use increases slightly among neighboring agencies. However, the Redwood City bill under proposed rates is now closer to the median of rates surveyed.

**Figure VI-2. Single Family Residential Monthly Bill Survey**



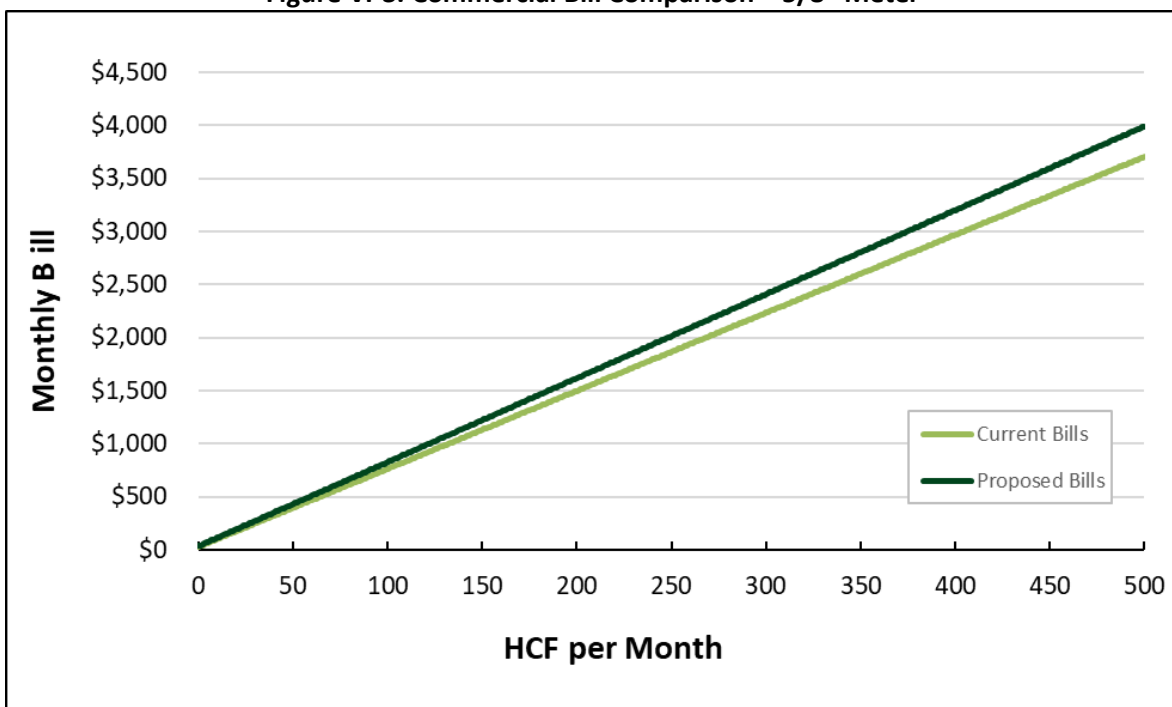
### Multi Family Bills Under Proposed Rates

It is challenging to provide sample multi-family bills impacts due to the change in rate structure. There is a weak correlation between the number of dwelling units served and the size of the meter. In addition, water use is individual to each account and not directly correlated to the number of dwelling units served. Therefore, whether customers see an increase or decrease depends on two factors: 1) the number of dwelling units previously charged versus the proposed capacity-based Service Charge; and 2) the amount of water consumed by all residents served by the account as the Water Use Charges adjust from a tiered-rate structure to a uniform rate.

### Commercial Bills Under Proposed Rates

Commercial bills will increase proportionately to the level of water use. This is reflected by the widening gap between the two lines in each chart shown in **Figures VI-3 to VI-5**. The three comparisons shown are for three of the most common meter sizes and represent 59% of commercial customers. Regardless of the meter size and level of water use, customers can expect monthly bills will increase.

