

CITY OF **WATSONVILLE**

Water, Wastewater, and Solid Waste Rate Study
Final Report / April 13, 2021

April 13, 2021

Mr. Steve Palmisano
Director of Public Works and Utilities
City of Watsonville Department of Public Works and Utilities
250 Main Street
Watsonville, CA 95076

Subject: Water, Wastewater, and Solid Waste Rate Study

Dear Mr. Palmisano,

Raftelis is pleased to provide this Water, Wastewater, and Solid Waste Rate Study Report to the City of Watsonville. The overall purpose of the study was to develop a proposed five-year schedule of water, wastewater, and solid waste rates for Fiscal Year (FY) 2022 through FY 2026 that is fair, equitable, and in compliance with Proposition 218 requirements.

The major goals of the study are to:

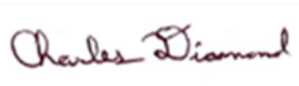
- » Develop a five-year financial plan for the City's Water, Wastewater, and Solid Waste Enterprises to ensure financial sufficiency, meet operating costs, fund long-term capital needs, and maintain prudent reserves.
- » Update the prior water and solid waste cost of service analyses to ensure a strong nexus between proposed rates and the cost to provide service to customers.
- » Develop water, wastewater, and solid waste rates in compliance with Proposition 218 requirements.

This report summarizes key results and recommendations related to the development of the proposed financial plans, cost of service analyses, and rates. It has been a pleasure working with you, and we thank you and other City staff for the support provided to Raftelis during this study.

Sincerely,



Sanjay Gaur
Project Director



Charles Diamond
Lead Analyst

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List of Abbreviations

AF: Acre-feet
AFY: Acre-feet per year
AWWA: American Water Works Association
BOD: Biological oxygen demand
CCF: One hundred cubic feet
CIP: Capital Improvement Plan
City: City of Watsonville
COS: Cost of Service
Cu yd: Cubic yard
CWSRF Loan: Clean Water State Revolving Fund Loan
EMU: Equivalent Meter Unit
FY: Fiscal year
Gal: Gallon
GPCD: Gallons per capita per day
GPM: Gallons per minute
IBank Loan: California Infrastructure and Economic Development Bank Loan
Manual M1: American Water Works Association's *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices - M1 Seventh Edition*
Max Day: Maximum day water demand
Max Hour: Maximum hour water demand
MG: One million gallons
MFR: Multi-Family Residential
O&M: Operations and Maintenance
OCLD: Original Cost Less Depreciation
PVWMA: Pajaro Valley Water Management Agency
R&R: Repair and replacement
SFR: Single Family Residential
SS: Suspended solids
Study Period: the rate-setting period for this study which extends through fiscal year 2026
WEF: Water Environment Federation

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1. Executive Summary

1.1. Study Overview

Public water, wastewater, and solid waste utilities in California typically perform a cost of service analysis every five to ten years to ensure that customers are appropriately charged commensurate with the cost to provide service. The City last conducted a water, wastewater, and solid waste cost of service and rate design study in 2015, which established proposed rates over a five-year period through Fiscal Year (FY) 2020. Adopted FY 2020 rates remain in effect as of FY 2021.

The City engaged Raftelis to conduct a water, wastewater, and solid waste rate study to establish a proposed five-year schedule of rates for FY 2021 to FY 2025. Due to the impacts of the COVID-19 pandemic, the City decided to postpone any proposed rate changes until FY 2022. Therefore, the proposed rate schedule shown in this report is for a five-year period from FY 2022 to FY 2026. Note that proposed rates cannot be implemented until formally adopted by City Council after a public hearing in accordance with Proposition 218 requirements.

This study was conducted using industry-standard principles outlined by the American Water Works Association's *Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices - M1 Seventh Edition* and the Water Environment Federation's *Financing and Charges for Wastewater Systems*. The major objectives of this study are to:

- » Develop a five-year financial plan that sufficiently funds the City's water, wastewater, and solid waste operations and maintenance expenses, debt service payments, and capital expenditures while adequately funding reserves and achieving debt coverage requirements.
- » Conduct cost of service analyses that establish a clear nexus between the cost to serve water and solid waste customers and the rates charged to customers, per Proposition 218 and industry standards. Note that no wastewater cost of service analysis was conducted as part of this study. Raftelis recommends that a wastewater cost of service analysis be conducted as part of the next rate study.
- » Review the City's existing water, wastewater, and solid waste rate structures to ensure that proposed rates achieve the financial and policy objectives of the City.
- » Develop a five-year schedule of water, wastewater, and solid waste rates that are fair, equitable, and compliant with Proposition 218 requirements.

1.2. Water Rate Study

1.2.1. WATER ENTERPRISE PROPOSED FINANCIAL PLAN

Raftelis conducted a status quo cash flow analysis to evaluate whether existing water rates adequately fund the Water Enterprise's various expenses over the five-year study period. Annual projections of revenues, O&M expenses, debt service payments, and capital expenditures through FY 2026 were developed by Raftelis with the assistance of City staff.

The Water Enterprise is projected to generate sufficient revenues from water rates over the study period to adequately fund its operating expenses, maintain healthy debt coverage, and maintain reserve funding above target levels under the status quo financial plan (i.e., no rate increases). However, reserves are projected to be drawn down significantly in the absence of any revenue increases, even though projected reserves exceed target amounts in each year.

In light of the substantial Water Enterprise CIP planned beyond FY 2026, Raftelis recommends that the Water Enterprise maintain reserve balances near current levels through FY 2026 to ensure sufficient capacity to fund planned CIP projects through FY 2030. Raftelis recommends one percent annual revenue adjustments (i.e., gross increases in water rate revenue) each year over the study period to achieve this goal (see Table 1-1).

Table 1-1: Proposed Water Enterprise Revenue Adjustments

Fiscal Year	Effective Date	Revenue Adjustment
FY 2022	July 1, 2021	1.0%
FY 2023	July 1, 2022	1.0%
FY 2024	July 1, 2023	1.0%
FY 2025	July 1, 2024	1.0%
FY 2026	July 1, 2025	1.0%

Figure 1 shows the Water Enterprise’s ten-year Capital Improvement Plan (CIP) by anticipated funding source. Although the study period only extends through FY 2026, annual capital expenditures through FY 2030 were considered in this study due to the substantial level of expenditure anticipated beyond FY 2026. The most significant CIP project costs over the next ten years are associated with constructing a new reservoir at the Airport Booster Station (\$10.4 million in FY 2023), Chromium 6 treatment plant construction (\$22.0 million in FY 2025), and Freedom Reservoir site improvements (\$48.6 million between FY 2027-FY 2029). New revenue bonds are assumed to be utilized to finance these three large CIP projects.

Figure 1: Water Enterprise CIP Summary

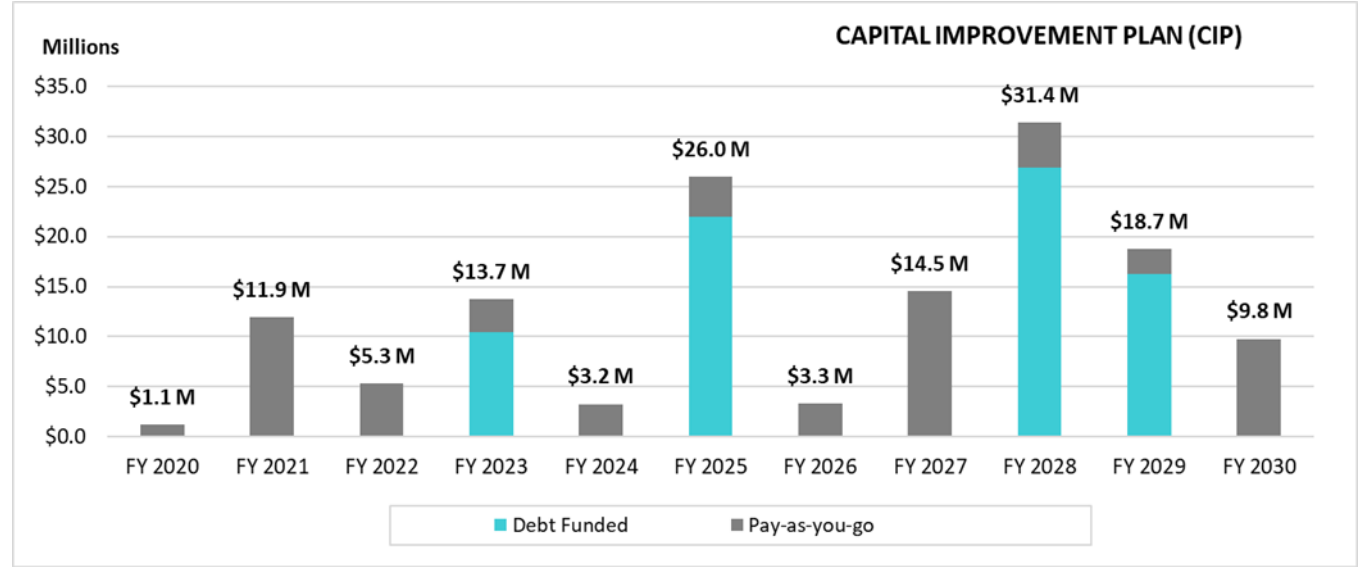


Figure 2 compares the status quo and proposed financial plans. Revenues under the proposed financial plan and status quo financial plan are represented by the blue and red dashed lines, respectively. Revenue requirements including O&M expenses, debt service, pay-as-you-go CIP, and reserve funding are represented by the various stacked bars. Green bars represent drawdown of reserves when negative and buildup of reserves when positive. Proposed revenue adjustments result in modest annual revenue increases relative to the status quo, but cumulatively have an important impact on projected debt coverage and reserve balances through FY 2026.

Figure 2: Water Enterprise Status Quo Versus Proposed Financial Plan

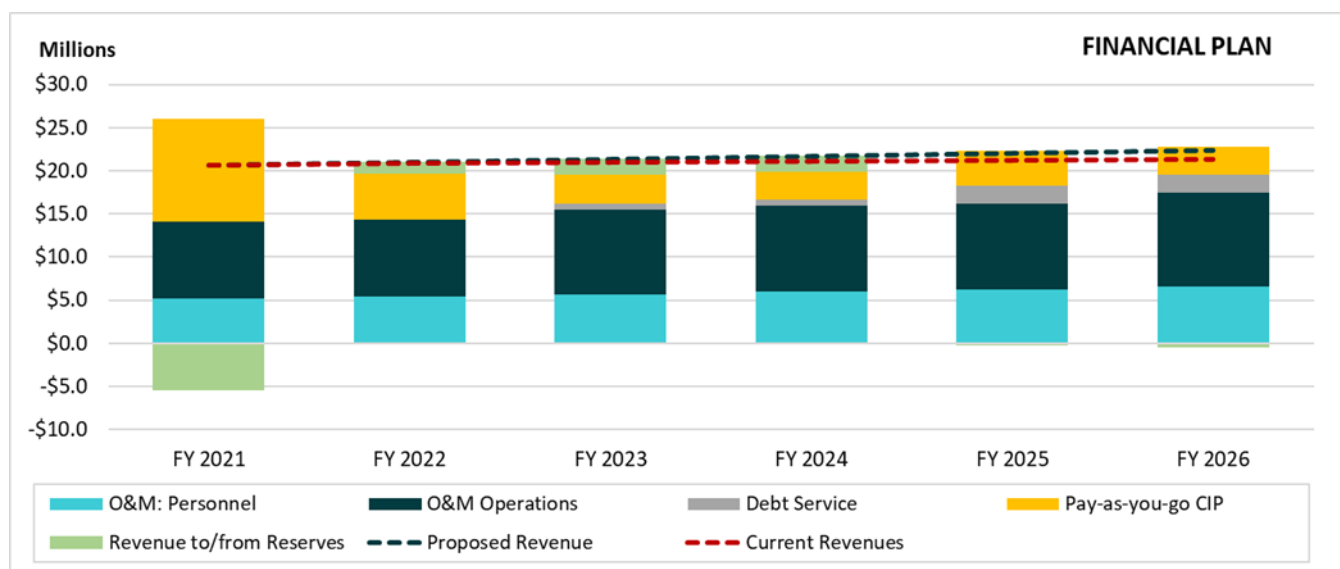
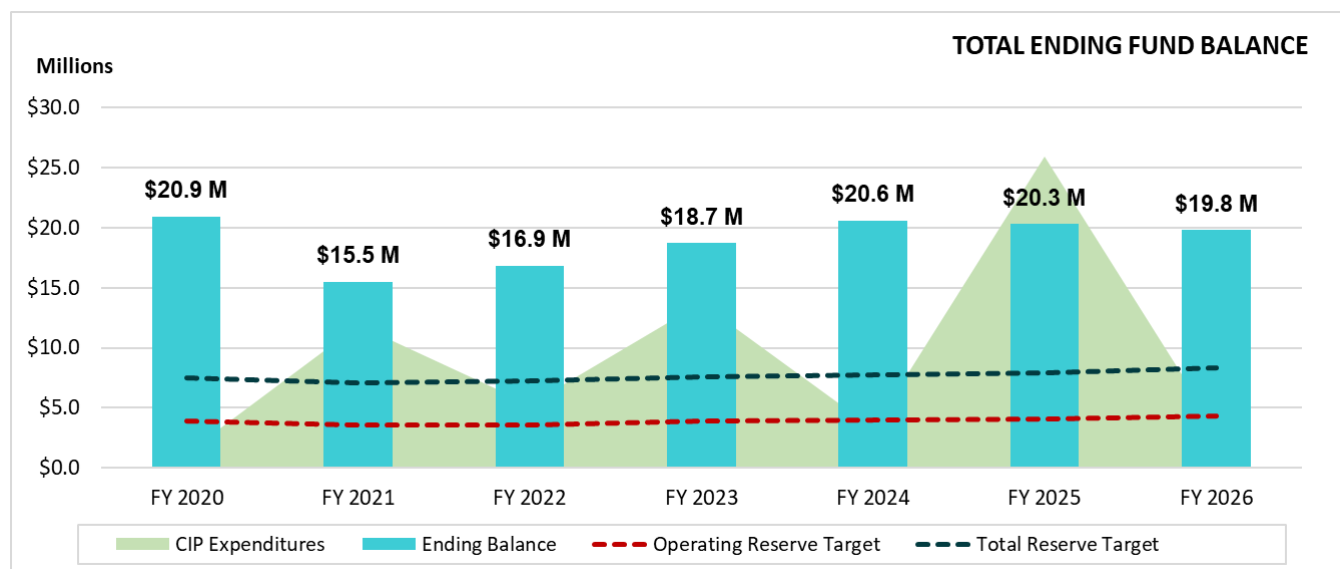


Figure 3 shows the Water Enterprise's projected ending balance under the proposed financial plan. The light blue bars indicate the ending balance. The operating reserve target and total (operating plus capital) reserve targets are represented by the red and blue dashed lines, respectively. Total annual CIP expenditures are represented by the shaded green area. Maintaining reserves near current levels through FY 2026 is necessary to ensure that the Water Enterprise will be able to adequately fund substantial CIP projects from FY 2027-FY 2030.

Figure 3: Proposed Water Enterprise Financial Plan – Projected Reserve Ending Balance



1.2.2.PROPOSED WATER RATES

Water customers are currently billed monthly for two primary charges: 1) Meter Size Availability Fees and 2) Water Consumption Charges per hundred cubic feet (CCF) of water delivered. The Meter Size Availability Fee is a fixed monthly charge that varies based on water meter size. Water Consumption Charges vary based on customer

class. Residential customers are subject to a three-tiered Water Consumption Charge rate structure. All other customer classes are subject to a uniform Water Consumption Charge rate structure. Additionally, customers with private fire lines are subject to a fixed monthly Fire Service Availability Fee based on the size of the fire line. Customers outside city limits are currently subject to higher Meter Size Availability Fees and Fire Service Availability Fees.

Raftelis conducted a water cost of service analysis to apportion costs to customers and provide a basis for proposed rates. Additionally, Raftelis worked with City staff to evaluate potential changes to the existing water rate structure. Raftelis recommends the following revisions to the existing water rate structure:

1. **Eliminate Additional Unit Charges for Meter Size Availability Fees:** The City's current schedule of Meter Size Availability Fees includes an Additional Unit Charge per additional dwelling unit for multi-family residential customers. Raftelis recommends that the City eliminate the Additional Unit Charge to simplify its water rate structure and improve customer equity.
2. **Differentiate Meter Size Availability Fees based on AWWA meter capacity:** The current schedule of Meter Size Availability Fees is differentiated by meter size based on meter capacity ratios provided by City staff during the previous water rate study in 2015. Raftelis recommends that proposed Meter Size Availability Fees be differentiated based on meter capacity values from AWWA's *Manual M1*. This proposed change will better align the City's rate structure with current rate-setting norms in California.
3. **Implement a single schedule of Fire Service Availability Fees for Inside City and Outside City Customers:** The City's current schedule of Fire Service Availability Fees includes separate charges for Inside City and Outside City customers. Raftelis recommends consolidation of the Fire Service Availability Fee rate structure so that Inside City and Outside City customers are subject to the same schedule of charges in order to simplify the rate structure.
4. **Update Residential Tier Allotments:** Raftelis recommends that the City update its current residential monthly tier allotments to account for changes in the City's water supply conditions and customer water use patterns since the last water rate study was conducted in 2015. Raftelis recommends modifying the existing tier allotments so that Tier 1 provides for average indoor water use, Tier 2 provides for average outdoor water use, and Tier 3 includes all additional water use. The current and proposed residential monthly tier allotments are shown in Table 1-2.

Table 1-2: Proposed Changes to Residential Tier Allotments

Residential Tier	Current Monthly Allotment (per Dwelling Unit)	Proposed Monthly Allotment (per Dwelling Unit)
Tier 1	0-5 CCF	0-6 CCF
Tier 2	6-10 CCF	7-12 CCF
Tier 3	>10 CCF	>12 CCF

Table 1-3 through Table 1-5 show proposed Meter Size Availability Fees, Fire Service Availability Fees, and Water Consumption Charge rates through FY 2026. Proposed FY 2022 rates (effective July 1, 2021) directly incorporate the results of the water cost of service analysis plus the proposed one percent revenue adjustment in FY = 2022. All rates are then uniformly increased by one percent each subsequent year through FY 2026 in accordance with the proposed water revenue adjustment schedule.