**Figure VI-3. Commercial Bill Comparison – 5/8” Meter**



**Figure VI-4. Commercial Bill Comparison – 2” Meter**

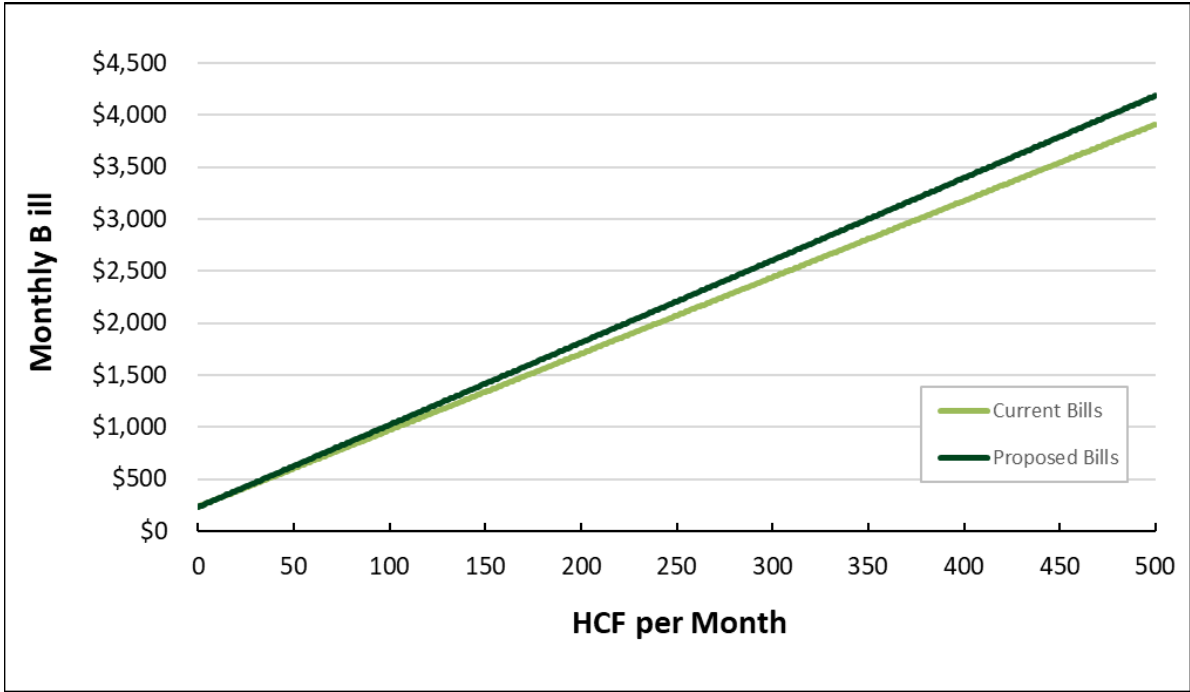
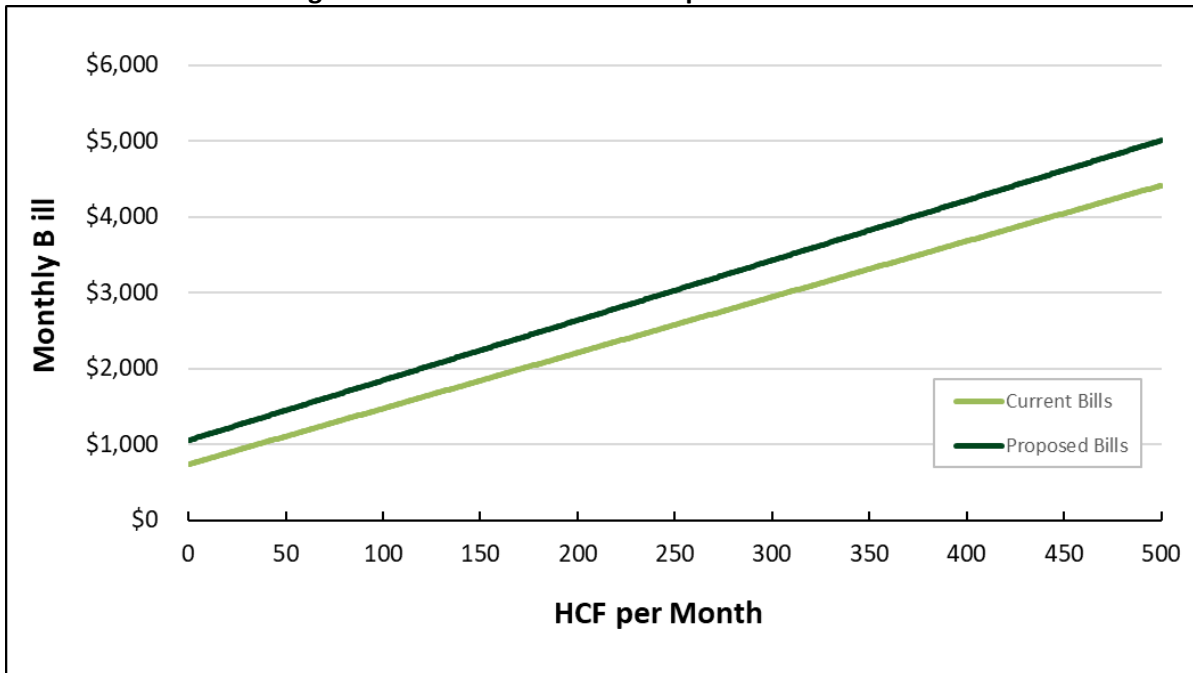