Table 1-3: Proposed Schedule of Meter Size Availability Fees

Monthly Meter Size Availability Fee	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Inside City Limits						
5/8"	\$33.54	\$28.76	\$29.05	\$29.34	\$29.63	\$29.93
3/4"	\$33.54	\$28.76	\$29.05	\$29.34	\$29.63	\$29.93
1"	\$47.12	\$57.11	\$57.68	\$58.26	\$58.84	\$59.43
1.5"	\$81.00	\$104.37	\$105.41	\$106.47	\$107.53	\$108.61
2"	\$121.64	\$161.07	\$162.68	\$164.31	\$165.95	\$167.61
3"	\$230.00	\$312.28	\$315.40	\$318.55	\$321.74	\$324.96
4"	\$351.96	\$482.39	\$487.21	\$492.09	\$497.01	\$501.98
6"	\$567.20	\$954.93	\$964.48	\$974.12	\$983.86	\$993.70
8"	\$1,275.07	\$1,521.98	\$1,537.20	\$1,552.58	\$1,568.10	\$1,583.78
Additional Unit Charge	\$5.43	N/A	N/A	N/A	N/A	N/A
Outside City Limits						
5/8"	\$37.77	\$33.78	\$34.12	\$34.46	\$34.80	\$35.15
3/4"	\$37.77	\$33.78	\$34.12	\$34.46	\$34.80	\$35.15
1"	\$53.38	\$69.65	\$70.35	\$71.05	\$71.77	\$72.48
1.5"	\$92.37	\$129.46	\$130.75	\$132.06	\$133.38	\$134.71
2"	\$139.13	\$201.22	\$203.23	\$205.26	\$207.31	\$209.39
3"	\$263.80	\$392.57	\$396.50	\$400.46	\$404.47	\$408.51
4"	\$404.12	\$607.84	\$613.92	\$620.06	\$626.26	\$632.52
6"	\$651.75	\$1,205.83	\$1,217.89	\$1,230.07	\$1,242.37	\$1,254.80
8"	\$1,466.18	\$1,923.42	\$1,942.65	\$1,962.08	\$1,981.70	\$2,001.52
Additional Unit Charge	\$5.43	N/A	N/A	N/A	N/A	N/A

Table 1-4: Proposed Schedule of Fire Service Availability Fees

Monthly Fire Service Availability Fee	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Inside City Limits						
2" and smaller	\$19.25	\$17.52	\$17.69	\$17.87	\$18.05	\$18.23
4"	\$53.33	\$37.54	\$37.91	\$38.29	\$38.67	\$39.06
6"	\$59.26	\$83.01	\$83.84	\$84.68	\$85.52	\$86.38
8"	\$65.84	\$161.44	\$163.06	\$164.69	\$166.34	\$168.00
10"	\$72.45	\$279.42	\$282.22	\$285.04	\$287.89	\$290.77
Outside City Limits						
2" and smaller	\$23.29	\$17.52	\$17.69	\$17.87	\$18.05	\$18.23
4"	\$62.38	\$37.54	\$37.91	\$38.29	\$38.67	\$39.06
6"	\$68.46	\$83.01	\$83.84	\$84.68	\$85.52	\$86.38
8"	\$75.08	\$161.44	\$163.06	\$164.69	\$166.34	\$168.00
10"	\$81.66	\$279.42	\$282.22	\$285.04	\$287.89	\$290.77

Table 1-5: Proposed Schedule of Water Consumption Charge Rates

Water Consumption Charge Rates (per CCF)	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Residential Tiered Rates						
Tier 1 (Current: 1-5 CCF / Proposed 1-6 CCF)	\$3.84	\$3.95	\$3.99	\$4.03	\$4.07	\$4.11
Tier 2 (Current: 6-10 CCF / Proposed 7-12 CCF)	\$4.53	\$5.17	\$5.22	\$5.27	\$5.32	\$5.38
Tier 3 (Current: >10 CCF / Proposed: >12 CCF)	\$6.14	\$8.00	\$8.08	\$8.16	\$8.25	\$8.33
Non-Residential Uniform Rates						
Non-Residential	\$4.83	\$4.72	\$4.77	\$4.82	\$4.86	\$4.91
Industrial	\$3.79	\$3.76	\$3.80	\$3.84	\$3.88	\$3.91
Irrigation	\$6.73	\$6.74	\$6.81	\$6.88	\$6.95	\$7.02

1.3. Wastewater Rate Study

1.3.1. WASTEWATER ENTERPRISE PROPOSED FINANCIAL PLAN

Raftelis conducted a status quo cash flow analysis to evaluate whether existing wastewater rates adequately fund the Wastewater Enterprise's various expenses over the five-year study period. Annual projections of revenues, O&M expenses, debt service payments, and capital expenditures through FY 2026 were developed by Raftelis with the assistance of City staff.

In the absence of any revenue adjustments (i.e., rate increases), Wastewater Enterprise reserves are projected to be fully depleted in FY 2024. Additionally, projected debt coverage is projected to fall below the requirement beginning in FY 2024. The status quo financial plan is clearly insufficient to meet the Wastewater Enterprise's financial needs over the study period. This demonstrates a clear need for revenue adjustments over the study period to increase rate revenues and ensure the financial viability of the Wastewater Enterprise.

The Wastewater Enterprise must increase its revenues from wastewater rates over the study period to adequately fund its operating and capital expenditures, meet required debt coverage, and maintain sufficient reserve funding. Raftelis worked closely with City staff to determine appropriate wastewater revenue adjustments. Substantial capital needs over the next ten years will clearly require increased rate revenues to ensure sufficient debt capacity and reserves to fund planned CIP projects. Raftelis and City staff recommend that 7.5 percent revenue adjustments be implemented annually over the next five fiscal years (see Table 1-6).

Table 1-6: Proposed Wastewater Enterprise Revenue Adjustments

Fiscal Year	Effective Date	Revenue Adjustment
FY 2022	July 1, 2021	7.5%
FY 2023	July 1, 2022	7.5%
FY 2024	July 1, 2023	7.5%
FY 2025	July 1, 2024	7.5%
FY 2026	July 1, 2025	7.5%

Figure 4 shows the Wastewater Enterprise's ten-year Capital Improvement Plan (CIP) by anticipated funding source. Although the study period only extends through FY 2026, annual capital expenditures through FY 2030 were considered in this study due to the substantial level of expenditure anticipated beyond FY 2026. The most significant CIP project costs over the next ten years are associated with main switchgear and energy recovery

electrical system improvements (\$15.0 million in FY 2024) and headworks diversion structure replacement (\$15.0 million in FY 2028). New revenue bonds are assumed to be utilized to finance these two large CIP projects. Additionally, a commercial loan is anticipated to finance a sewer cleaning truck replacement (\$500,000 in FY 2021). Note that a portion of treatment-related CIP costs are shared with three outside sanitary districts based on the allocation of capacity at the City’s wastewater treatment plant.

Figure 4: Wastewater Enterprise Capital Improvement Plan

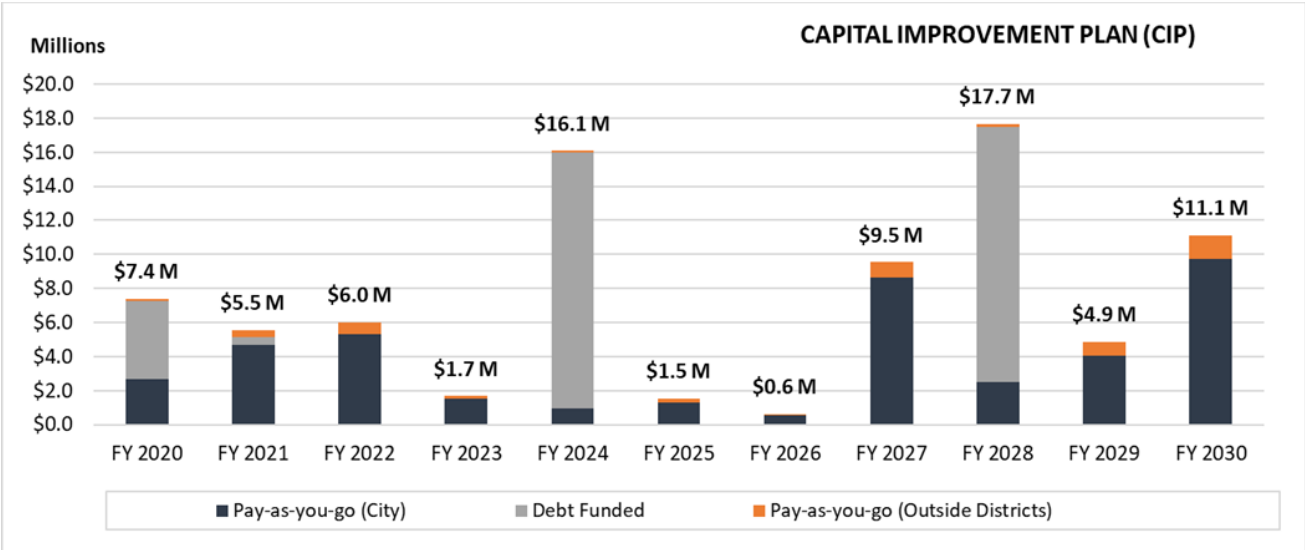


Figure 5 compares the status quo and proposed financial plans. Revenues under the proposed financial plan and status quo financial plan are represented by the blue and red dashed lines, respectively. Revenue requirements including O&M expenses, debt service, pay-as-you-go CIP, and reserve funding are represented by the various stacked bars. Green bars represent drawdown of reserves when negative and buildup of reserves when positive. Current wastewater revenues under the status quo fail to sufficiently recover O&M expenses by the end of the study period. Proposed revenue adjustments are projected to generate \$13.5 million in additional rate revenue over the study period relative to the status quo.

Figure 5: Wastewater Enterprise Status Quo Versus Proposed Financial Plan

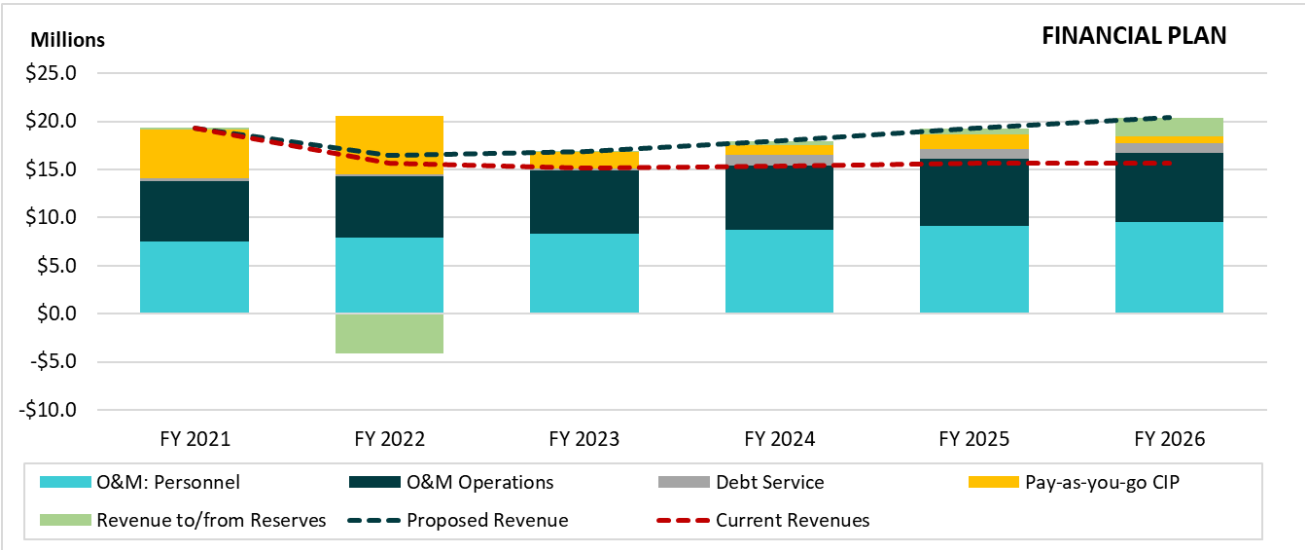
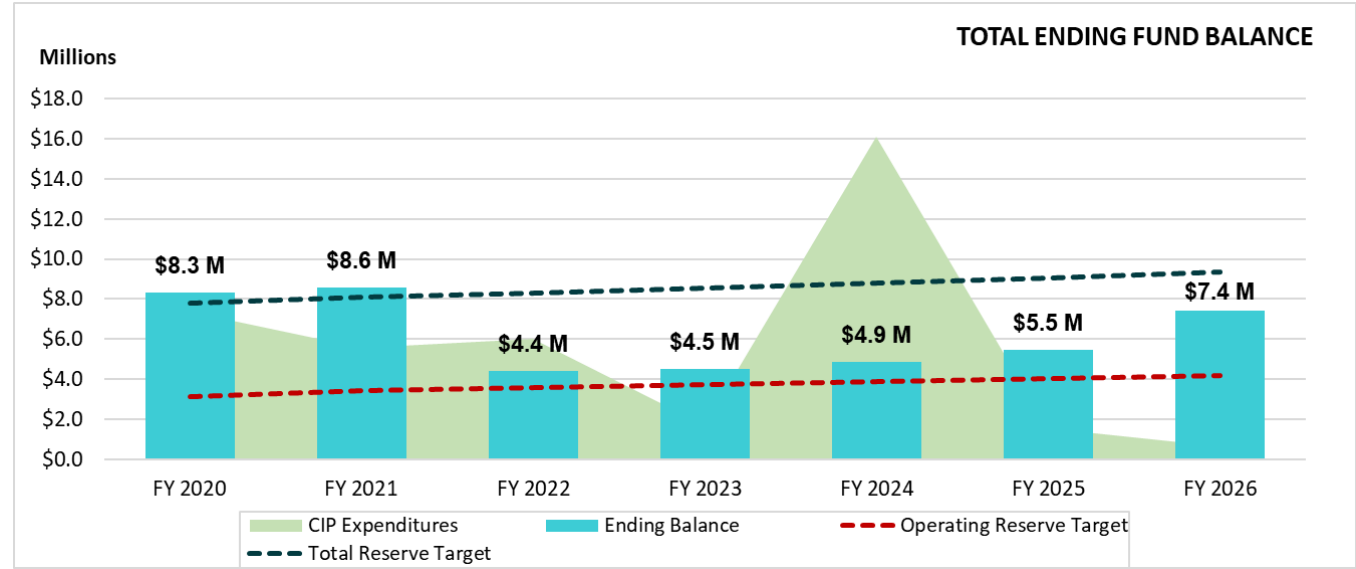


Figure 6 shows the Wastewater Enterprise’s projected ending reserve balance under the proposed financial plan. The light blue bars indicate the ending balance. The operating reserve target and total (operating plus capital) reserve targets are represented by the red and blue dashed lines, respectively. Total annual CIP expenditures are represented by the shaded green area. Under the proposed financial plan, reserves are drawn down to cover a portion of pay-as-you-go CIP in FY 2022, before slowly building back up through the end of the study period. City staff determined that the magnitude of revenue adjustments necessary to achieve the total reserve target by the end of the study period was not feasible due to the unacceptably high impact on customer affordability.

Figure 6: Proposed Wastewater Enterprise Financial Plan – Projected Reserve Ending Balance



1.3.2. PROPOSED WASTEWATER RATES

Wastewater customers are currently billed monthly based on a rate structure that varies by customer class. Residential customers are subject to a fixed charge per dwelling unit. Commercial customers are subject to a fixed charge plus a variable charge per CCF of water use. Commercial customers classified as eating/ food preparation establishments and bakeries are subject to a higher variable charge rate due to the relatively higher wastewater strength¹ of these establishments. Industrial customers pay three different charges: per million gallons of wastewater flows, per 1,000 pounds of biological oxygen demand (BOD), and per 1,000 pounds of suspended solids (SS) based on actual measurement of each industrial customer’s wastewater discharge.

Raftelis did not conduct a wastewater cost of service analysis as part of this study. It is recommended that the City conduct a wastewater cost of service analysis during the next wastewater rate study (which will be necessary to establish wastewater rates beyond FY 2026). In this study, proposed wastewater rates are determined by increasing current rates each year by the proposed wastewater revenue adjustments. The proposed five-year schedule of wastewater rates for FY 2022 to FY 2026 is shown in Table 1-7.

¹ Wastewater strength refers to the concentration of organic and particulate matter in wastewater.

Table 1-7: Proposed Schedule of Wastewater Rates

Wastewater Rates	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Residential Fixed Charge						
Single & Multiple Family Residential Monthly Charge (per dwelling unit)	\$42.84	\$46.06	\$49.51	\$53.22	\$57.22	\$61.51
Commercial Fixed Charge						
Minimum Monthly Fee	\$23.63	\$25.41	\$27.31	\$29.36	\$31.56	\$33.93
Commercial Charges per Unit of Water Consumed (CCF)						
High-Strength: Eating and food preparation establishments; bakeries	\$5.50	\$5.92	\$6.36	\$6.84	\$7.35	\$7.90
Low-Strength: Laundries; other commercial	\$3.17	\$3.41	\$3.67	\$3.94	\$4.24	\$4.56
Industrial Charges						
Flow (per million gallons)	\$2,225.48	\$2,392.40	\$2,571.83	\$2,764.71	\$2,972.06	\$3,194.97
Biological Oxygen Demand (per 1,000 pounds)	\$221.70	\$238.33	\$256.21	\$275.42	\$296.08	\$318.28
Suspended Solids (per 1,000 pounds)	\$533.50	\$573.52	\$616.53	\$662.77	\$712.48	\$765.91

1.4.Solid Waste Rate Study

1.4.1.PROPOSED SOLID WASTE ENTERPRISE FINANCIAL PLAN

Raftelis conducted a status quo cash flow analysis to evaluate whether existing solid waste rates adequately fund the Solid Waste Enterprise's various expenses over the five-year study period. Annual projections of revenues, O&M expenses, debt service payments, and capital expenditures through FY 2026 were developed by Raftelis with the assistance of City staff.

In the absence of any revenue adjustments (i.e., rate increases), Solid Waste Enterprise reserves are projected to be fully depleted in FY 2024. More critically, net revenues are projected to be negative in all years throughout the study period. This means that Solid Waste Enterprise O&M expenses would exceed revenues in all years, indicating a serious operating deficit. The status quo financial plan is insufficient to meet the Solid Waste Enterprise's financial needs over the study period. This demonstrates a need for revenue adjustments over the study period to increase rate revenues and ensure the financial viability of the Solid Waste Enterprise.

The Solid Waste Enterprise must increase its revenues from rates over the study period to adequately fund its operating and capital expenditures, maintain sufficient reserve funding, and provide debt capacity to fund long-term CIP. Raftelis worked closely with City staff to determine appropriate solid waste revenue adjustments. Operating and capital funding needs over the next five years will necessitate significant increases in rate revenues to ensure the financial viability of the Solid Waste Enterprise. Raftelis and City staff recommend that 7.5 percent revenue adjustments be implemented annually over the next three fiscal years, followed by 5 percent annual revenue adjustments in the final two fiscal years of the study period (see Table 1-8).

Table 1-8: Proposed Solid Waste Enterprise Revenue Adjustments

Fiscal Year	Effective Date	Revenue Adjustment
FY 2022	July 1, 2021	7.5%
FY 2023	July 1, 2022	7.5%
FY 2024	July 1, 2023	7.5%
FY 2025	July 1, 2024	5.0%
FY 2026	July 1, 2025	5.0%

Figure 7 shows the Solid Waste Enterprise’s ten-year Capital Improvement Plan (CIP) by anticipated funding source. Although the study period only extends through FY 2026, annual capital expenditures through FY 2030 were considered in this study to account for long-term capital needs. The most significant CIP project costs over the next ten years are associated with replacing collection vehicles (\$7.5 million through FY 2030), closure of the City’s Cell III of the landfill (\$2.6 million in FY 2023), and Cell IV opening costs (\$4.1 million in FY 2024). Commercial loans are assumed to be utilized to finance collection vehicle replacement over the study period (\$2.0 million in FY 2021 and \$0.8 million in FY 2023). Additionally, a California Infrastructure and Economic Development Bank (IBank) loan is assumed to be utilized to finance landfill Cell IV opening (\$4.1 million in FY 2024).