Figure VI-5. Commercial Bill Comparison – 4" Meter



The scale of each graph makes it difficult to discern the variance between bills at current rates and proposed rates. **Figure VI-6** provides specific bill impacts by incremental water use and meter size.

**Figure VI-6. Sample Commercial Bill Impacts by Meter Size and Water Use**

Water Use (HCF)	5/8" meter			2" meter			4" meter		
	Current Bill	Bill with Proposed Rates	Monthly Increase	Current Bill	Bill with Proposed Rates	Monthly Increase	Current Bill	Bill with Proposed Rates	Monthly Increase
<b>0</b>	\$29.52	\$38.36	<b>\$8.84</b>	\$236.16	\$238.44	<b>\$2.28</b>	\$738.00	\$1,081.66	<b>\$343.66</b>
<b>10</b>	\$103.02	\$117.56	<b>\$14.54</b>	\$309.66	\$317.64	<b>\$7.98</b>	\$811.50	\$1,160.86	<b>\$349.36</b>
<b>20</b>	\$176.52	\$196.76	<b>\$20.24</b>	\$383.16	\$396.84	<b>\$13.68</b>	\$885.00	\$1,240.06	<b>\$355.06</b>
<b>30</b>	\$250.02	\$275.96	<b>\$25.94</b>	\$456.66	\$476.04	<b>\$19.38</b>	\$958.50	\$1,319.26	<b>\$360.76</b>
<b>40</b>	\$323.52	\$355.16	<b>\$31.64</b>	\$530.16	\$555.24	<b>\$25.08</b>	\$1,032.00	\$1,398.46	<b>\$366.46</b>
<b>50</b>	\$397.02	\$434.36	<b>\$37.34</b>	\$603.66	\$634.44	<b>\$30.78</b>	\$1,105.50	\$1,477.66	<b>\$372.16</b>
<b>100</b>	\$764.52	\$830.36	<b>\$65.84</b>	\$971.16	\$1,030.44	<b>\$59.28</b>	\$1,473.00	\$1,873.66	<b>\$400.66</b>
<b>200</b>	\$1,499.52	\$1,622.36	<b>\$122.84</b>	\$1,706.16	\$1,822.44	<b>\$116.28</b>	\$2,208.00	\$2,665.66	<b>\$457.66</b>
<b>300</b>	\$2,234.52	\$2,414.36	<b>\$179.84</b>	\$2,441.16	\$2,614.44	<b>\$173.28</b>	\$2,943.00	\$3,457.66	<b>\$514.66</b>
<b>400</b>	\$2,969.52	\$3,206.36	<b>\$236.84</b>	\$3,176.16	\$3,406.44	<b>\$230.28</b>	\$3,678.00	\$4,249.66	<b>\$571.66</b>
<b>500</b>	\$3,704.52	\$3,998.36	<b>\$293.84</b>	\$3,911.16	\$4,198.44	<b>\$287.28</b>	\$4,413.00	\$5,041.66	<b>\$628.66</b>

**EXHIBIT B**

**ARTICLE II. WATER SERVICE AND FACILITIES CHARGES**

**Sec. 38.5. WATER SERVICE CHARGE:**

A. In addition to all other charges and fees applicable to users of water from the water system owned or operated by the City of Redwood City, as established by the Water Rules and Regulations of the Public Works Services Department, as amended, and this chapter, residential and non-residential water service charges shall be paid ~~for~~by each parcel receiving water service provided by the City at the rates ~~set forth in this Section; adopted by ordinance or resolution of the City Council.~~

~~(a) Residential Basic Water Service Charge. A monthly water service charge per dwelling unit equivalent ("DUE") for residential customers, irrespective of whether such service is furnished through a single meter for multiple dwelling units or through individual meters for each dwelling unit, is hereby established as follows:~~