Figure 7: Solid Waste Enterprise CIP Summary

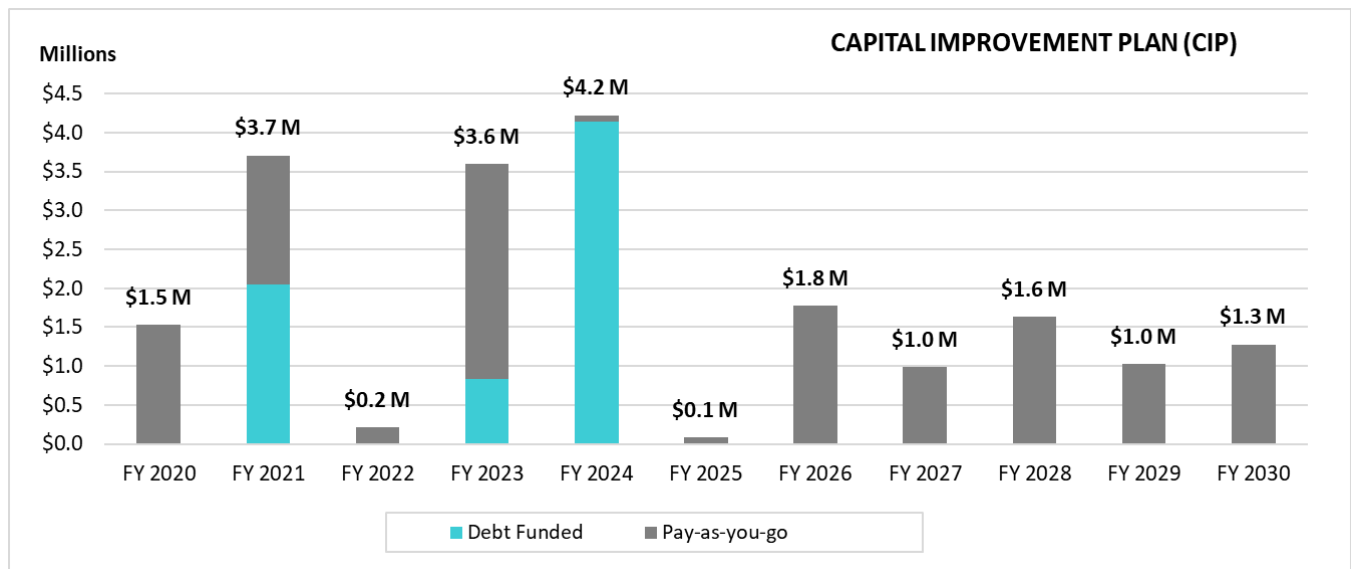


Figure 8 compares the status quo and proposed financial plans for the Solid Waste Enterprise. Revenues under the proposed financial plan and status quo financial plan are represented by the blue and red dashed lines, respectively. Revenue requirements including O&M expenses, debt service, pay-as-you-go CIP, and reserve funding are represented by the various stacked bars. Green bars represent drawdown of reserves when negative and buildup of reserves when positive. Current revenues under the status quo fail to sufficiently recover O&M expenses in all years. Proposed revenue adjustments are projected to generate \$16.7 million in additional rate revenue over the study period relative to the status quo.

Figure 8: Solid Waste Enterprise Status Quo Versus Proposed Financial Plan

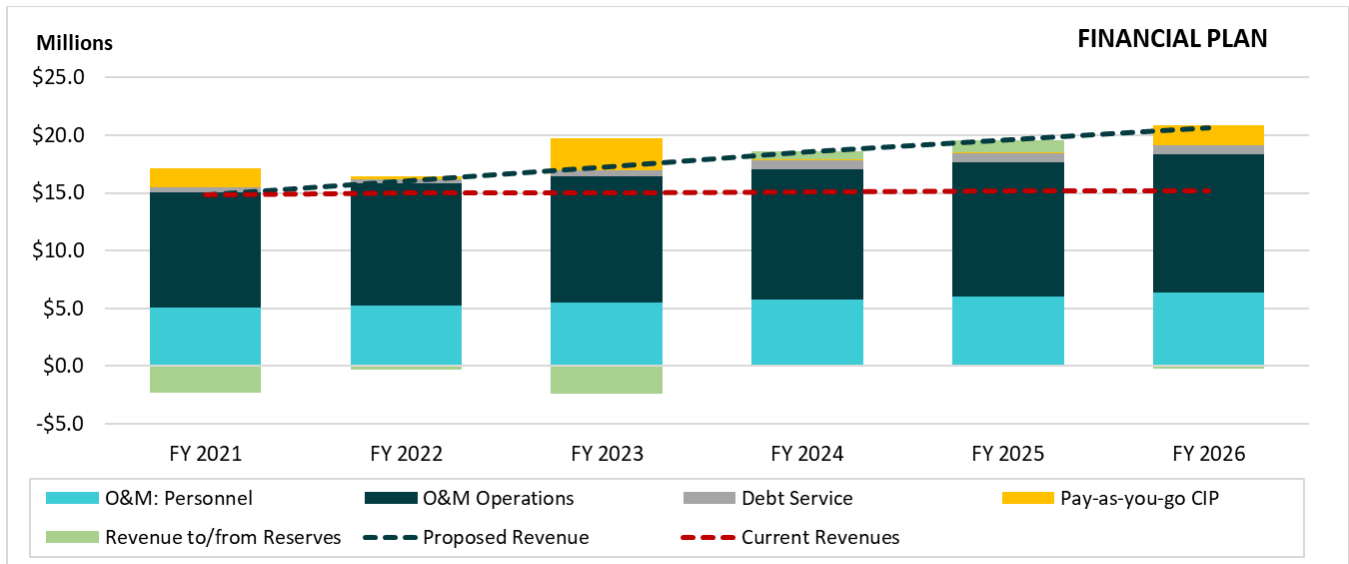
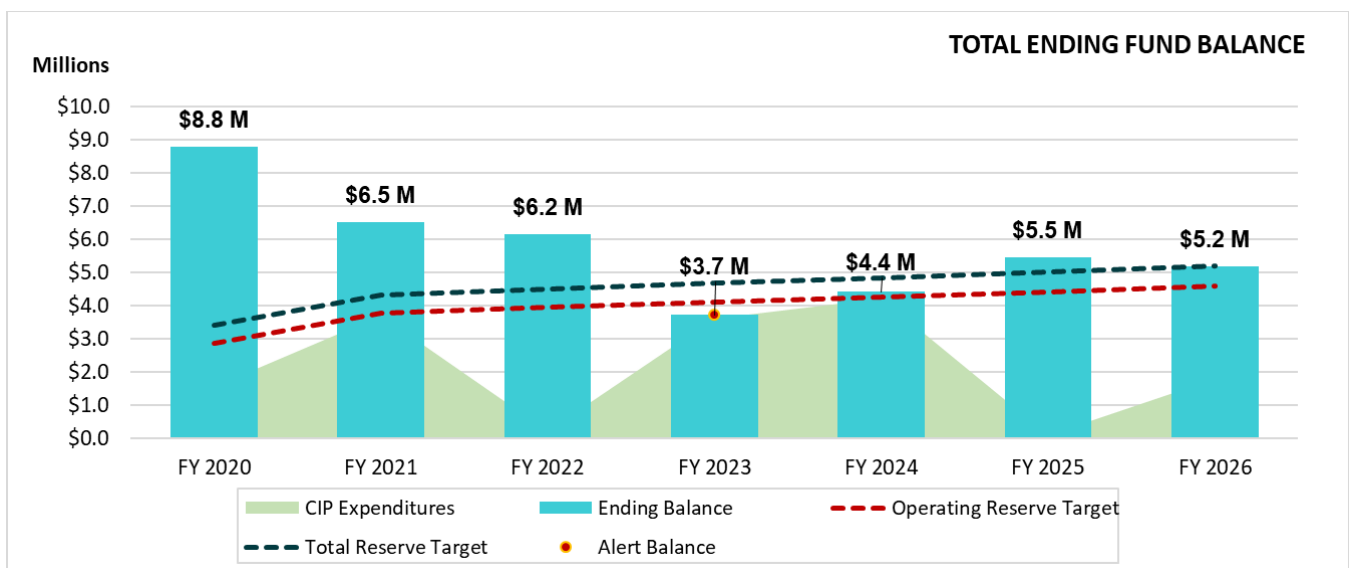


Figure 9 shows the Solid Waste Enterprise’s projected ending reserve balance under the proposed financial plan. The light blue bars indicate the ending balance. The operating reserve target and total (operating plus capital) reserve targets are represented by the red and blue dashed lines, respectively. Total annual CIP expenditures are represented by the shaded green area. Under the proposed financial plan, reserves are drawn down through FY 2023 before building back up to above the total reserve target in FY 2025 and FY 2026. Note that an “alert balance” is displayed in FY 2023 when reserve balances are projected to fall below the operating reserve target. City staff determined that the magnitude of revenue adjustments necessary to remain above the operating reserve target every year throughout the study period was not feasible due to the unacceptably high impacts on customer affordability.

Figure 9: Proposed Solid Waste Enterprise Financial Plan – Projected Reserve Ending Balance



1.4.2.PROPOSED SOLID WASTE RATES

The majority of Solid Waste Enterprise operations is associated with weekly pickup services provided to customers. However, the Solid Waste Enterprise does also provide one-time temporary services. Customers receiving weekly pickup services are billed monthly. Customers receiving temporary services are charged per service. Raftelis conducted a solid waste cost of service analysis to apportion costs to customers and provide a basis for proposed rates. Additionally, Raftelis worked with City staff to evaluate potential changes to the existing solid waste rate structure. Raftelis recommends the following revisions to the existing solid waste rate structure:

1. **Solid Waste (Organics) to be charged the same rate as other weekly pickup services:** The current solid waste rate schedule for weekly pickup services includes unique rates for Solid Waste (Organics) customers. The Solid Waste Enterprise plans to significantly expand organics recycling due to recent legislation in the state that mandates the diversion of organic wastes from landfills (namely AB 1383 and SB 1383). The anticipated changes to the Solid Waste Enterprise's cost structure over the study period make it challenging to develop unique Solid Waste (Organics) rates that are fair and equitable. Furthermore, differentiated rates for Solid Waste (Organics) may produce revenue instability as organics recycling expands. Therefore, Raftelis recommends that Solid Waste (Organics) customers be charged the same rates as other weekly pickup customers.
2. **Temporary Special Use Containers to be charged the same rate as other temporary services:** The current solid waste rate schedule for temporary services includes unique rates for Temporary Special Use Containers (Wood Waste, Yard Trimmings, & Scrap Metal). Raftelis recommends that Temporary Special Use Containers be charged the same rates as other temporary services. This proposed change will simplify the current solid waste rate structure.

Table 1-9 and Table 1-10 show proposed monthly charges through FY 2026 for weekly pickup services and one-time charges for temporary services. Proposed FY 2022 rates (effective July 1, 2021) directly incorporate the results of the solid waste cost of service analysis plus the proposed 7.5 percent revenue adjustment in FY 2022. All rates are then uniformly increased each subsequent year through FY 2026 in accordance with the proposed solid waste revenue adjustment schedule.

Table 1-9: Proposed Schedule of Solid Waste Rates for Weekly Pickup Services

Monthly Charge per Weekly Pickup	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Cart Service						
32 gal	\$35.60	\$35.64	\$38.31	\$41.19	\$43.25	\$45.41
68 gal	\$57.41	\$59.82	\$64.30	\$69.13	\$72.58	\$76.21
95 gal	\$73.76	\$77.95	\$83.80	\$90.08	\$94.59	\$99.32
Container Service						
1 cu yd	\$138.56	\$149.78	\$161.02	\$173.09	\$181.75	\$190.84
1.5 cu yd	\$199.73	\$217.60	\$233.92	\$251.46	\$264.03	\$277.23
2 cu yd	\$260.91	\$285.42	\$306.82	\$329.83	\$346.33	\$363.64
3 cu yd	\$383.25	\$421.05	\$452.63	\$486.58	\$510.90	\$536.45
4 cu yd	\$505.61	\$556.67	\$598.42	\$643.30	\$675.47	\$709.24
6 cu yd	\$750.31	\$827.94	\$890.03	\$956.78	\$1,004.62	\$1,054.85
8 cu yd	\$995.00	\$1,099.20	\$1,181.64	\$1,270.27	\$1,333.78	\$1,400.47
Drop Box Service						
20 cu yd	\$2,463.19	\$2,726.76	\$2,931.27	\$3,151.12	\$3,308.67	\$3,474.10
25 cu yd	\$3,078.99	\$3,404.92	\$3,660.29	\$3,934.81	\$4,131.55	\$4,338.12
30 cu yd	\$3,694.79	\$4,083.07	\$4,389.30	\$4,718.50	\$4,954.42	\$5,202.14
35 cu yd	\$4,310.58	\$4,761.22	\$5,118.31	\$5,502.19	\$5,777.30	\$6,066.16
40 cu yd	\$4,910.17	\$5,439.38	\$5,847.33	\$6,285.88	\$6,600.17	\$6,930.18
Compactor Drop Box Service						
3 cu yd	\$1,103.11	\$1,234.83	\$1,327.44	\$1,426.99	\$1,498.34	\$1,573.26
4 cu yd	\$1,470.80	\$1,641.72	\$1,764.85	\$1,897.22	\$1,992.08	\$2,091.68
10 cu yd	\$3,676.98	\$4,083.07	\$4,389.30	\$4,718.50	\$4,954.42	\$5,202.14
15 cu yd	\$5,515.45	\$6,117.53	\$6,576.34	\$7,069.57	\$7,423.05	\$7,794.20
20 cu yd	\$7,353.93	\$8,151.98	\$8,763.38	\$9,420.63	\$9,891.66	\$10,386.24
22 cu yd	\$8,089.32	\$8,965.76	\$9,638.19	\$10,361.06	\$10,879.11	\$11,423.07
25 cu yd	\$9,192.39	\$10,186.44	\$10,950.42	\$11,771.70	\$12,360.28	\$12,978.30
30 cu yd	\$11,030.89	\$12,220.90	\$13,137.46	\$14,122.77	\$14,828.91	\$15,570.35
35 cu yd	\$12,869.36	\$14,255.35	\$15,324.51	\$16,473.84	\$17,297.53	\$18,162.41
40 cu yd	\$14,707.83	\$16,289.80	\$17,511.54	\$18,824.90	\$19,766.15	\$20,754.45
Solid Waste (Organics) Collections						
68 gal	\$43.75	\$59.82	\$64.30	\$69.13	\$72.58	\$76.21
1 cu yd	\$94.99	\$149.78	\$161.02	\$173.09	\$181.75	\$190.84
2 cu yd	\$177.37	\$285.42	\$306.82	\$329.83	\$346.33	\$363.64
3 cu yd	\$259.75	\$421.05	\$452.63	\$486.58	\$510.90	\$536.45

Table 1-10: Proposed Schedule of Solid Waste Rates for Temporary Services

Charge per Temporary Service	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Temporary Use Containers						
1 cu yd	\$34.65	\$37.46	\$40.27	\$43.29	\$45.45	\$47.72
1.5 cu yd	\$51.97	\$54.41	\$58.49	\$62.88	\$66.02	\$69.32
2 cu yd	\$65.25	\$71.36	\$76.72	\$82.47	\$86.59	\$90.92
3 cu yd	\$95.83	\$105.27	\$113.16	\$121.65	\$127.73	\$134.12
4 cu yd	\$126.41	\$139.17	\$149.61	\$160.83	\$168.87	\$177.32
6 cu yd	\$187.60	\$207.00	\$222.52	\$239.21	\$251.17	\$263.73
8 cu yd	\$248.77	\$274.81	\$295.42	\$317.57	\$333.45	\$350.12
On-Call Drop Box Service						
20 cu yd (<1/2 full)	\$309.94	\$342.62	\$368.31	\$395.94	\$415.73	\$436.52
20 cu yd	\$615.81	\$681.69	\$732.82	\$787.78	\$827.17	\$868.53
25 cu yd	\$768.75	\$851.23	\$915.08	\$983.71	\$1,032.89	\$1,084.53
30 cu yd	\$921.69	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54
35 cu yd	\$1,074.63	\$1,190.31	\$1,279.58	\$1,375.55	\$1,444.33	\$1,516.54
40 cu yd	\$1,227.55	\$1,359.85	\$1,461.84	\$1,571.47	\$1,650.05	\$1,732.55
50 cu yd	\$1,534.45	\$1,698.92	\$1,826.34	\$1,963.32	\$2,061.48	\$2,164.56
On-call Compactor Drop Box Service						
3 yd Compactor	\$276.12	\$308.71	\$331.87	\$356.76	\$374.59	\$393.32
4 yd Compactor	\$368.14	\$410.44	\$441.22	\$474.31	\$498.03	\$522.93
10 yd Compactor	\$920.34	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54
12 yd Compactor	\$1,104.40	\$1,224.21	\$1,316.03	\$1,414.73	\$1,485.47	\$1,559.74
15 yd Compactor	\$1,380.49	\$1,529.39	\$1,644.09	\$1,767.40	\$1,855.77	\$1,948.55
20 yd Compactor	\$1,839.31	\$2,038.00	\$2,190.85	\$2,355.16	\$2,472.92	\$2,596.57
22 yd Compactor	\$2,024.72	\$2,241.44	\$2,409.55	\$2,590.27	\$2,719.78	\$2,855.77
25 yd Compactor	\$2,300.82	\$2,546.62	\$2,737.61	\$2,942.93	\$3,090.08	\$3,244.58
30 yd Compactor	\$2,756.92	\$3,055.23	\$3,284.37	\$3,530.70	\$3,707.23	\$3,892.60
40 yd Compactor	\$2,845.28	\$4,072.46	\$4,377.89	\$4,706.24	\$4,941.55	\$5,188.62
Temporary Special Use Containers* (Wood Waste, Yard Trimmings, & Scrap Metal)						
4 cu yd	\$102.77	\$139.17	\$149.61	\$160.83	\$168.87	\$177.32
6 cu yd	\$131.30	\$207.00	\$222.52	\$239.21	\$251.17	\$263.73
20 cu yd	\$363.07	\$681.69	\$732.82	\$787.78	\$827.17	\$868.53
25 cu yd	\$428.17	\$851.23	\$915.08	\$983.71	\$1,032.89	\$1,084.53
30 cu yd	\$494.36	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54
35 cu yd	\$560.58	\$1,190.31	\$1,279.58	\$1,375.55	\$1,444.33	\$1,516.54
40 cu yd	\$593.72	\$1,359.85	\$1,461.84	\$1,571.47	\$1,650.05	\$1,732.55
Temporary Recycling						
3 cu yd	\$95.83	\$105.27	\$113.16	\$121.65	\$127.73	\$134.12
6 cu yd	\$187.60	\$207.00	\$222.52	\$239.21	\$251.17	\$263.73
15 cu yd	\$462.88	\$512.16	\$550.57	\$591.86	\$621.45	\$652.53
30 cu yd	\$921.69	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54

1.5.Monthly Bill Impacts

Figure 10 includes sample monthly bill impacts for single family residential customers. All combined monthly bills shown include water, wastewater, and solid waste bills. Sample combined monthly bills are shown for two representative customers:

1) Low-Impact Single Family Residential Customer:

- » Representative of a small household with 1-2 persons
- » Water service: 5/8-inch water meter using 6 CCF per month (*median water use for residential customers*)
- » Wastewater service: fixed monthly charge for one dwelling unit
- » Solid waste service: 32-gallon weekly cart service (*smallest cart size*)

2) Typical Single Family Residential Customer:

- » Representative of an average family household with 3-4 persons
- » Water service: 5/8-inch water meter using 8 CCF per month (*average water use for residential customers*)
- » Wastewater service: fixed monthly charge for one dwelling unit
- » Solid waste service: 68-gallon weekly cart service (*medium cart size*)