Service Charge per DUE* Per Month	
Effective Date:	08/01/16
	\$25.39
Effective Date:	07/01/17
	\$27.38
Effective Date:	07/01/18
	\$29.52

~~\* DUEs shall be determined as follows:~~

- ~~(i) A single family residence consisting of one (1) independent dwelling unit on a parcel of property shall be deemed 1 DUE; and~~
- ~~(ii) Multi-family residences, consisting of more than one (1) dwelling unit on a parcel of property shall be deemed to consist of the number of DUEs derived from applying the following conversion table.~~

**Multi-Family Dwelling Unit Equivalent Conversion Schedule**

Residential Dwelling Units	Conversion Schedule Per Residential Dwelling Unit
Up to 9	1 DUE
10 to 59	0.75 DUE
60 or more	0.50 DUE

~~(b) Non-Residential Basic Water Service Charge. Monthly water service charges for water service to non-residential customers are hereby established as follows and are calculated based on the size of each meter served by the City:~~

**Service Charges Per Meter  
Category Per Month**

Meter Sizes **	Effective Date: 08/01/16	Effective Date: 07/01/17	Effective Date: 07/01/18
5/8 inch	\$25.39	\$27.38	\$29.52
3/4 inch	38.09	41.07	44.28
1-inch	63.48	68.45	73.80
1-1/2 inch	126.95	136.90	147.60
2-inch	203.12	219.04	236.16
3-inch	380.85	410.70	442.80
4-inch	634.75	684.50	738.00
Over 4-inch	1,269.50	1,369.00	1,476.00

~~(c) Manifold Meters. The service charge for a manifold meter installation shall be the sum of the applicable individual meter service charges for each such installation.~~

~~(d) Fire Meter Service Charge. Monthly charges for water service furnished to fire service connections for the corresponding fire connection sizes after the effective date are hereby established as follows:~~

Fire Meter Service Sizes	
1 inch	\$16.00
2 inch	32.00
3 inch	48.00
4 inch	64.00
6 inch	96.00
8 inch	128.00
10 inch	160.00
12 inch	192.00

~~Fire meters are not a part of a regular meter billing system and are only billed when the usage is registered.~~

~~(e) [Reserved]~~

~~(f) Water Quantity Charges. In addition to the monthly basic charges set forth in subdivisions (a) and (b) of this Section, each customer shall be charged consumption rates, based on meter readings, for each hundred cubic feet ("water unit") of water delivered by the City to customer premises in accordance with the following schedules:~~

**Residential Water Quantity Charges—Potable**

Monthly Consumption Ranges (Water Unit)	Tier	Charge per Water Unit Effective 08/01/2016	Charge per Water Unit Effective 07/01/2017	Charge per Water Unit Effective 07/01/2018
1—4	1	\$5.27	\$5.68	\$6.13
5—10	2	6.32	6.82	7.35
11—20	3	8.77	9.46	10.20
21 and above	4	11.57	12.47	13.45

Ranges are stated on a per DUE per month basis. The ranges stated above shall be multiplied by the number of DUEs served and by the number of months in the billing period.

**Commercial Water Quantity Charges—Potable**

	Tier	Charge per Water Unit Effective 08/01/2016	Charge per Water Unit Effective 07/01/2017	Charge per Water Unit Effective 07/01/2018
All Water Use	—	\$6.32	\$6.82	\$7.35

**Landscape Irrigation Water Quantity Charges—Potable**

Portion of Water Budget	Charge per Water Unit Effective 08/01/2016	Charge per Water Unit Effective 07/01/2017	Charge per Water Unit Effective 07/01/2018
0—100%	\$6.32	\$6.82	\$7.35
101—200%	8.77	9.46	10.20
>201%	11.57	12.47	13.45

Potable Landscape Water Quantity Charge Tiers are based on a 'water budget' calculated according to the City's 'water budget methodology', which is available at [www.redwoodcity.org/utilityrates](http://www.redwoodcity.org/utilityrates).

**Water Quantity Charges—Recycled Water**

	Charge per Water Unit Effective 08/01/2016	Charge per Water Unit Effective 07/01/2017	Charge per Water Unit Effective 07/01/2018
All Water Use	\$6.32	\$6.82	\$7.35

(g) B. Bi-Monthly Billing. Water meters or classes of water meters may be read bi-monthly, and the corresponding billing period shall be for a two-month period.