Figure 10: Single Family Residential Monthly Bill Impacts

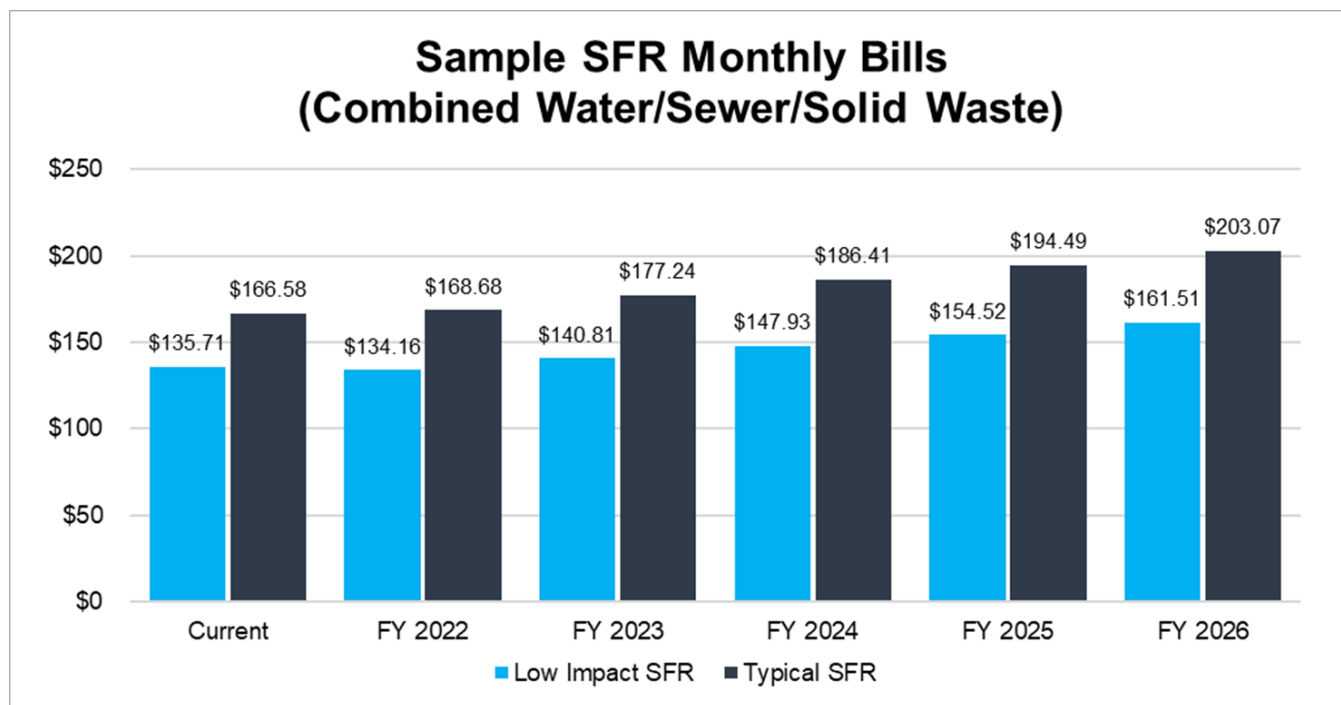
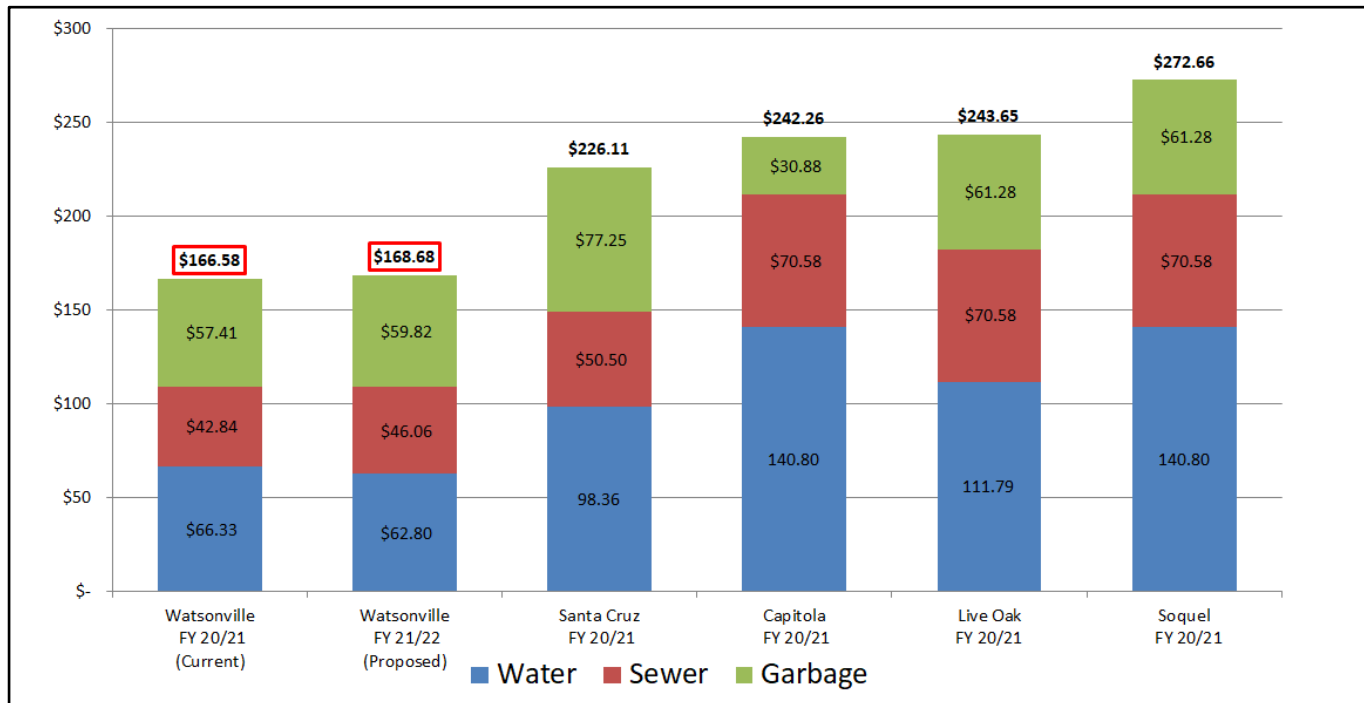


Figure 11 shows a comparison of typical single family residential combined monthly water, wastewater, and solid waste bills in the City of Watsonville with four neighboring communities. All bills are calculated based on the smallest water meter size available, monthly water use of 8 CCF, and solid waste service comparable to the City's 68-gallon weekly cart service. Estimated monthly bills based on the City's current and proposed FY 2022 rates are significantly lower than current monthly bills in all four neighboring communities. Monthly bills for other neighboring communities are based on rates currently in effect as of FY 2021. While customers in the City will experience monthly bill increases over the next five years under the proposed rate schedule, utility service will still remain affordable compared to other nearby communities.

Figure 11: Single Family Residential Monthly Bill Comparison with Neighboring Communities



Note: Figure reflects current rates for neighboring communities.

2. Introduction

2.1. Agency Overview

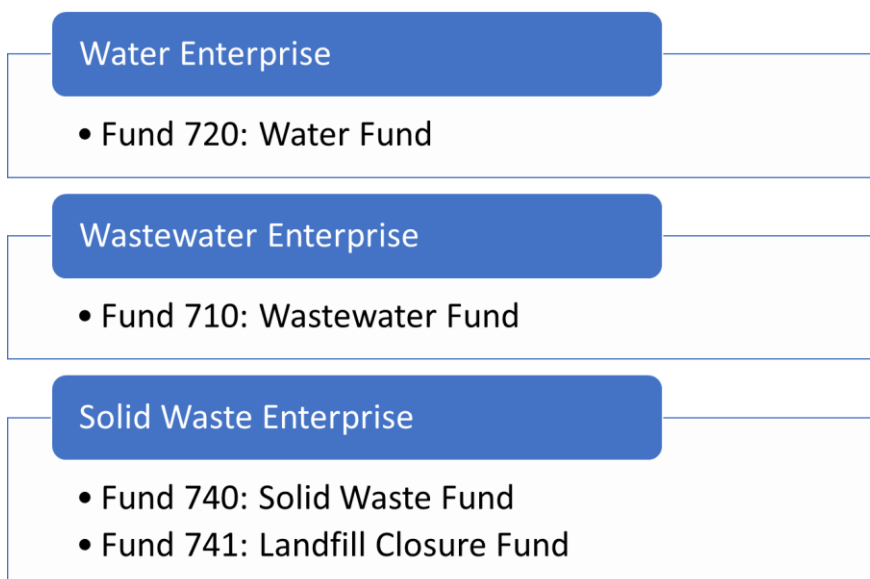
The City of Watsonville (City) operates three independent and self-supporting utility enterprises, which are run by the Water, Wastewater, and Solid Waste Divisions. Each enterprise is managed and operated by the City's Public Works & Utilities Department, and is funded primarily with rates and charges paid monthly by each customer.

The Water Division is responsible for providing safe, reliable, and affordable drinking water to 66,000 residential, commercial, industrial, and institutional customers within the City as well as to parts of unincorporated areas of Santa Cruz County. Staff operates and maintains 190 miles of pipelines, 14 wells, 8 reservoirs and the Corralitos Filtration Plant treatment plant. The City's primary water supply source is local groundwater from the Pajaro Valley Groundwater Basin produced by the City's wells. The Water Division will require substantial capital expenditures over the next decade to continue operating within the State of California's Chromium 6 treatment guidelines.

The Wastewater Division is responsible for providing wastewater treatment services to the City and three surrounding sanitary districts (Freedom County Sanitation District, Pajaro County Sanitation District, and Salsipuedes Sanitary District). Wastewater is highly treated to either the secondary level of treatment and discharged to the Monterey Bay National Marine Sanctuary or is treated to the tertiary level and is distributed for direct food crop irrigation as recycled water. In addition to the City's wastewater treatment plant, City staff also maintains over 150 miles of wastewater pipelines as well as 33 sewer and storm water pump stations.

The Solid Waste Division collects and disposes of the City's refuse, recycling, and green waste. Staff also operates the highly-used public drop-off facility at 320 Harvest Drive and completes over 10,000 miles of street sweeping per year. The Solid Waste Division recently closed the City's landfill when capacity was reached. Solid waste is now transported about 15 miles from the City and disposed of at the Monterey County Regional Waste Management District's Monterey Peninsula Landfill in the City of Marina.

Figure 12: Utility Enterprise Fund Structure



2.2. Study Overview

Public water, wastewater, and solid waste utilities in California typically perform a cost of service (COS) analysis every five to ten years to ensure that customers are appropriately charged for service commensurate with the cost to provide service. The City last conducted a water, wastewater, and solid waste cost of service and rate design study in 2015, which established proposed rates over a five-year period through Fiscal Year (FY) 2020. Adopted FY 2020 rates remain in effect as of FY 2021.

The City engaged Raftelis to conduct a water, wastewater, and solid waste rate study to establish a proposed five-year schedule of rates for FY 2021 to FY 2025. Due to the impacts of the COVID-19 pandemic, the City decided to postpone any proposed rate changes until FY 2022. Therefore, the proposed rate schedule shown in this report is for a five-year period from FY 2022 to FY 2026. The results of the study are documented in this report. Note that proposed rates cannot be implemented until formally adopted by City Council after a public hearing in accordance with Proposition 218 requirements.

Study Objectives

The major objectives of this study are to:

- » Develop a five-year financial plan that sufficiently funds the City’s water, wastewater, and solid waste operations and maintenance (O&M) expenses, debt service payments, and capital expenditures while adequately funding reserves and achieving debt coverage requirements.
- » Conduct COS analyses that establish a clear nexus between the cost to serve water and solid waste customers and the rates charged to customers, per Proposition 218 and industry standards. Note that no wastewater COS analysis was conducted as part of this study. Raftelis recommends that a wastewater COS analysis be conducted as part of the next rate study.
- » Review the City’s existing water, wastewater, and solid waste rate structures to ensure that proposed rates achieve the financial and policy objectives of the City.
- » Develop a five-year schedule of water, wastewater, and solid waste rates that are fair, equitable, and compliant with Proposition 218 requirements.

2.3. Legal Requirements

There are two provisions in the California Constitution that govern and impact rates — Article X, Section 2 (“Article X”) and Article XIII D, Section 6 (“Article XIII D”). Article X was added to the California Constitution in 1928 as former Article XIV, Section 3, and amended in 1976. Article X applies specifically to water and provides that:

“It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.”

In November 1996, California voters approved Proposition 218, which amended the California Constitution by adding Article XIII C and Article XIII D. Article XIII D placed substantive limitations on the use of the revenue collected from property-related fees and on the amount of the fee that may be imposed on each parcel.

Additionally, it established procedural requirements for imposing new, or increasing existing, property-related fees. Water and wastewater service fees are property-related fees.

In accordance with these provisions, a property-related fee must meet all of the following requirements:

3. Revenues derived from the fee must not exceed the funds required to provide the property-related service;
4. Revenues from the fee must not be used for any purpose other than that for which the fee is imposed;
5. The amount of a fee imposed upon any parcel or person as an incident of property ownership must not exceed the proportional cost of the service attributable to the parcel;
6. The fee may not be imposed for a service, unless the service is actually used by, or immediately available to, the owner of the property subject to the fee. A fee based on potential or future use of a service is not permitted, and stand-by charges must be classified as assessments subject to the ballot protest and proportionality requirements for assessments;
7. No fee may be imposed for general governmental services, such as police, fire, ambulance, or libraries, where the service is available to the public in substantially the same manner as it is to property owners.

The five substantive requirements in Article XIII D are structured to place limitations on (1) the use of the revenue collected from property-related fees and (2) the allocation of costs recovered by such fees to ensure that they are proportionate to the cost of providing the service attributable to each parcel.

2.4. Rate Setting Methodology

This study was conducted using industry-standard principles outlined by the American Water Works Association's (AWWA) *Manual M1* and the Water Environment Federation's (WEF) *Financing and Charges for Wastewater Systems*. The process and approach Raftelis utilized in the study to determine rates are informed by the City's policy objectives, the current system of rates, and the legal requirements in California (namely, Proposition 218). The resulting financial plans, cost of service analyses, and rate design process follows five key steps, outlined below, to determine proposed rates that fulfill the City's objectives, meet industry standards, and comply with relevant regulations. The overall process outlined below generally applies to each of the water, wastewater, and solid waste rate studies presented in this report. Note that no COS analysis was conducted for the Wastewater Enterprise.

1. **Financial Plan:** The first study step is to develop a multi-year financial plan that projects each enterprise's revenues, expenses, capital project financing, annual debt service, and reserve funding. The financial plan is used to determine revenue adjustments needed to recover adequate revenues to fund expenses and reserves.
2. **Revenue Requirement Determination:** After completing the financial plan, the rate-making process begins with the determination of the revenue requirement for the test year, also known as the cost-of service year. The test year for this study is FY 2020. The revenue requirement should sufficiently fund each enterprise's operating costs, annual debt service (including coverage requirements), capital expenditures, and reserve funding needs.
3. **Cost of Service (COS) Analysis:** The annual cost of providing service (i.e., the revenue requirement) is then distributed to customer classes commensurate with their use of and burden on the system. Note that no COS analysis was conducted for the Wastewater Enterprise in this study. A cost of service analysis involves the following steps:

- » Functionalize costs – The different components of the revenue requirement are categorized into functions such as supply, transmission, storage, customer service, etc. (for water).
- » Allocate to cost causation components – The functionalized costs are then allocated to cost causation components such as supply, base delivery, peaking, etc. (for water).
- » Develop unit costs – Unit costs for each cost causation component are determined using units of service.
- » Distribute cost components – The cost components are allocated to each customer class and tier using the unit costs in proportion to their demand and burden on the system.

A water cost of service analysis considers both the average water demand and peak demand. Peaking, or extra-capacity, costs are incurred during periods of peak consumption, most often coinciding with summer water use. There are additional capacity-related costs associated with designing, constructing, operating, maintaining, and replacing facilities to meet peak demand. Patterns of use impose additional costs on a water utility and are used to determine the cost burden on peaking-related facilities. Similarly, a solid waste cost of service analysis considers the volume of solid waste generated and the frequency of collection for each customer class.

4. **Rate Design:** After allocating the revenue requirement to each customer class, the rate design and calculation process can begin. Rates do more than simply recover costs; within the legal framework and industry standards, properly designed rates should support and optimize the City's policy objectives. Rates also act as a public information tool in communicating policy objectives to customers. This process also includes a bill impact analysis.
5. **Administrative Record Preparation and Rate Adoption:** The final step in a rate study is to develop the administrative record in conjunction with the rate adoption process. This report serves as the administrative record for this study. The administrative record documents the study results and presents the methodologies, rationale, justifications, and calculations used to determine the proposed rates. A thorough and methodological administrative record serves two important functions: maintaining defensibility in a stringent legal environment and communicating the rationale for revenue adjustments and proposed rates to customers and other key stakeholders.

3. Water Rate Study

Raftelis developed a water rate model in Microsoft Excel to project financial calculations over the five-year rate-setting period through FY 2026 (i.e., the “study period”). The City’s fiscal year spans from July 1 through June 30. Projections in future years were generally made based on actual or estimated data from FY 2020 and the revised budget for FY 2021 using key assumptions outlined below. Assumptions were discussed with and reviewed by City staff to ensure that the City water system’s unique characteristics are accurately addressed. Note that most table values shown throughout this report are rounded to the last digit shown; and therefore, may not sum precisely to the totals shown.

3.1. Water Enterprise Revenue Requirements

Section 3.1 includes estimates and projections of annual revenues, O&M expenses, debt service payments, capital expenditures, and reserve funding targets through FY 2026 for the Water Enterprise (Fund 720). These projections are necessary to determine annual water rate revenues required over the study period to achieve sufficient cash flow, maintain adequate reserves, and maintain adequate debt coverage.

3.1.1. REVENUE FROM CURRENT WATER RATES

Current Water Rates

The City’s current water rates have been in effect since July 2019 and are shown below in Table 3-1 to Table 3-5. Water customers are currently billed monthly for two primary charges: 1) Meter Size Availability Fees and 2) Water Consumption Charges per hundred cubic feet (CCF) of water delivered.

The Meter Size Availability Fee is a fixed monthly charge that varies based on water meter size (multi-family residential customers are also currently subject to an Additional Unit Charge for each additional dwelling unit). Additionally, customers with private fire lines are subject to a fixed monthly Fire Service Availability Fee based on the size of the fire line. Customers outside city limits are currently subject to higher Meter Size Availability Fees and Fire Service Availability Fees.

Water Consumption Charges vary based on customer class. Residential customers are subject to a three-tiered Water Consumption Charge rate structure. For residential customers: the first 5 CCF per dwelling unit used each month is charged at the lowest rate (Tier 1), the next 5 CCF at a higher rate (Tier 2), and any additional use at the highest rate (Tier 3). All other customer classes are subject to a uniform Water Consumption Charge rate structure.

Table 3-1: Current Meter Size Availability Fees (Inside City Limits)

Monthly Meter Size Availability Fee (Inside City Limits)	Effective July 2019
5/8"	\$33.54
3/4"	\$33.54
1"	\$47.12
1.5"	\$81.00
2"	\$121.64
3"	\$230.00
4"	\$351.96
6"	\$567.20
8"	\$1,275.07
10"	\$1,569.07
Additional Unit Charge	\$5.43

Table 3-2: Current Meter Size Availability Fees (Outside City Limits)

Monthly Meter Size Availability Fee (Outside City Limits)	Effective July 2019
5/8"	\$37.77
3/4"	\$37.77
1"	\$53.38
1.5"	\$92.37
2"	\$139.13
3"	\$263.80
4"	\$404.12
6"	\$651.75
8"	\$1,466.18
10"	\$1,804.77
Additional Unit Charge	\$5.43

Table 3-3: Current Fire Service Availability Fees (Inside City Limits)

Monthly Fire Service Availability Fee (Inside City Limits)	Effective July 2019
2" and smaller	\$19.25
4"	\$53.33
6"	\$59.26
8"	\$65.84
10"	\$72.45

Table 3-4: Current Fire Service Availability Fees (Outside City Limits)

Monthly Fire Service Availability Fee (Outside City Limits)	Effective July 2019
2" and smaller	\$23.29
4"	\$62.38
6"	\$68.46
8"	\$75.08
10"	\$81.66

Table 3-5: Current Water Consumption Charge Rates

Water Consumption Charge Rates (per CCF)	Effective July 2019
Residential Tiered Rates	
Tier 1 (1-5 CCF/month)	\$3.84
Tier 2 (6-10 CCF /month)	\$4.53
Tier 3 (Over 10 CCF /month)	\$6.14
Non-Residential Uniform Rates	
Non-Residential	\$4.83
Industrial	\$3.79
Irrigation	\$6.73

Projected Water Service Connections

Water connection growth projections are necessary to estimate water demand and rate revenues over the study period. City staff provided Raftelis with the number of water meters and fire lines by size for FY 2020. Raftelis then applied a 0.52 percent annual account growth rate² to all connection types to project the number of water meters and fire lines in each year over the study period (see Table 3-6 to Table 3-9).

² Estimated by Raftelis based on 15-year water service area population growth estimates through 2035 from the City's recent update to its Water Master Plan.

Table 3-6: Inside City Water Meter Counts

Inside City Water Meters	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
5/8"	8,075	8,117	8,159	8,202	8,244	8,287	8,331
3/4"	531	534	537	539	542	545	548
1"	1,689	1,698	1,707	1,716	1,724	1,733	1,742
1.5"	239	240	241	243	244	245	247
2"	254	255	257	258	259	261	262
3"	35	35	35	36	36	36	36
4"	27	27	27	27	28	28	28
6"	6	6	6	6	6	6	6
8"	1	1	1	1	1	1	1
10"	0	0	0	0	0	0	0
Total Water Meters	10,857	10,914	10,970	11,027	11,085	11,143	11,201

Additional Dwelling Units	5,211	5,238	5,265	5,293	5,320	5,348	5,376
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Table 3-7: Outside City Water Meter Counts

Outside City Water Meters	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
5/8"	2,657	2,671	2,685	2,699	2,713	2,727	2,741
3/4"	206	207	208	209	210	211	213
1"	562	565	568	571	574	577	580
1.5"	43	43	43	44	44	44	44
2"	51	51	52	52	52	52	53
3"	11	11	11	11	11	11	11
4"	7	7	7	7	7	7	7
6"	1	1	1	1	1	1	1
8"	0	0	0	0	0	0	0
10"	0	0	0	0	0	0	0
Total Water Meters	3,538	3,556	3,575	3,594	3,612	3,631	3,650

Additional Dwelling Units	1,240	1,246	1,253	1,259	1,266	1,273	1,279
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Table 3-8: Inside City Private Fire Line Counts

Inside City Private Fire Lines	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
2" and smaller	25	25	25	25	26	26	26
4"	111	112	112	113	113	114	115
6"	130	131	131	132	133	133	134
8"	70	70	71	71	71	72	72
10"	5	5	5	5	5	5	5
Total	341	343	345	346	348	350	352

Table 3-9: Outside City Private Fire Line Counts

Outside City Private Fire Lines	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
2" and smaller	16	16	16	16	16	16	17
4"	11	11	11	11	11	11	11
6"	7	7	7	7	7	7	7
8"	6	6	6	6	6	6	6
10"	1	1	1	1	1	1	1
Total	41	41	41	42	42	42	42

Projected Water Demand

City staff provided Raftelis with actual annual water use by customer class and tier for FY 2020. Beginning in FY 2021, annual water use for each customer class and tier was projected. No change in demand per account is assumed over the study period as no substantial changes in customer water use patterns over the study period can be anticipated at present. Therefore, annual usage increases are due solely to the projected 0.52 percent increase in customer accounts. Projected annual water use by customer class and tier over the study period is shown in Table 3-10. Total water use is shown in both hundred cubic feet (CCF) and acre-feet (AF). Residential water use by tier is based on the current tier allotments per dwelling unit (which are subject to proposed changes in subsequent report sections).

Table 3-10: Annual Water Use under Current Rate Structure

Water Use (CCF)	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Residential							
Tier 1	955,478	960,452	965,452	970,478	975,531	980,609	985,714
Tier 2	446,393	448,717	451,053	453,401	455,761	458,134	460,519
Tier 3	377,705	379,671	381,647	383,634	385,631	387,639	389,657
Subtotal	1,779,576	1,788,840	1,798,153	1,807,514	1,816,923	1,826,382	1,835,890
Non-Residential							
Non-Residential	399,240	401,318	403,407	405,507	407,618	409,740	411,873
Industrial	221,317	222,470	223,628	224,792	225,962	227,138	228,321
Irrigation	153,829	154,630	155,435	156,244	157,057	157,875	158,697
Subtotal	774,386	778,417	782,469	786,543	790,638	794,753	798,891
TOTAL (CCF)	2,553,962	2,567,257	2,580,622	2,594,057	2,607,561	2,621,136	2,634,781
Total (AF)	5,863	5,894	5,924	5,955	5,986	6,017	6,049

The City also sells wholesale water to the Pajaro Valley Water Management Agency (PVWMA) at a unique rate per AF (currently \$680.77 per AF as of FY 2021). The City sold 878 AF of wholesale water to PVWMA in FY 2020. Raftelis projects that wholesale water sales to PVWMA will remain level at 878 AF each year over the study period.

Table 3-11: PVWMA Wholesale Water Sales Assumptions

PVWMA Wholesale Water Sales	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Wholesale Water Rate (per Acre-Foot)	\$672.77	\$680.17	\$680.17	\$680.17	\$680.17	\$680.17	\$680.17
Wholesale Water Use (Acre-Feet)	878	878	878	878	878	878	878

Projected Water Enterprise Revenue Under Current Rates

The Water Enterprise's revenue sources consist of water rates, miscellaneous fees, interest earnings on cash reserves, and other non-rate revenues. The rate revenue projections shown in this section assume that current water rates are effective throughout the study period and represent estimated revenues in the absence of any water rate increases. This status quo scenario provides a baseline from which Raftelis evaluated the need for revenue adjustments (i.e., gross rate revenue increases).

Raftelis projected annual water rate revenues from Meter Size Availability Fees, Fire Service Availability Fees, and Water Consumption Charges over the study period based on current water rates (from Table 3-1 to Table 3-5), projected number of water meters/private fire lines (from Table 3-6 to Table 3-9), and projected annual water use (from Table 3-10). Raftelis also projected PVWMA wholesale water sales revenue based on information shown in Table 3-11. Table 3-12 shows projected water rate revenues under current rates over the study period, calculated as follows:

Meter Size Availability Fee revenue = [current monthly charge] × [number of meters] × [12 bills per year]

Fire Service Availability Fee revenue = [current monthly charge] × [number of fire lines] × [12 bills per year]

Water Consumption Charge revenue = [current rate per CCF] × [annual water use in CCF]

PVWMA Wholesale revenue = [current rate per AF] × [annual wholesale water sales in AF]

Table 3-12: Water Enterprise Rate Revenue from Current Rates

Rate Revenue	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Retail							
Inside City Meter Size Availability Fees	\$5,628,161	\$5,657,460	\$5,686,912	\$5,716,517	\$5,746,277	\$5,776,191	\$5,806,261
Outside City Water Size Availability Fees	\$1,947,818	\$1,957,958	\$1,968,151	\$1,978,397	\$1,988,697	\$1,999,049	\$2,009,456
Inside City Fire Service Availability Fees	\$228,909	\$230,100	\$231,298	\$232,502	\$233,713	\$234,929	\$236,152
Outside City Fire Service Availability Fees	\$24,842	\$24,971	\$25,101	\$25,232	\$25,364	\$25,496	\$25,628
Water Consumption Charges	\$11,812,692	\$11,874,187	\$11,936,003	\$11,998,140	\$12,060,601	\$12,123,386	\$12,186,499
Subtotal	\$19,642,422	\$19,744,678	\$19,847,466	\$19,950,789	\$20,054,650	\$20,159,052	\$20,263,997
Wholesale							
PVWMA Wholesale	\$590,712	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210
Subtotal	\$590,712	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210
Total	\$20,233,134	\$20,341,888	\$20,444,676	\$20,547,999	\$20,651,860	\$20,756,262	\$20,861,207

Table 3-13 shows all non-rate Water Enterprise revenues. All non-rate revenues in FY 2021 are based on the City's FY 2021 revised budget. Interest earnings are estimated by Raftelis beyond FY 2021 based on projected fund balances and an assumed annual interest rate of 1.5 percent. All other non-rate revenues are held constant over the study period at the FY 2021 revised budget amount.

Table 3-13: Water Enterprise Miscellaneous Revenue

Miscellaneous Revenue	Actual FY 2020	Revised Budget FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Construction Deposits	\$54,876	\$67,000	\$67,000	\$67,000	\$67,000	\$67,000	\$67,000
Water Use Reduction Fees	\$11,852	\$17,000	\$17,000	\$17,000	\$17,000	\$17,000	\$17,000
Water Reserve Fees	\$316,364	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Interest Earnings	\$357,867	\$100,000	\$264,708	\$292,248	\$304,097	\$298,453	\$203,555
Other Revenue	\$84,941	\$0	\$0	\$0	\$0	\$0	\$0
Cash Overages	(\$393)	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$825,506	\$234,000	\$398,708	\$426,248	\$438,097	\$432,453	\$337,555

3.1.2.WATER ENTERPRISE O&M EXPENSES

Water Enterprise operations and maintenance (O&M) expenses are annual recurring expenses necessary to operate and maintain the water system. Water Enterprise expenses excluded from O&M expenses in this study include debt service payments, Capital Improvement Plan (CIP) expenditures, and non-cash expenses (such as depreciation).

Raftelis projected most O&M expenses over the study period based on the City's FY 2021 revised budget and annual inflationary assumptions, with the exception of the PVWMA Augmentation Charges. The PVWMA assesses an Augmentation Charge per AF of groundwater pumped from the groundwater basin to fund its efforts to reduce groundwater overdraft and prevent seawater intrusion into the groundwater basin. In FY 2021 this charge was \$246 per AF. City staff projects that the existing charge will increase to \$344 per AF by the end of the study period³.

Table 3-14 shows the PVWMA Augmentation Charges based on actuals for FY 2020, the City's revised budget for FY 2021, and Raftelis projections for FY 2022-FY 2026. Projected charges from FY 2022-FY 2026 were calculated by multiplying the assumed charge per AF by projected water production in AF (from Table 3-10), after accounting for assumed water loss of 3 percent due to leakage.

³ Raftelis estimated the PVWMA Water Augmentation Charges per AF each year based on an assumed linear increase of approximately \$19.60 per year (from \$246 per AF in FY 2021 to \$344 per AF in FY 2026).

Table 3-14: Water Augmentation Charges

Water Demand	Actual FY 2020	Revised Budget FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Projected Water Sales (AF)	N/A	N/A	5,924	5,955	5,986	6,017	6,049
Assumed Water Loss	N/A	N/A	3.0%	3.0%	3.0%	3.0%	3.0%
Projected Water Production (AF)⁴	N/A	N/A	6,108	6,139	6,171	6,203	6,236
PVWMA Water Augmentation Charge Rate (\$/AF)	\$246.00	\$246.00	\$265.60	\$285.20	\$304.80	\$324.40	\$344.00
Calculated PVWMA Augmentation Charges	\$1,504,054	\$1,500,000	\$1,622,157	\$1,750,932	\$1,881,004	\$2,012,383	\$2,145,079

All other O&M expenses were projected beyond FY 2021 based on annual inflationary assumptions shown in Table 3-15. The general inflation rate is consistent with long-term changes in the Consumer Price Index (CPI). All other O&M expense inflationary assumptions shown were developed by Raftelis based on professional judgement and industry trends and reviewed by City staff.

Table 3-15: Inflationary Assumptions for Water Enterprise O&M Expenses

Inflationary Category	Annual Inflation
General	3.0%
Salary	5.0%
Benefits	5.0%
Utilities	4.0%
Chemicals	5.0%
Inter-Dept charges	5.0%

Table 3-16 shows a summary of all Water Enterprise O&M expenses over the study period. It is projected that O&M expenses will increase by approximately 4.3 percent per year on average over the study period. All O&M expenses in FY 2021 are from the City's FY 2021 revised budget. PVWMA Augmentation Charges (from Table 3-14) are included within "Water Operations." All other O&M projections for FY 2022-FY 2026 were calculated by increasing FY 2021 revised budget amounts by the assumed annual inflationary increases in Table 3-15 (each line item O&M expense from the FY 2021 revised budget was assigned to one of the six inflationary categories shown). Additionally, "Water Operations" O&M expenses associated with electricity/gas and chemicals (which tend to vary with the quantity of water produced) were increased in proportion to total water demand increases each year after adjustment for inflation.

⁴ = [Projected water sales] ÷ [100% - assumed water loss]

Table 3-16: Water Enterprise O&M Expenses

O&M Expenses	Actual FY 2020	Revised Budget FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Water Operations (596)							
Personnel	\$2,609,580	\$1,449,590	\$1,522,070	\$1,598,173	\$1,678,082	\$1,761,986	\$1,850,085
Operations	\$8,061,406	\$8,067,959	\$8,010,484	\$8,880,854	\$9,009,125	\$8,960,614	\$9,881,039
Subtotal	\$10,670,986	\$9,517,549	\$9,532,553	\$10,479,027	\$10,687,207	\$10,722,600	\$11,731,124
Customer Service (597)							
Personnel	\$1,002,665	\$1,111,753	\$1,167,341	\$1,225,708	\$1,286,993	\$1,351,343	\$1,418,910
Operations	\$145,921	\$157,477	\$157,009	\$156,267	\$155,231	\$153,877	\$152,182
Subtotal	\$1,148,586	\$1,269,230	\$1,324,350	\$1,381,975	\$1,442,224	\$1,505,220	\$1,571,092
Services (598)							
Personnel	\$1,776,691	\$1,984,416	\$2,083,637	\$2,187,819	\$2,297,210	\$2,412,070	\$2,532,674
Operations	\$1,733,551	\$1,058,616	\$1,090,389	\$1,123,117	\$1,156,827	\$1,191,549	\$1,227,314
Subtotal	\$3,510,242	\$3,043,032	\$3,174,026	\$3,310,936	\$3,454,037	\$3,603,619	\$3,759,987
Billing (600)							
Personnel	\$603,280	\$620,369	\$651,387	\$683,957	\$718,155	\$754,062	\$791,766
Operations	(\$383,290)	(\$330,263)	(\$352,318)	(\$375,642)	(\$400,304)	(\$426,375)	(\$453,931)
Subtotal	\$219,990	\$290,106	\$299,069	\$308,315	\$317,851	\$327,687	\$337,834
Total	\$15,549,804	\$14,119,917	\$14,329,998	\$15,480,252	\$15,901,318	\$16,159,126	\$17,400,037

3.1.3.WATER ENTERPRISE CAPITAL IMPROVEMENT PLAN

The City has planned approximately \$63.4 million in Water Enterprise capital expenditures between FY 2021 and FY 2026. This amounts to \$10.6 million per year on average over the study period. Detailed CIP project costs are shown through FY 2026 in Table 3-17. City staff provided all CIP project cost estimates in current dollars. Raftelis then inflated all costs by 2 percent per year beginning in FY 2022 based on long-term changes in the Engineering-News Record Construction Cost Index.

The most significant CIP project costs over the study period are associated with well repair and replacement (\$4.9 million in FY 2021), constructing a new reservoir at the Airport Booster Station (\$10.4 million in FY 2023), and Chromium 6 treatment plant construction (\$22.0 million in FY 2025). Capital expenditures associated with Chromium 6 treatment are necessary for the City to comply with Chromium 6 drinking water safety guidelines introduced by the State of California in 2014.

Although the study period only extends through FY 2026, annual capital expenditures through FY 2030 were considered in this study due to the substantial level of expenditure anticipated beyond FY 2026. Annual average CIP project costs in FY 2027-FY 2030 amount to \$18.6 million per year. Financial plan projections through FY 2026 must therefore account for the need to maintain cash reserves and debt capacity through FY 2026 to ensure sufficient funding for CIP projects through FY 2030. Detailed CIP project costs are shown for FY 2027-FY 2030 in Table 3-18. The most significant CIP project costs beyond FY 2026 are associated with Freedom Reservoir site improvements (\$48.6 million between FY 2027-FY 2029).

Table 3-17: Detailed Water Enterprise Capital Improvement Plan (FY 2020-FY 2026)

Water Enterprise CIP Projects	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Server Infrastructure Upgrade (14093)	\$5,160	\$0	\$0	\$0	\$0	\$0	\$0
Citywide Fiber Optic (14133)	\$18,957	\$0	\$0	\$0	\$0	\$0	\$0
5/8" x 3/4" Meter Change Out (14340)	\$44,194	\$150,000	\$153,000	\$78,030	\$79,591	\$0	\$0
1" Meter Change Out (14341)	\$26,924	\$27,000	\$27,540	\$28,091	\$28,653	\$0	\$0
2" Meter Change Out (14342)	\$10,698	\$11,000	\$11,220	\$11,444	\$11,673	\$0	\$0
1.5 Meter Change Out (14343)	\$9,782	\$10,000	\$10,200	\$10,404	\$10,612	\$0	\$0
Vehicle Replacement - Customer Service (14344)	\$39,702	\$0	\$0	\$0	\$0	\$0	\$0
Chromium 6 Treatment Plants (14346)	\$77,931	\$0	\$1,530,000	\$0	\$0	\$22,000,000	\$0
Rider Reservoir Painting (14347)	\$208,785	\$126,349	\$0	\$0	\$0	\$0	\$0
Cover for Corralitos Treatment Plant (14348)	\$4,395	\$650,000	\$0	\$0	\$0	\$0	\$0
Water Operations Service Vehicle (14349)	\$44,285	\$45,000	\$0	\$0	\$0	\$0	\$60,724
Water Services - 12 yd Dump Truck (14350)	\$396,399	\$0	\$0	\$0	\$0	\$0	\$0
Water Services Truck (14351)	\$10,000	\$411,437	\$0	\$0	\$0	\$0	\$0
Freedom Reservoir Site Improvements (14414)	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0
Corralitos Filter Plant Decking (14415)	\$3,640	\$46,360	\$0	\$0	\$0	\$0	\$0
Road Maintenance at Reservoirs (14416)	\$39,940	\$75,000	\$0	\$0	\$0	\$0	\$0
Electrical Instrumentation Upgrade (14417)	\$0	\$257,682	\$204,000	\$208,080	\$212,242	\$216,486	\$0
Water Services - Backhoe (14418)	\$136,802	\$0	\$0	\$0	\$0	\$0	\$0
New Carpets - City Hall (14435)	\$0	\$21,658	\$0	\$0	\$0	\$0	\$0
Clean Ductwork at City Hall (14436)	\$0	\$1,500	\$0	\$0	\$0	\$0	\$0
Parking Lot Repairs - City Hall (14438)	\$0	\$2,357	\$0	\$0	\$0	\$0	\$0
Fowle Booster Station Upgrade (14442)	\$785	\$99,215	\$0	\$0	\$0	\$0	\$0
Citywide IT Equipment (14486)	\$769	\$0	\$0	\$0	\$0	\$0	\$0
Zone 1 or 2 Wells (14557)	\$67,487	\$4,932,513	\$0	\$0	\$0	\$0	\$0
Meter Reading Communication Tower (14629)	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0
Meter Reading System Upgrade (14630)	\$0	\$263,350	\$0	\$0	\$0	\$0	\$0
Utility Truck - Water Services (14631)	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0
Water Services - Flat Bed with Hoist (14633)	\$0	\$175,000	\$0	\$0	\$0	\$0	\$0
Airport Booster Pump Station Seismic Retrofit (14825)	\$0	\$0	\$0	\$225,767	\$0	\$0	\$0
Airport, Hames, Amesti and Rider Tank Coating Projects (14826)	\$0	\$500,000	\$266,220	\$385,988	\$273,792	\$522,979	\$93,484