- ~~(h) After-Hour Turn-on Fee. The fee for direct costs associated with turning on water meters or classes of water meters during non-business hours of the Public Works Division shall be in an amount set by resolution of the City Council. When after-hour turn-on is requested by a user, this fee shall be charged and collected on the user's next ensuing utility bill.~~
- (i) C. Separate Landscape Water Meters. For all new landscapes and existing landscapes of one acre or more the installation of separate water meter is required except for single-family homes.
- (j) D. Submeters. ~~For all~~ All newly constructed residential buildings, where one meter is furnished by the City for more than one residential dwelling unit, shall be required to install a separate meter for each distinct dwelling unit downstream of the City water meter. Maintenance and billing for water use of submeters shall be the responsibility of the property owner.
- ~~(k) Pass Through Provision for Wholesale Water Rates. All potable water distributed by the City through its water system is purchased by the City at wholesale from the San Francisco Public Utilities Commission. The potable water service charges set forth in subdivision (f) of this Section were calculated based on the assumption that SFPUC would set its rates to \$4.10 per unit on July 1, 2016; to \$4.28 per unit on July 1, 2017; and to \$4.68 per unit on July 1, 2018. If there are additional wholesale rate increases adopted by the SFPUC, each potable water charge, as set forth in subdivision (f) of this Section, will automatically adjust by the exact number of cents per water unit that the SFPUC increases its wholesale rate above the assumed wholesale rates set forth in this subdivision (k). The City will mail notification of any such adjustment to customers at least 30 days prior to the effective date of such automatic adjustment.~~

### **Sec. 38.6. PAYMENT; DISCONTINUANCE OF SERVICE; PRORATION:**

The water meter service charge shall be paid at the same time as the regular billing for water service based upon the amount of water consumed, and the nonpayment of the water meter service charge shall result in the discontinuance of water service under the same rules and regulations that are applicable to nonpayment of the billing for water consumed. The water meter service charge shall be prorated where water service is utilized for only a portion of a billing period.

### **Sec. 38.7. WATER SERVICE ADMINISTRATION:**

#### **A. Charges when meter is inoperative.**

If a meter fails to register due to any cause except the nonuse of potable or recycled water, the charge for potable or recycled water will be estimated based on previous consumption for a comparable period or by such other method as is determined by the City. In the preparation of such averaged bills, due consideration will be given to fluctuations caused by seasonal changes or any interruption to the service known to have occurred.

B. Charges for vacant premises.

If a property is vacant, the fixed component of the water service charge and any water used in the billing period will be billed to the active account holder on record. The account holder or authorized representative shall be responsible for notifying the City and requesting to discontinue service.

**Secs. ~~38.78~~-38.9 RESERVED**

## EXHIBIT C

### ARTICLE IV. WATER FUND

#### **Sec. 38.20. ESTABLISHED; REVENUES; USE OF REVENUES:**

A special fund to be known as the Water Fund is hereby established. All revenues arising from the imposition of the charges and fees provided in this Chapter, and all revenues arising from the imposition of the charges and fees established by the rules and regulations (and all amendments thereto) of the Water Department of the City or such other revenues derived from the operation of water utilities owned or operated by the City as are or may be provided shall be deposited in the Water Fund. ~~Such revenues shall be expended solely for the following purposes; provided, however, that such revenues derived from the operation of such water utilities serving water service Area 3 shall be expended exclusively for the following purposes related to said water service area: the acquisition, construction, reconstruction (including the extension or replacement of existing mains and transmission lines), maintenance, management, operation and repair of such water facilities; the payment of bond interest and principal or charges due on any bond issue (including facilities bonds, all or any portion of the proceeds of which are used for the following purposes) sold for the purpose of acquiring, constructing, or reconstructing water facilities; and for such other lawful purposes of the City as the City Council may provide from time to time.~~ Within the Water Fund, the City shall maintain separate and segregated accounts for the revenues for each charge, rate, or fee imposed pursuant to this Chapter. The revenues from each charge, rate, or fee shall be used for the purposes for which they were imposed.

#### **Secs. 38.21—38.24. RESERVED:**

## Exhibit D

### Water Service Charges

Fixed Service Charges	Effective 2/1/2024	Effective 1/1/2025
<b>Single Family Residential</b>	<i>Bi-monthly per Dwelling Unit</i>	
	\$76.72	\$82.09
<b>Multi Family Residential (including Residential Irrigation)</b>	<i>Bi-monthly per Meter</i>	
5/8" Meters	\$76.72	\$82.09
3/4" Meters	\$105.30	\$112.67
1" Meters	\$162.46	\$173.83
1.5" Meters	\$305.38	\$326.76
2" Meters	\$476.88	\$510.26
3" Meters	\$1,262.94	\$1,351.35
4" Meters	\$2,163.32	\$2,314.75
6" Meters	\$4,592.92	\$4,914.42
8" Meters	\$8,022.96	\$8,584.57
10" Meters	\$12,024.68	\$12,866.41
<b>Commercial (including Commercial Irrigation)</b>	<i>Monthly per Meter</i>	
5/8" Meters	\$38.36	\$41.05
3/4" Meters	\$52.65	\$56.34
1" Meters	\$81.23	\$86.92
1.5" Meters	\$152.69	\$163.38
2" Meters	\$238.44	\$255.13
3" Meters	\$631.47	\$675.67
4" Meters	\$1,081.66	\$1,157.38
6" Meters	\$2,296.46	\$2,457.21
8" Meters	\$4,011.48	\$4,292.28
10" Meters	\$6,012.34	\$6,433.20

<b>Water Use Charges</b>	<b>Effective 2/1/2024</b>	<b>Effective 1/1/2025</b>
<b>Single Family Residential</b>		
	<i>Per HCF</i>	<i>Per HCF</i>
Tier 1 (0-10 HCF)	\$6.45	\$6.90
Tier 2 (11-14 HCF)	\$7.37	\$7.89
Tier 3 (15-20 HCF)	\$9.63	\$10.30
Tier 4 (21+ HCF)	\$14.57	\$15.59
<b>Multi Family Residential (including Residential Fire)</b>		
	<i>Per HCF</i>	<i>Per HCF</i>
All Water Use	\$7.92	\$8.47
<b>Commercial (Includes Commercial, Industrial, Other, Municipal, Commercial Fire)</b>		
	<i>Per HCF</i>	<i>Per HCF</i>
All Water Use	\$7.92	\$8.47
<b>Landscape Irrigation</b>		
	<i>Per HCF</i>	<i>Per HCF</i>
All Water Use	\$7.92	\$8.47

HCF= Hundred Cubic Feet, 748 gallons, or 1 unit

<b>Fire Service Connections Size</b>	<b>Effective 2/1/2024</b>	<b>Effective 1/1/2025</b>
1"	\$17.28	\$18.49
2"	\$34.56	\$36.98
3"	\$51.84	\$55.47
4"	\$69.12	\$73.96
6"	\$103.68	\$110.94
8"	\$138.24	\$147.92
10"	\$172.80	\$184.90
12"	\$207.36	\$221.88

Note: monthly rates are billed based on the size of the connection serving the property.

<b>Maximum Drought Rate Factors by Water Conservation Stage</b>						
<b>Customer Class</b>	<b>Stage 1</b>	<b>Stage 2</b>	<b>Stage 3</b>	<b>Stage 4</b>	<b>Stage 5</b>	<b>Stage 6</b>
	<b>Shortage Up to 10% Reduction</b>	<b>Shortage Up to 20% Reduction</b>	<b>Shortage Up to 30% Reduction</b>	<b>Shortage Up to 40% Reduction</b>	<b>Shortage Up to 50% Reduction</b>	<b>Shortage Up to &gt;50% Reduction</b>
<b>Single Family</b>	1.021	1.047	1.080	1.124	1.182	1.222
<b>Multi-Family</b>	1.014	1.031	1.051	1.074	1.101	1.121
<b>Commercial</b>	1.018	1.039	1.064	1.096	1.135	1.162
<b>Irrigation</b>	1.046	1.118	1.250	1.571	3.420	n/a

ORDINANCE NO. 2531

At a Joint City Council/Successor Agency Board/Public Financing  
Authority Meeting thereof held on the 18<sup>th</sup> day of December 2023 by the following  
votes:

AYES, and in favor of the passage and adoption of the foregoing ordinance:

AYES: Aguirre, Eakin, Howard, Martinez Saballos, Sturken, Vice Mayor  
Espinoza-Garnica, and Mayor Gee  
NOES: None  
ABSENT: None  
ABSTAINED: None  
RECUSED: None



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Jeff Gee  
Mayor of the City of Redwood City

Attest:



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Yessika Castro, CMC, CPMC  
Interim City Clerk of Redwood City

I hereby approve the foregoing Ordinance  
this 19<sup>th</sup> day of December 2023.



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Jeff Gee  
Mayor of the City of Redwood City