Water Enterprise CIP Projects	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Miscellaneous Electrical Maintenance/Repair Projects (14828)	\$0	\$155,318	\$112,200	\$260,100	\$53,060	\$573,689	\$0
New Reservoir at Airport Booster Station (14829)	\$0	\$1,000,000	\$0	\$10,404,000	\$0	\$0	\$0
Poppy Hill Booster Pump Station Improvements (14830)	\$0	\$0	\$553,860	\$0	\$0	\$0	\$0
Replace Cover for Corralitos Treatment Plant (14831)	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0
Water Disinfection System Mechanical Improvements (14832)	\$0	\$300,000	\$306,000	\$0	\$0	\$0	\$0
Water Main Replacement (14833)	\$0	\$1,000,000	\$1,020,000	\$1,040,400	\$1,061,208	\$1,082,432	\$1,104,081
Additional Water Main Replacement (14834)	\$2,783	\$1,031,000	\$1,051,620	\$1,072,652	\$1,094,105	\$1,115,988	\$1,138,307
Water Meter Testing Equipment (14835)	\$0	\$35,000	\$0	\$0	\$0	\$0	\$0
Backflow Training Equipment	\$0	\$0	\$35,700	\$0	\$0	\$0	\$0
Replace Existing Covers for Freedom Reservoir	\$0	\$0	\$0	\$0	\$424,483	\$0	\$0
Replace Well 10 Building	\$0	\$0	\$0	\$0	\$0	\$0	\$384,179
Replace Well 8 Building	\$0	\$0	\$0	\$0	\$0	\$0	\$384,179
Well 8 Improvements	\$0	\$0	\$0	\$0	\$0	\$458,296	\$124,334
Total	\$1,149,418	\$11,901,739	\$5,281,560	\$13,724,957	\$3,249,419	\$25,969,871	\$3,289,289

Table 3-18: Detailed Water Enterprise Capital Improvement Plan (FY 2027-FY 2030)

Water Enterprise CIP Projects	Projected FY 2027	Projected FY 2028	Projected FY 2029	Projected FY 2030
Water Operations Service Vehicle (14349)	\$0	\$126,355	\$64,441	\$59,755
Freedom Reservoir Site Improvements (14414)	\$5,414,268	\$26,940,694	\$16,284,472	\$0
Miscellaneous Electrical Maintenance/Repair Projects (14828)	\$0	\$0	\$0	\$288,352
Water Disinfection System Mechanical Improvements (14832)	\$0	\$0	\$0	\$999,501
Water Main Replacement (14833)	\$1,126,162	\$1,148,686	\$1,171,659	\$1,195,093
Additional Water Main Replacement (14834)	\$1,161,073	\$1,184,295	\$1,207,981	\$1,232,140
Browns Valley Intake Line	\$0	\$0	\$0	\$884,514
Well 14 Site Improvements Project	\$2,531,175	\$0	\$0	\$0
Well 18 Site Improvements Project	\$3,370,264	\$0	\$0	\$0
Pajaro Dunes Site Improvement Project	\$0	\$0	\$0	\$5,119,009
Airport Reservoir, Airport BPS and Well 17 Site Improvements Project	\$941,385	\$1,994,890	\$0	\$0
Total	\$14,544,328	\$31,394,920	\$18,728,553	\$9,778,365

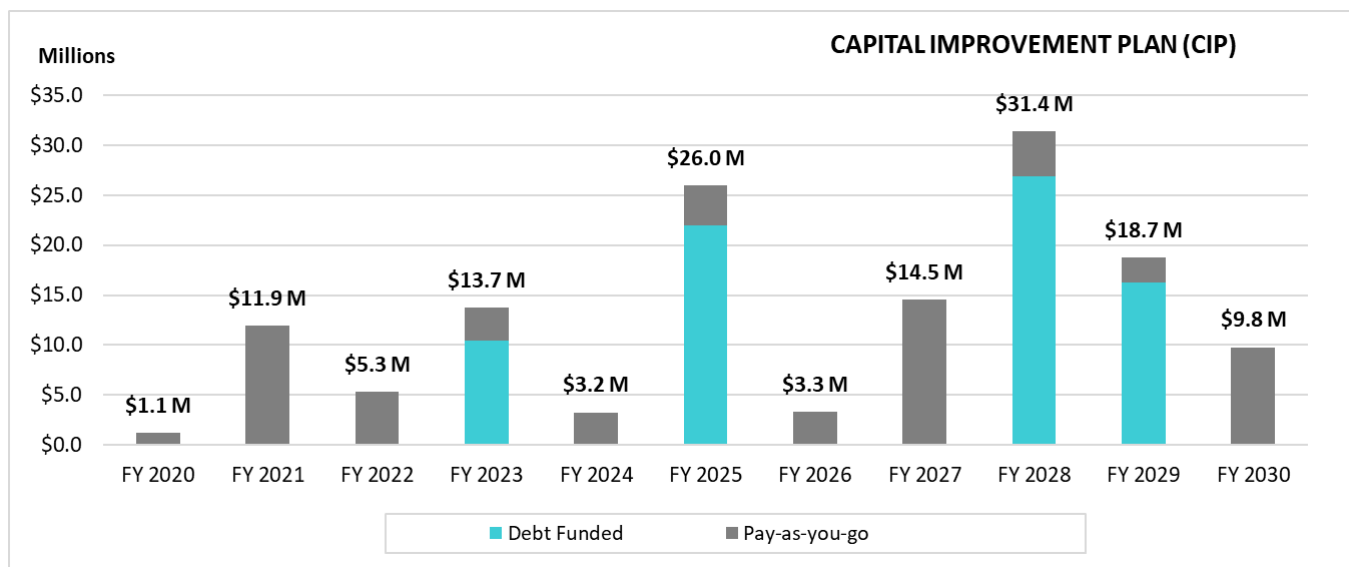
CIP projects are primarily funded by rates and cash reserves (referred to as “pay-as-you-go”) or by issuing debt. Potential grant funding for CIP projects through FY 2030 is uncertain and is not considered in this study. Due to the substantial level of CIP expenditures through FY 2030, the City expects to issue new debt over the next ten years to finance its largest planned Water Enterprise CIP projects. Raftelis worked with City staff to determine the assumed mix of new debt and pay-as-you-go funding for Water Enterprise CIP expenditures over the next ten years (see Table 3-19 and Figure 13).

All new debt issuance assumptions shown are for preliminary planning purposes only and are subject to refinement or change. Revenue bonds are assumed to be issued to finance the new reservoir at Airport Booster Station (\$10.4 million in FY 2023), Chromium 6 treatment plants (\$22 million in FY 2026), and Freedom Reservoir site improvements (\$43.2 million in FY 2028-FY 2029). Estimates of annual debt service associated with new debt issues are shown in Section 3.1.4. All other CIP expenditures are assumed to be pay-as-you-go funded.

Table 3-19: Water Enterprise CIP Funding Summary

Fiscal Year	Debt Funded	Pay-as-you-go	Total CIP	Notes
FY 2020	\$0	\$1,149,418	\$1,149,418	
FY 2021	\$0	\$11,901,739	\$11,901,739	
FY 2022	\$0	\$5,281,560	\$5,281,560	
FY 2023	\$10,404,000	\$3,320,957	\$13,724,957	Debt funding for New Reservoir at Airport Booster Station
FY 2024	\$0	\$3,249,419	\$3,249,419	
FY 2025	\$22,000,000	\$3,969,871	\$25,969,871	Debt funding for Chromium 6 Treatment Plants
FY 2026	\$0	\$3,289,289	\$3,289,289	
FY 2027	\$0	\$14,544,328	\$14,544,328	
FY 2028	\$26,940,694	\$4,454,226	\$31,394,920	Debt funding for Freedom Reservoir Site Improvements
FY 2029	\$16,284,472	\$2,444,081	\$18,728,553	Debt funding for Freedom Reservoir Site Improvements
FY 2030	\$0	\$9,778,365	\$9,778,365	

Figure 13: Water Enterprise CIP Summary



3.1.4.WATER ENTERPRISE DEBT SERVICE

The Water Enterprise's only existing debt service is for a 2019 PG&E loan for lighting upgrades and replacement (see Table 3-20). Associated debt service will extend through FY 2023. The 2019 PG&E loan does not have a coverage requirement.

Table 3-20: Water Enterprise Existing Debt Service

Existing Debt Service	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
PG&E 2019 Notes	\$17,538	\$16,322	\$12,677	\$7,891	\$0	\$0	\$0
Total	\$17,538	\$16,322	\$12,677	\$7,891	\$0	\$0	\$0

Raftelis estimated annual proposed debt service associated with assumed new debt issues to fund ten years of CIP expenditures (from Table 3-19) based on the following assumptions:

- » Debt instrument: revenue bond
- » Term: 30 years
- » Annual interest rate: 5 percent
- » Issuance costs (as a percent of total debt proceeds): 1.5 percent
- » Annual debt service payments are amortized over the life of the loan beginning in the year of issue (i.e., level principal plus interest payments each year)

All proposed debt service payments shown represent preliminary estimates, and all debt assumptions are intended to be sufficiently conservative to avoid underestimating future debt service. Proposed debt service estimates are only shown for new debt issues through the end of the study period in FY 2026.

Table 3-21: Water Enterprise Proposed Debt Service

Proposed Debt Service	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
FY 2023 Proposed Debt	\$0	\$0	\$0	\$687,102	\$687,102	\$687,102	\$687,102
FY 2025 Proposed Debt	\$0	\$0	\$0	\$0	\$0	\$1,452,925	\$1,452,925
Total	\$0	\$0	\$0	\$687,102	\$687,102	\$2,140,027	\$2,140,027

Table 3-22 shows a summary of total debt service payments each year over the study period, including both existing and proposed debt service. Assumed debt financing for the new Airport Booster Station reservoir and Chromium 6 treatment plants is projected to result in annual debt service payments of \$2.1 million by the end of the study period.

Table 3-22: Water Enterprise Debt Service Summary

Water Existing Debt	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Existing Debt Service	\$17,538	\$16,322	\$12,677	\$7,891	\$0	\$0	\$0
Proposed Debt service	\$0	\$0	\$0	\$687,102	\$687,102	\$2,140,027	\$2,140,027
Total	\$17,538	\$16,322	\$12,677	\$694,993	\$687,102	\$2,140,027	\$2,140,027

3.1.5.WATER ENTERPRISE FINANCIAL POLICIES

Debt Coverage

Debt coverage indicates whether an agency is able to meet annual debt service payments and is defined as the ratio of net operating revenues (total revenues less operating expenses) to annual debt service. Prior Water Enterprise debt was subject to a required debt coverage ratio of 1.25. Although the Water Enterprise currently has no debt service coverage requirement on its existing debt, maintaining sufficient debt coverage may benefit the Water Enterprise by providing lower cost debt financing options over the next ten years.

Reserve Targets

Adequate cash reserves are required to meet operating, capital, and debt service requirements. No changes are proposed to the Water Enterprise's existing reserve policies. Operating reserves provide funds to meet ongoing cash flow requirements related to operating expenses. The current operating reserve target is equal to 25 percent of annual O&M expenses or three months of working capital. Capital reserves are maintained to provide available funds for CIP project costs. The current capital reserve target is equal to 2 percent of the replacement cost of the Water Enterprise capital assets. Table 3-23 summarizes the Water Enterprise's key financial policies relevant to this rate study. Table 3-24 shows projected operating and capital reserve targets over the study period based on the reserve policies outlined.

Table 3-23: Water Enterprise Financial Policies

Financial Policy	Target/Requirement
Debt Coverage	
Required Debt Coverage Ratio	N/A
Reserve Targets	
Operating Reserve Target	25% of annual Water Enterprise O&M expenses
Capital Reserve Target	2% of replacement cost of Water Enterprise capital assets

Table 3-24: Water Enterprise Reserve Targets

Reserve	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Operating Reserve ⁵	\$3,529,979	\$3,582,500	\$3,870,063	\$3,975,330	\$4,039,782	\$4,350,009
Capital Reserve ⁶	\$3,579,931	\$3,651,530	\$3,724,560	\$3,799,052	\$3,875,033	\$3,952,533
Total	\$7,109,910	\$7,234,029	\$7,594,623	\$7,774,381	\$7,914,814	\$8,302,542

3.2.Water Enterprise Status Quo Financial Plan

To evaluate the Water Enterprise's need for revenue adjustments (i.e., increases to gross rate revenues), Raftelis first developed a status quo financial plan. The status quo financial plan assumes that current rates remain unchanged over the study period. Table 3-25 combines projected revenues (from Table 3-12 and Table 3-13), O&M expenses (from Table 3-16), CIP expenditures (from Table 3-19), debt service (from Table 3-22), and reserve targets (from Table 3-24) to generate cash flow projections under the status quo for the Water Enterprise. Note that other

⁵ Equal to 25 percent of annual projected Water Enterprise O&M expenses (from Table 3-16).

⁶ Equal to 2 percent of current replacement cost of Water Enterprise capital assets (\$178,996,556) in FY 2021, and escalated by 2 percent each subsequent year to account for capital cost inflation (consistent with inflationary assumptions used to escalate CIP project costs).

revenue (Line 5) is less than what is shown in Table 3-13 (which reflects the proposed financial plan) to account for reduced interest earnings due to depletion of interest-bearing reserves. Interest earnings under the status quo and proposed financial plan scenarios are calculated by averaging the beginning and ending reserve balance in each year and then multiplying by the assumed interest rate.

The key results shown in the status quo financial plan proforma include projected Water Enterprise reserve balances and projected debt coverage each year over the study period. In the absence of any revenue adjustments, the Water Enterprise is projected to generate sufficient revenue to maintain reserve balances above target levels. However, reserves are projected to be drawn down substantially from \$20.9 million in FY 2021 to \$16.7 million by the end of FY 2026. Projected debt coverage is shown beginning in FY 2023 when proposed debt service payments begin. Debt coverage remains above typical debt coverage requirements associated with revenue bonds but does begin to decrease as debt service ramps up over the study period.

Table 3-25: Status Quo Water Enterprise Financial Plan Proforma

Line	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
1	Revenue						
2	Retail Water Sales Revenue from Current Rates	\$19,744,678	\$19,847,466	\$19,950,789	\$20,054,650	\$20,159,052	\$20,263,997
3	Revenue Adjustments	\$0	\$0	\$0	\$0	\$0	\$0
4	Wholesale Water Sales	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210
5	Other Revenue	\$234,000	\$373,063	\$392,701	\$412,585	\$413,533	\$393,630
6	Total Revenue	\$20,575,888	\$20,817,739	\$20,940,700	\$21,064,445	\$21,169,795	\$21,254,837
7							
8	O&M Expenses						
9	Water Operations	\$9,517,549	\$9,532,553	\$10,479,027	\$10,687,207	\$10,722,600	\$11,731,124
10	Customer Service	\$1,269,230	\$1,324,350	\$1,381,975	\$1,442,224	\$1,505,220	\$1,571,092
11	Services	\$3,043,032	\$3,174,026	\$3,310,936	\$3,454,037	\$3,603,619	\$3,759,987
12	Billing	\$290,106	\$299,069	\$308,315	\$317,851	\$327,687	\$337,834
13	Total O&M Expenses	\$14,119,917	\$14,329,998	\$15,480,252	\$15,901,318	\$16,159,126	\$17,400,037
14							
15	Net Revenues [Line 6 – Line 13]	\$6,455,971	\$6,487,741	\$5,460,448	\$5,163,127	\$5,010,669	\$3,854,800
16							
17	Debt Service						
18	Existing Debt Service	\$16,322	\$12,677	\$7,891	\$0	\$0	\$0
19	Proposed Debt Service	\$0	\$0	\$687,102	\$687,102	\$2,140,027	\$2,140,027
20	Total Debt Service	\$16,322	\$12,677	\$694,993	\$687,102	\$2,140,027	\$2,140,027
21							
22	CIP Expenditures						
23	Debt Funded	\$0	\$0	\$10,404,000	\$0	\$22,000,000	\$0
24	Pay-as-you-go	\$11,901,739	\$5,281,560	\$3,320,957	\$3,249,419	\$3,969,871	\$3,289,289
25	Total CIP Expenditures	\$11,901,739	\$5,281,560	\$13,724,957	\$3,249,419	\$25,969,871	\$3,289,289
26							
27	Net Cash Change [Line 15 – Line 20 -Line 24]	(\$5,462,090)	\$1,193,504	\$1,444,498	\$1,226,606	(\$1,099,229)	(\$1,574,516)
28							
29	Beginning Fund Balance	\$20,922,426	\$15,460,336	\$16,653,839	\$18,098,338	\$19,324,944	\$18,225,715
30	Ending Fund Balance [Line 27 + Line 29]	\$15,460,336	\$16,653,839	\$18,098,338	\$19,324,944	\$18,225,715	\$16,651,199
31							
32	Operating Reserve Target	\$3,529,979	\$3,582,500	\$3,870,063	\$3,975,330	\$4,039,782	\$4,350,009
33	Total Reserve Target	\$7,109,910	\$7,234,029	\$7,594,623	\$7,774,381	\$7,914,814	\$8,302,542
34							
35	Projected Debt Coverage [Line 15 ÷ Line 20]	N/A	N/A	7.95	7.51	2.34	1.80
36	Required Debt Coverage	N/A	N/A	N/A	N/A	N/A	N/A

3.3. Water Enterprise Proposed Financial Plan

The Water Enterprise is projected to generate sufficient revenues from water rates over the study period to adequately fund its operating expenses, maintain healthy debt coverage, and maintain reserve funding above target levels under the status quo financial plan. However, reserves are projected to be drawn down significantly in the absence of any revenue increases, even though projected reserves exceed target amounts in each year.

In light of the substantial Water Enterprise CIP planned beyond FY 2026 (namely \$48.6 million in Freedom Reservoir site improvements in FY 2027-FY 2029), Raftelis recommends that the Water Enterprise maintain reserve balances near current levels through FY 2026 to ensure sufficient capacity to fund planned CIP projects through FY 2030. Raftelis projects that one percent annual revenue adjustments each year over the study period are sufficient to achieve this goal (see Table 3-26). Revenue adjustments represent annual percent increases in total rate revenue relative to rate revenue generated by the prior year's water rates. The first revenue adjustment is proposed to be implemented in July 2021.

Table 3-26: Proposed Water Enterprise Revenue Adjustments

Fiscal Year	Effective Date	Revenue Adjustment
FY 2022	July 1, 2021	1.0%
FY 2023	July 1, 2022	1.0%
FY 2024	July 1, 2023	1.0%
FY 2025	July 1, 2024	1.0%
FY 2026	July 1, 2025	1.0%

Proposed financial plan results are shown in Table 3-27, and were calculated in the same manner as described for the status quo financial plan proforma in Section 3.2. Revenue adjustments (Line 3) represent additional rate revenues collected each year as a result of proposed revenue adjustments in Table 3-26. With the addition of proposed revenue adjustments, Raftelis projects that Water Enterprise reserve balances at the end of study period will be \$2.1 million higher relative to the status quo.

Additionally, debt coverage is significantly increased under the proposed financial plan. Ensuring sufficient debt capacity beyond FY 2026 will be critical under the assumed CIP financing plan, in which \$43.2 million in Freedom Reservoir site improvement costs in FY 2028-FY 2029 are assumed to be debt financed. In the absence of any revenue adjustments through FY 2026, the Water Enterprise is at risk of not maintaining sufficient debt capacity needed to adequately fund Freedom Reservoir site improvements.

Table 3-27: Proposed Water Enterprise Financial Plan Proforma

Line	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
1	Revenue						
2	Retail Water Sales Revenue from Current Rates	\$19,744,678	\$19,847,466	\$19,950,789	\$20,054,650	\$20,159,052	\$20,263,997
3	Revenue Adjustments	\$0	\$198,475	\$401,011	\$607,676	\$818,538	\$1,033,668
4	Wholesale Water Sales	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210	\$597,210
5	Other Revenue	\$234,000	\$374,552	\$398,708	\$426,248	\$438,097	\$432,453
6	Total Revenue	\$20,575,888	\$21,017,702	\$21,347,718	\$21,685,783	\$22,012,897	\$22,327,328
7							
8	O&M Expenses						
9	Water Operations	\$9,517,549	\$9,532,553	\$10,479,027	\$10,687,207	\$10,722,600	\$11,731,124
10	Customer Service	\$1,269,230	\$1,324,350	\$1,381,975	\$1,442,224	\$1,505,220	\$1,571,092
11	Services	\$3,043,032	\$3,174,026	\$3,310,936	\$3,454,037	\$3,603,619	\$3,759,987
12	Billing	\$290,106	\$299,069	\$308,315	\$317,851	\$327,687	\$337,834
13	Total O&M Expenses	\$14,119,917	\$14,329,998	\$15,480,252	\$15,901,318	\$16,159,126	\$17,400,037
14							
15	Net Revenues [Line 6 – Line 13]	\$6,455,971	\$6,687,704	\$5,867,466	\$5,784,465	\$5,853,771	\$4,927,291
16							
17	Debt Service						
18	Existing Debt Service	\$16,322	\$12,677	\$7,891	\$0	\$0	\$0
19	Proposed Debt Service	\$0	\$0	\$687,102	\$687,102	\$2,140,027	\$2,140,027
20	Total Debt Service	\$16,322	\$12,677	\$694,993	\$687,102	\$2,140,027	\$2,140,027
21							
22	CIP Expenditures						
23	Debt Funded	\$0	\$0	\$10,404,000	\$0	\$22,000,000	\$0
24	Pay-as-you-go	\$11,901,739	\$5,281,560	\$3,320,957	\$3,249,419	\$3,969,871	\$3,289,289
25	Total CIP Expenditures	\$11,901,739	\$5,281,560	\$13,724,957	\$3,249,419	\$25,969,871	\$3,289,289
26							
27	Net Cash Change [Line 15 – Line 20 -Line 24]	(\$5,462,090)	\$1,393,467	\$1,851,516	\$1,847,945	(\$256,127)	(\$502,025)
28							
29	Beginning Fund Balance	\$20,922,426	\$15,460,336	\$16,853,803	\$18,705,319	\$20,553,264	\$20,297,137
30	Ending Fund Balance [Line 27 + Line 29]	\$15,460,336	\$16,853,803	\$18,705,319	\$20,553,264	\$20,297,137	\$19,795,112
31							
32	Operating Reserve Target	\$3,529,979	\$3,582,500	\$3,870,063	\$3,975,330	\$4,039,782	\$4,350,009
33	Total Reserve Target	\$7,109,910	\$7,234,029	\$7,594,623	\$7,774,381	\$7,914,814	\$8,302,542
34							
35	Projected Debt Coverage [Line 15 ÷ Line 20]	N/A	N/A	8.54	8.42	2.74	2.30
36	Required Debt Coverage	N/A	N/A	N/A	N/A	N/A	N/A

Figure 14 compares the status quo and proposed financial plans. Revenues under the proposed financial plan and status quo financial plan are represented by the blue and red dashed lines, respectively. Revenue requirements including O&M expenses, debt service, pay-as-you-go CIP, and reserve funding are represented by the various stacked bars. Green bars represent drawdown of reserves when negative and buildup of reserves when positive. Proposed revenue adjustments result in modest annual revenue increases relative to the status quo but cumulatively have an important impact on projected debt coverage and reserve balance through FY 2026.

Figure 14: Water Enterprise Status Quo Versus Proposed Financial Plan

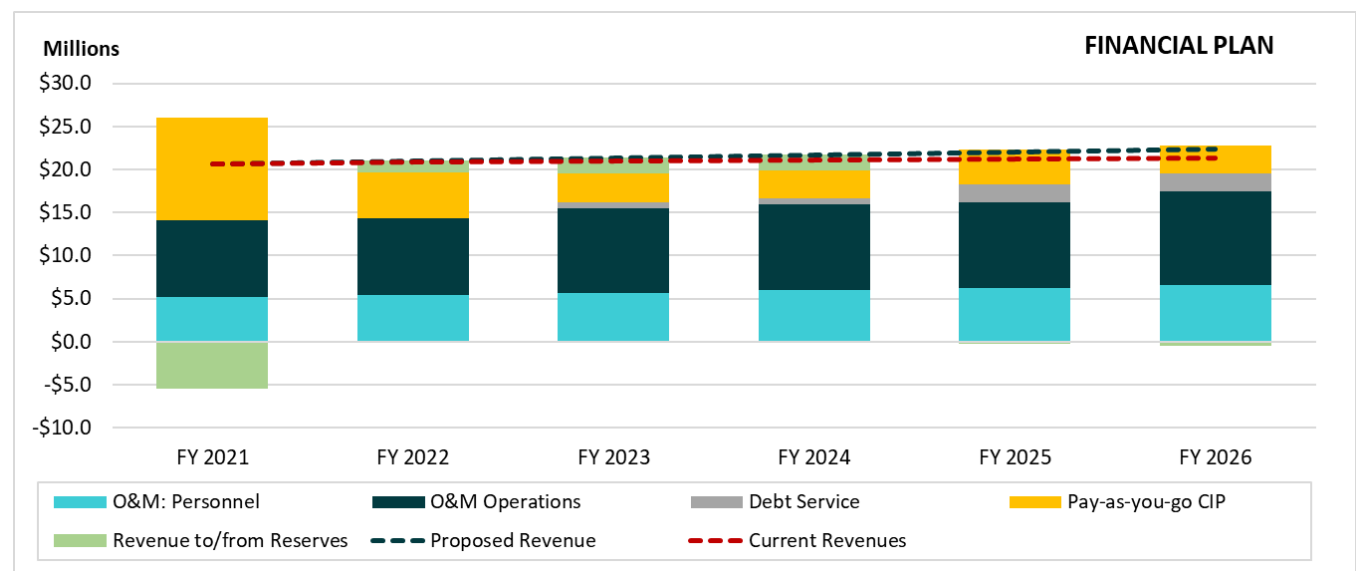
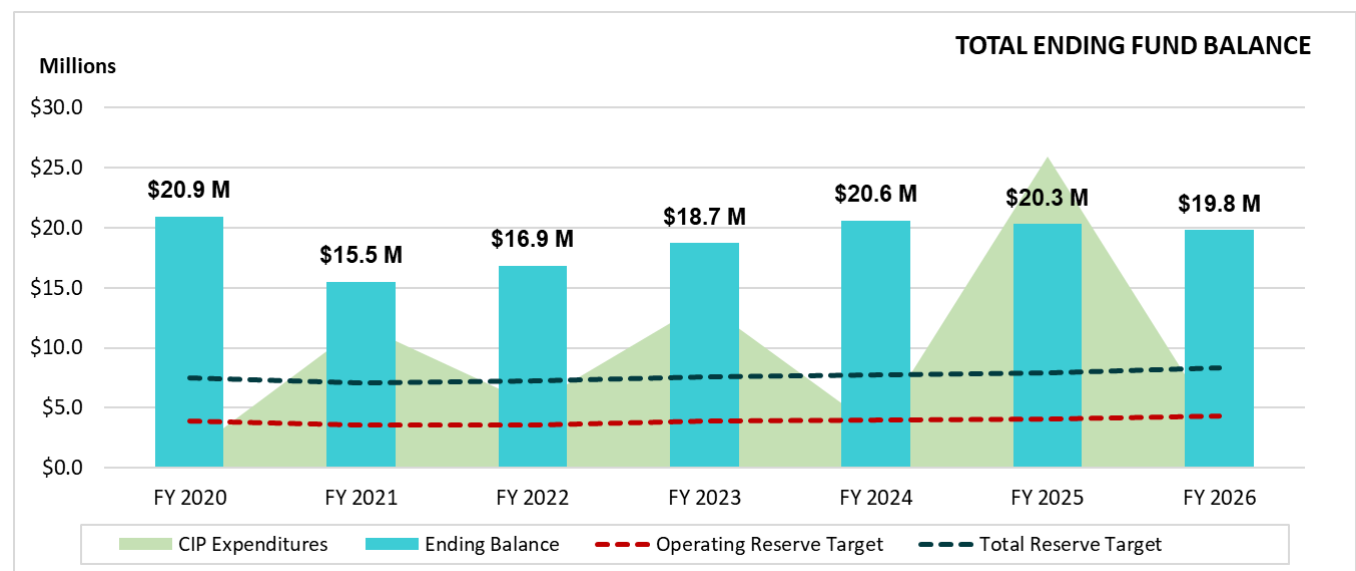


Figure 15 shows the Water Enterprise’s projected ending balance under the proposed financial plan. The light blue bars indicate the ending balance. The operating reserve target and total (operating plus capital) reserve target are represented by the red and blue dashed lines, respectively. Total annual CIP expenditures are represented by the shaded green area. Maintaining reserves near current levels through FY 2026 is necessary to ensure that the Water Enterprise will be able to adequately fund substantial CIP projects from FY 2027-FY 2030.

Figure 15: Proposed Water Enterprise Financial Plan – Projected Reserve Ending Balance



3.4. Water Cost of Service Analysis

Section 3.4 details the cost of service (COS) analysis performed for the Water Enterprise for FY 2020. The COS analysis allocates the overall rate revenue requirement to customer classes based on their proportional use of and burden on the water system. This provides the basis for the development of proposed water rates through FY 2026 in subsequent report sections.

3.4.1. METHODOLOGY

The framework and methodology utilized to develop the COS analysis and to apportion the revenue requirement to each customer class and tier is informed by the processes outlined in the AWWA's *Manual M1*. COS analyses are tailored to meet the specific needs of each water system. However, industry standards suggest adherence to four distinct steps in every COS analysis to recover costs from customers in an accurate, equitable, and defensible manner:

1. **Cost functionalization:** O&M expenses and capital assets are categorized by their function in the system. Sample functions may include water supply, treatment, distribution, transmission, customer service, etc.
2. **Cost causation component allocation:** Functionalized costs are then allocated to cost causation components based on their burden on the system. The cost causation components include water supply, base delivery, extra-capacity, meters, and customer, among others. The revenue requirement is allocated accordingly to the cost causation components and results in the total share of the revenue requirement attributable to each cost component.
3. **Unit cost development:** The revenue requirement for each cost causation component is divided by the appropriate units of service to determine the unit cost of each.
4. **Revenue requirement distribution:** The unit cost is utilized to distribute the revenue requirement for each cost causation component to customer classes based on each customer class's individual service units.

This method of allocating costs is consistent with the AWWA's *Manual M1* and is widely used in the water industry to perform COS analyses.

3.4.2. WATER RATE REVENUE REQUIREMENT

Table 3-28 shows the rate revenue requirement for FY 2020 (also referred to as the test year). The revenue requirement is split into operating, capital, and revenue offset categories (Columns C-E), which are later allocated based on O&M expenses and capital assets. The revenue requirements (Lines 2-4) are equal to FY 2020 O&M expenses, debt service, and pay-as-you-go CIP. The revenue offsets (Lines 8-9) include wholesale water sales and all non-rate revenue. These revenues are applied as offsets to the final rate revenue requirement. All revenue requirement and revenue offset values shown are from Section 3.1 The reserve transfer adjustment (Line 13) is equal to the estimated contribution of rate revenues to reserves in FY 2020 after accounting for all revenue requirements and revenue offsets. Note that the total water rate revenue requirement (Column F, Line 16) equals total calculated rate revenues under current rates⁷ in FY 2020 (from Table 3-12). This is because the COS analysis is based on FY 2020, which is before any revenue adjustments will be implemented. The final COS water rate revenue requirement (Line 16) is calculated as follows:

⁷ The PVWMA wholesale water sale revenue is excluded from the water rate revenue requirement and applied as a revenue offset because the scope of this rate study is to develop proposed retail water rates only.

Total revenue required from rates (Line 16) = Revenue requirements (Line 5) - Revenue offsets (Line 10) - Adjustments (Line 14)

Table 3-28: FY 2020 Water Rate Revenue Requirement

[A]	[B]	[C]	[D]	[E]	[F]
Line	Description	Operating Revenue Requirement	Capital Revenue Requirement	Revenue Offsets	Total
1	Revenue Requirements				
2	O&M Expenses	\$15,549,804	\$0	\$0	\$15,549,804
3	Debt Service	\$0	\$17,538	\$0	\$17,538
4	Pay-as-you-go CIP	\$0	\$1,149,418	\$0	\$1,149,418
5	Total Revenue Requirements	\$15,549,804	\$1,166,956	\$0	\$16,716,760
6					
7	Less Revenue Offsets				
8	Wholesale Water Sales	\$0	\$0	\$590,712	\$590,712
9	Other Miscellaneous Revenue	\$0	\$0	\$825,506	\$825,506
10	Total Revenue Offsets	\$0	\$0	\$1,416,218	\$1,416,218
11					
12	Less Adjustments				
13	Transfer from (to) Reserves	\$0	(\$4,341,880)	\$0	(\$4,341,880)
14	Total Adjustments	\$0	(\$4,341,880)	\$0	(\$4,341,880)
15					
16	Water Rate Revenue Requirement	\$15,549,804	\$5,508,836	(\$1,416,218)	\$19,642,422

3.4.3.WATER SYSTEM PEAKING FACTORS

A significant portion of the costs of the water system are based on the peaking characteristics of different customer classes. A water system is designed to meet different requirements, including extra-capacity / peaking costs. Peaking costs are divided into maximum day (Max Day) and maximum hour (Max Hour) demand. The Max Day demand is the maximum amount of water used in a single day over a full year. The Max Hour demand is the maximum use in an hour on the Max Day. For example, storage and treatment components of the water system are designed to handle Max Day requirements while the distribution system is designed for Max Hour demands.

Table 3-29 shows system-wide peaking factors for the City's water system based on water production data provided by City staff for calendar year (CY) 2019. System-wide peaking factors are used to derive the cost component allocation bases for Base Delivery, Max Day, and Max Hour costs. Base Delivery use is considered average daily demand over one year, which has been normalized to a factor of 1.00 (Column C, Line 1). The Max Day peaking factor (Column C, Line 2) indicates that the Max Day demand is 1.46 times greater than the average daily demand. Similarly, the Max Hour peaking factor (Column C, Line 3) shows that the Max Hour demand is 1.95 times greater than average demand. The allocation bases (Columns D-F) are calculated using the equations outlined below. Columns are represented in these equations as letters, and lines are represented as numbers. For example, Column D, Line 2 is shown as D2.

The Max Day allocations are calculated as follows:

- » Base Delivery: $C1 / C2 \times 100\% = D2$
- » Max Day: $(C2 - C1) / C2 \times 100\% = E2$

The Max Hour allocations are calculated as follows:

- » Base Delivery: $C1 / C3 \times 100\% = D3$
- » Max Day: $(C2 - C1) / C3 \times 100\% = E3$
- » Max Hour: $(C3 - C2) / C3 \times 100\% = F3$

Table 3-29: Water System Peaking Factor Allocations

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Line	Description	Factor	Base	Max Day	Max Hour	Total
1	Base	1.00	100.0%	0.0%	0.0%	100.0%
2	Max Day	1.46	68.3%	31.7%	0.0%	100.0%
3	Max Hour	1.95	51.2%	23.8%	25.0%	100.0%

3.4.4.FUNCTIONALIZATION AND ALLOCATION OF EXPENSES

After determining the revenue requirement and system-wide peaking allocation basis, the next step of the water COS analysis is to allocate O&M expenses and capital assets to the following functional categories:

- » **Customer:** costs of meter reading, billing, and other customer service functions
- » **Meters:** costs of meter maintenance/repair and a share of extra capacity-related costs
- » **Field Services/Distribution:** costs related to delivering treated water to customers from storage facilities to the meter
- » **Water Supply:** water supply costs relating to the PVWMA Water Augmentation Charges and water production
- » **Storage:** costs related to water storage tanks and reservoirs
- » **Treatment:** costs associated with treating water to drinking water standards
- » **Transmission:** costs associated with the pump stations and transporting water
- » **Conservation:** costs associated with water conservation, outreach, and efficiency programs
- » **General/Admin:** costs associated with general administration of the Water Enterprise (i.e., indirect costs)
- » **Engineering:** operating costs not directly attributable to the above functions are allocated based on the overall cost functionalization of the capital asset base

The functionalization of costs allows for the allocation of costs to cost causation components. Some cost causation components correspond directly to a functional category listed above. The cost causation components include:

- » **Customer:** directly associated with the Customer functional category
- » **Meters:** directly associated with the Meters functional category
- » **Field Services:** directly associated with the Field Services functional category
- » **Fire Protection:** costs associated with providing water for private fire protection purposes
- » **Water Supply:** directly associated with the Water Supply functional category
- » **Base Delivery:** costs associated with providing water under average water demand conditions
- » **Peaking (Max Day and Max Hour):** extra-capacity costs associated with providing water during peak demand conditions
- » **Conservation:** directly associated with the Conservation functional category
- » **General:** directly associated with the General/Admin functional category
- » **Revenue Offsets:** miscellaneous revenues applied as offsets to the rate revenue requirement

Table 3-30 shows the basis for allocating each functional category to the various cost causation components. This provides the basis for allocating O&M and capital expenses in the following subsections. Most functional categories are allocated entirely to the corresponding cost causation component. The allocation basis for functional categories not allocated entirely to a single cost causation component is as follows:

- » **Functional categories allocated based on Max Day demand:** Storage and treatment infrastructure is designed to accommodate maximum day water demand. Therefore, all Storage and Treatment costs are allocated to the Base Delivery and Max Day cost causation components based on the Max Day allocation from Table 3-29.
- » **Functional categories allocated based on Max Hour demand:** Distribution and transmission infrastructure is designed to accommodate maximum hour water demand; therefore, all Transmission costs are allocated to the Base Delivery, Max Day, and Max Hour cost causation components based on the Max Hour allocation from Table 3-29.
- » **Engineering:** Engineering costs are allocated based on the final capital allocation (calculated subsequently in Table 3-34, Line 12). The functional breakdown of the Water Enterprise's capital assets is used here as a proxy to allocate O&M costs that cannot be directly attributed to a specific functional category.

Table 3-30: Allocation of Functional Categories to Water Cost Causation Components

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]
Line	Functional Category	Customer	Meter	Field Services	Fire Protection	Water Supply	Base Delivery	Max Day	Max Hour	Conser- vation	General	Total
1	Customer	100.0%										100.0%
2	Meters		100.0%									100.0%
3	Field Services/ Distribution			100.0%								100.0%
4	Water Supply					100.0%						100.0%
5	Storage						68.3%	31.7%				100.0%
6	Treatment						68.3%	31.7%				100.0%
7	Transmission						51.2%	23.8%	25.0%			100.0%
8	Conservation									100.0%		100.0%
9	Engineering	0.0%	0.1%	0.0%	0.0%	8.3%	54.9%	25.5%	2.7%	0.0%	8.5%	100.0%
10	General/Admin										100.0%	100.0%

3.4.5.WATER ENTERPRISE O&M EXPENSE ALLOCATION

The next step of the COS analysis is to develop an allocation basis for the operating revenue requirement based on the functionalization of the Water Enterprise's O&M expenses. Raftelis assigned O&M expenses on a line item basis to the most closely associated functional category. Table 3-31 shows a summary of FY 2020 O&M expenses by functional category. This intermediate step is necessary to allocate total O&M expenses to individual cost causation components.

Table 3-31: Summary of Water Enterprise O&M Expenses by Functional Category

[A]	[B]	[C]	[D]
Line	Functional Category	FY 2020 O&M Expenses	Percent of Total
1	Customer	\$1,368,576	8.8%
2	Meters	\$0	0.0%
3	Field Services/Distribution	\$3,510,242	22.6%
4	Water Supply	\$1,504,054	9.7%
5	Storage	\$0	0.0%
6	Treatment	\$32,225	0.2%
7	Transmission	\$18,738	0.1%
8	Conservation	\$88,813	0.6%
9	Engineering	\$5,585,138	35.9%
10	General/Admin	\$3,442,019	22.1%
11	Total	\$15,549,804	100.0%

Table 3-32 shows the allocation of FY 2020 O&M expenses by functional category to each cost causation component. The percentage allocation of each functional category (Lines 1-10) to the various cost causation components (Columns C-L) was determined in Table 3-30. Total O&M expenses associated with each functional category (Column M) was determined in Table 3-31. The total dollar amount allocated to each cost causation component (Line 11) is determined by multiplying the total expense associated with each functional category by the corresponding percentage allocation and summing across all functional categories.

For example, 100 percent (Column C, Line 1) of Customer costs (Column M, Line 1) are allocated to the Customer cost causation factor total (Column C, Line 13). The same calculation is performed for the remaining functional categories (i.e., Column C \times Column M in Lines 2-10). The subtotals of Column C \times Column M in Lines 1-10 are summed to determine the total dollar amount allocated to the Customer cost causation factor (Column C, Line 11). The same calculations are repeated for the remaining cost causation components (Columns D-L) to determine the allocation of O&M expenses to each cost causation component (Line 11). The total operating revenue requirement (Column M, Line 11) equals the operating revenue requirement from Table 3-28, Column C, Line 16. The O&M allocation percentages (Line 13) represent the proportion of total O&M expenses allocated to each cost causation component (Line 11).

Table 3-32: Allocation of Water Enterprise O&M Expenses to Cost Causation Components

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]
Line	Functional Category	Customer	Meter	Field Services	Fire Protection	Water Supply	Base Delivery	Max Day	Max Hour	Conser- vation	General	FY 2020 O&M Expenses
1	Customer	100.0%										\$1,368,576
2	Meters		100.0%									\$0
3	Field Services/ Distribution			100.0%								\$3,510,242
4	Water Supply					100.0%						\$1,504,054
5	Storage						68.3%	31.7%				\$0
6	Treatment						68.3%	31.7%				\$32,225
7	Transmission						51.2%	23.8%	25.0%			\$18,738
8	Conservation									100.0%		\$88,813
9	Engineering	0.0%	0.1%	0.0%	0.0%	8.3%	54.9%	25.5%	2.7%	0.0%	8.5%	\$5,585,138
10	General/Admin										100.0%	\$3,442,019
11	Total	\$1,368,576	\$5,814	\$3,510,242	\$0	\$1,969,296	\$3,097,484	\$1,439,307	\$153,050	\$88,813	\$3,917,222	\$15,549,804
12												
13	<i>O&M Allocation</i>	<i>8.8%</i>	<i>0.0%</i>	<i>22.6%</i>	<i>0.0%</i>	<i>12.7%</i>	<i>19.9%</i>	<i>9.3%</i>	<i>1.0%</i>	<i>0.6%</i>	<i>25.2%</i>	<i>100.0%</i>

3.4.6.WATER ENTERPRISE CAPITAL ALLOCATION

Capital assets are utilized in COS analyses to allocate the capital revenue requirement to the various cost causation components. The distribution of short-term CIP project costs can be heavily weighted to specific cost causation components based on the type of projects. Use of short-term plans to allocate capital costs may cause rates to fluctuate and result in customer confusion. The overall water asset base however is considerably stable in the long-term; therefore, it is more representative of long-term capital investment in the City's water system. Thus, functionalized capital assets are used to allocate capital costs.

City staff provided Raftelis with a detailed Water Enterprise asset listing that included the original cost less depreciation (OCLD) value of each individual asset. As part of the capital asset analysis, Raftelis assigned each individual asset to a functional category. Total water asset value (OCLD) by functional category is shown in Table 3-33.

Table 3-33: Summary of Water Enterprise Capital Assets by Functional Category

[A]	[B]	[C]	[D]
Line	Functional Category	Asset Value (OCLD)	Percent of Total
1	Customer	\$0	0.0%
2	Meters	\$39,921	0.1%
3	Field Services/Distribution	\$0	0.0%
4	Supply	\$3,194,337	8.3%
5	Storage	\$617,846	1.6%
6	Treatment	\$27,165,201	70.8%
7	Transmission	\$4,067,324	10.6%
8	Conservation	\$0	0.0%
9	General/Admin	\$3,262,728	8.5%
10	Total Asset Value (OCLD)	\$38,347,357	100.0%

Table 3-34 shows the allocation of capital assets by functional category to each cost causation component. The percentage allocation of each functional category (Lines 1-9) to the various cost causation components (Columns C-L) was determined in Table 3-30. Total asset value associated with each functional category (Column M) was determined in Table 3-33. The total dollar amount allocated to each cost causation component (Line 10) is determined by multiplying the total asset value associated with each functional category by the corresponding percentage allocation and summing across all functional categories. This is consistent with the methodology used to determine the allocation of O&M expenses to cost causation components in Table 3-32 (described in detail in Section 3.4.5). The final capital allocation percentages (Line 12) represent the proportion of total capital assets allocated to each cost causation component (Line 10).

The capital allocation percentages (Line 12) are used to allocate the total capital revenue requirement. The total capital revenue requirement (Column M, Line 14) equals the capital revenue requirement from Table 3-28, Column D, Line 16. This total is allocated to each cost causation component (Columns C-L, Line 14) based on the final capital allocation percentages (Columns C-L, Line 12).

Table 3-34: Allocation of Functionalized Water Capital Assets to Cost Causation Components

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]	[L]	[M]
Line	Functional Category	Customer	Meter	Field Services	Fire Protection	Water Supply	Base Delivery	Max Day	Max Hour	Conser- vation	General	Asset Value (OCLD)
1	Customer	100.0%										\$0
2	Meters		100.0%									\$39,921
3	Field Services/ Distribution			100.0%								\$0
4	Water Supply					100.0%						\$3,194,337
5	Storage						68.3%	31.7%				\$617,846
6	Treatment						68.3%	31.7%				\$27,165,201
7	Transmission						51.2%	23.8%	25.0%			\$4,067,324
8	Conservation									100.0%		\$0
9	General/Admin										100.0%	\$3,262,728
10	Total	\$0	\$39,921	\$0	\$0	\$3,194,337	\$21,050,314	\$9,781,440	\$1,018,616	\$0	\$3,262,728	\$38,347,357
11												
12	Capital Allocation	0.0%	0.1%	0.0%	0.0%	8.3%	54.9%	25.5%	2.7%	0.0%	8.5%	100.0%
13												
14	Capital Revenue Requirement	\$0	\$5,735	\$0	\$0	\$458,886	\$3,024,009	\$1,405,165	\$146,331	\$0	\$468,711	\$5,508,836

3.4.7.PRELIMINARY WATER COST OF SERVICE ALLOCATION

Table 3-35 shows the preliminary allocation of the total FY 2020 water rate revenue requirement to the various cost causation components. The preliminary COS allocations (Column G) are subject to further adjustments based on additional reallocations developed in the following subsections. The results shown in Table 3-35 are calculated as follows based on intermediate results developed in the preceding subsections:

1. **Operating Revenue Requirement** (Column C): The total operating revenue requirement consists solely of the Water Enterprise's O&M expenses. The allocation of the total operating revenue requirement to each cost causation component was previously determined in Table 3-32, Columns C-L, Line 11.
2. **Capital Revenue Requirement** (Column D): The total capital revenue requirement consists of debt service, pay-as-you-go CIP, and reserve funding. The allocation of the total capital revenue requirement to each cost causation component was previously determined in Table 3-34, Columns C-L, Line 14).
3. **Revenue Offsets** (Column E): Revenue offsets (from Table 3-28, Column E, Line 16) are allocated fully to the Revenue Offsets cost causation component (Column E, Line 11), with the exception of \$11,852 in revenue offsets from water use reduction fees which are allocated to the Conservation cost causation component (Column E, Line 9). Note that the Revenue Offsets cost causation component was not included within the operation or capital revenue requirement allocation, as it pertains exclusively to miscellaneous revenues used to offset the total revenue required from rates.
4. **Reallocation of General Costs** (Column F): The total General cost allocation equals the operating revenue requirement (Column C, Line 10) and capital revenue requirement (Column D, Line 10) allocated to the General cost causation component. The total General revenue requirement (Column F, Line 10) is fully reallocated to all other cost causation components on a pro rata basis⁸ (Column F, Lines 1-9) excluding the Revenue Offsets cost causation component (to which General costs do not pertain). Note that the reallocation results in a shifting of costs between cost causation components but does not change the total rate revenue requirement.
5. **Preliminary Cost of Service Allocation** (Column G): The preliminary COS allocation to each cost causation component (Column G, Lines 1-11) equals the sum of Columns C-F. Note that the total COS allocation (Column G, Line 12) equals the total FY 2020 rate revenue requirement (from Table 3-28, Column F, Line 16).

⁸ The operating (Column C) and capital (Column D) revenue requirements are summed for each cost causation component shown in Lines 1-9. The percentage of the sum falling within each cost causation component (Lines 1-9) is multiplied by total reallocated General costs (Column F, Line 10) to determine the share of General costs reallocated to each cost causation component (Column F, Lines 1-9).

Table 3-35: Preliminary Water Cost of Service Allocation (FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Line	Cost Causation Component	Operating Revenue Requirement	Capital Revenue Requirement	Revenue Offsets	Reallocation of General Costs	Preliminary COS Allocation
1	Customer	\$1,368,576	\$0	\$0	\$360,275	\$1,728,851
2	Meter	\$5,814	\$5,735	\$0	\$3,040	\$14,589
3	Field Services	\$3,510,242	\$0	\$0	\$924,063	\$4,434,306
4	Fire Protection	\$0	\$0	\$0	\$0	\$0
5	Water Supply	\$1,969,296	\$458,886	\$0	\$639,214	\$3,067,396
6	Base Delivery	\$3,097,484	\$3,024,009	\$0	\$1,611,469	\$7,732,962
7	Max Day	\$1,439,307	\$1,405,165	\$0	\$748,801	\$3,593,272
8	Max Hour	\$153,050	\$146,331	\$0	\$78,811	\$378,192
9	Conservation	\$88,813	\$0	(\$11,852)	\$20,260	\$97,221
10	General	\$3,917,222	\$468,711	\$0	(\$4,385,933)	\$0
11	Revenue Offsets	N/A	N/A	(\$1,404,367)	N/A	(\$1,404,367)
12	Total	\$15,549,804	\$5,508,836	(\$1,416,218)	\$0	\$19,642,422

3.4.8.ALLOCATION OF FIRE PROTECTION COSTS

Water systems provide two types of fire protection: public fire protection from fire hydrants for firefighting and fire protection from fire lines for private structures with sprinkler systems for fire suppression. Raftelis performed a fire demand analysis to determine the share of fire protection costs allocated to fire hydrants (public fire) versus private fire lines (private fire).

Table 3-36 shows the calculation of equivalent fire demand associated with fire hydrants and private fire lines. City staff provided Raftelis with a count of fire hydrants connected to its water system. The number of private fire lines in FY 2020 was previously shown in Table 3-8 and Table 3-9. Each connection size has a fire flow demand factor similar to the hydraulic capacity factor of a water meter. The diameter of the connection (in inches) is raised to the power of 2.63 to determine the fire demand factor (Column C).⁹ The fire demand factor (Column C) is multiplied by the number of connections by size (Column D) to calculate equivalent fire demand (Column E). Total equivalent fire demand is shown for fire hydrants and private fire lines in Lines 3 and 11 respectively.

⁹ Per the Hazen-Williams equation and AWWA *Manual M1*.

Table 3-36: Equivalent Fire Demand

[A] Line	[B] Connection Size	[C] Fire Demand Factor	[D] Unit Count	[E] Equivalent Fire Demand
1	Public Fire Hydrants			
2	6-inch	111.31	1,263	140,586
3	Subtotal		1,263	140,586
4				
5	Private Fire Lines			
6	2" and smaller	6.19	41	254
7	4"	38.32	122	4,675
8	6"	111.31	137	15,250
9	8"	237.21	76	18,028
10	10"	426.58	6	2,559
11	Subtotal		382	40,766
12				
13	Total		1,645	181,351

Table 3-37 shows the number of equivalent fire demand units associated with fire hydrants and private fire lines (from Table 3-36). The proportional share of equivalent fire demand (Column D) provides the basis for which fire protection costs are allocated in subsequent steps of the COS analysis.

Table 3-37: Fire Protection Allocation Basis

[A] Line	[B] Connection Size	[C] Equivalent Fire Demand	[D] % of Equivalent Fire Demand
1	Public Fire Hydrants	140,586	77.5%
2	Private Fire Lines	40,766	22.5%
3	Total	181,351	100.0%

3.4.9. PEAKING UNITS OF SERVICE

Peaking units of service are developed to calculate unit peaking costs (Max Day and Max Hour) for select customer classes and provide a basis to reallocate peaking costs associated with fire protection in subsequent steps of the COS analysis. Fire hydrants and private fire lines contribute to system capacity-related costs (i.e., peaking costs); therefore, they are reallocated a portion of Max Day and Max Hour costs.

Table 3-38 shows the calculation of peaking units of service for non-fire related water service. Peaking units are used to attribute peaking costs to specific customer classes based on actual water use patterns. Raftelis estimates Max Day (Column E) and Max Hour (Column H) factors based on actual FY 2019 water use and system-wide peaking factors (from Table 3-29). Actual FY 2020 water use in Column C (from Table 3-10)¹⁰ is divided by 365 days to determine average daily water use (Column D). Average daily use in Column D is then multiplied by the Max Day factor (Column E) to determine Max Day demand (Column F). Max Day requirements (Column G) are determined by subtracting average daily water use (Column D) from Max Day demand (Column F). Max Hour requirements (Column J) are similarly calculated. Max Hour demand (Column I) equals average daily water use

¹⁰ Note residential water use differs from the values shown in Table 3-10. The values shown account for proposed rate structure changes discussed in further detail in Section 3.5.1 (see Table 3-46).

(Column D) multiplied by the Max Hour factor (Column H). Max Hour requirements (Column J) equal Max Hour demand (Column I) less Max Day demand (Column F).

Note that the industrial customer class is excluded from Table 3-38. Based on Raftelis' analysis of industrial water use patterns in FY 2019, the City's industrial customers do not tend to use more water than average during system-wide peak water use in the summer. This indicates that industrial customers do not contribute to system-wide peaking during periods of maximum system-wide water use. Therefore, Raftelis recommends that no peaking costs are allocated to industrial customers.

Table 3-38: Peaking Units by Customer Class

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Line	Customer Class	FY 2020 Water Use (CCF)	Average Daily Water Use (CCF)	Max Day Factor	Max Day Demand (CCF/Day)	Max Day Requirements (CCF/Day)	Max Hour Factor	Max Hour Demand (CCF/Day)	Max Hour Requirements (CCF/Day)
1	Residential Tier 1	1,126,771	3,085	1.12	3,441	356	1.49	4,590	1,150
2	Residential Tier 2	409,721	1,122	1.63	1,824	702	2.17	2,434	609
3	Residential Tier 3	243,084	666	2.43	1,618	953	3.24	2,159	541
4	Non-Residential	399,240	1,093	1.39	1,517	424	1.85	2,024	507
5	Irrigation	153,829	421	2.24	941	520	2.98	1,256	315
6	Total	2,553,962	6,992		9,948	2,955		13,069	3,121

Table 3-39 shows the methodology¹¹ used to calculate peaking units of service associated with fire protection based on assumptions regarding the duration and water flow rate in gallons per minute (gpm) associated with a fire in the City's water service area:

$$\text{Max Day Requirements (CCF/day)} = \text{Duration of Fire (hrs)} \times \text{Water Use Rate (gpm)} \times 60 \text{ mins/hr} \div 748.05 \text{ gallons/CCF}$$

$$\text{Max Hour Requirements (CCF/day)} = [\text{Water Use Rate (gpm)} \times 60 \text{ mins/hr} \times 24 \text{ hrs/day} \div 748.05 \text{ gallons/CCF}] - \text{Max Day Requirements (CCF/day)}$$

Table 3-39: Peaking Units for Fire Protection

[A]	[B]	[C]
Line	Description	Value
1	Duration of Fire (Hours)	4.0
2	Water Use Rate (gallons per minute)	4,000
3	Max Day Requirements (CCF/Day)	1,283
4	Max Hour Requirements (CCF/Day)	6,417

Table 3-40 shows the distribution of fire protection-related Max Day and Max Hour requirements (from Table 3-39) to public hydrants versus private fire lines based on proportional equivalent fire demand (from Table 3-37).

¹¹ Per the AWWA Manual M1.

Table 3-40: Allocation of Peaking Units to Public and Private Fire Protection

[A]	[B]	[C]
Line	Description	Value
1	Max Day Requirements (CCF/Day)	1,283
2	<i>Allocation to Public Fire Protection (77.5%)</i>	995
3	<i>Allocation to Private Fire Protection (22.5%)</i>	288
4		
5	Max Hour Requirements (CCF/Day)	6,417
6	<i>Allocation to Public Fire Protection (77.5%)</i>	4,974
7	<i>Allocation to Private Fire Protection (22.5%)</i>	1,442

Peaking units of service (from Table 3-38 and Table 3-40) are summarized below in Table 3-41. The percentage of Max Day and Max Hour Requirements attributed to each customer class is shown in Columns D and F, respectively.

Table 3-41: Summary of Total Peaking Units

[A]	[B]	[C]	[D]	[E]	[F]
Line	Customer Class	Max Day Requirements (HCF/Day)	% of Max Day Requirements	Max Hour Requirements (HCF/Day)	% of Max Hour Requirements
1	Residential Tier 1	356	8.4%	1,150	12.1%
2	Residential Tier 2	702	16.6%	609	6.4%
3	Residential Tier 3	953	22.5%	541	5.7%
4	Non-Residential	424	10.0%	507	5.3%
5	Irrigation	520	12.3%	315	3.3%
6	Public Fire	995	23.5%	4,974	52.2%
7	Private Fire	288	6.8%	1,442	15.1%
8	Total	4,239	100.0%	9,538	100.0%

3.4.10.ADJUSTED WATER COST OF SERVICE

Table 3-42 shows the adjusted allocation of the water rate revenue requirement to the various cost causation components. The adjusted COS allocations (Column F) incorporates adjustments to the preliminary COS allocations developed in Section 3.4.7 and provides the underlying basis for FY 2020 rate calculations shown subsequently in Section 3.5. The results shown in Table 3-42 are calculated as follows based on intermediate results developed in the preceding subsections:

1. **Preliminary Cost of Service Allocation** (Column C): The preliminary COS allocations were previously developed in Section 3.4.7. (see Table 3-35, Column G, Lines 1-12). The General cost causation component is excluded because all General costs were previously reallocated to other cost causation components.
2. **Reallocation of Public Fire Protection Costs** (Column D): Fire protection costs associated with public fire hydrants are reallocated to the Meters cost causation component to recover these extra-capacity costs from all metered connections. Preliminary Max Day (Column C, Line 7) and Max Hour costs (Column C, Line 8) associated with fire hydrants are reallocated from Max Day (Column D, Line 7) and Max Hour (Column D, Line 8) to Meters (Column D, Line 2) based on the percentage of peaking units associated with public fire protection (Table 3-41, Column D and F, Line 6). Note that the reallocation results in a

shifting of costs between cost causation components but does not change the total rate revenue requirement.

3. **Reallocation of Private Fire Protection Costs** (Column E): Preliminary peaking costs (Column C, Lines 7-8) associated with private fire protection are reallocated from Max Day (Column E, Line 7) and Max Hour (Column E, Line 8) to Fire Protection (Column E, Line 4) based on the percentage of peaking units associated with private fire lines (Table 3-41, Column D and F, Line 7). Note that the reallocation results in a shifting of costs between cost causation components but does not change the total rate revenue requirement.
4. **Adjusted Cost of Service Allocation** (Column F): The final COS allocation (Column F) equals the sum of Columns C to E. This represents the final adjusted allocation of the total water revenue requirement (from Table 3-28, Column F, Line 16) to the various cost causation components.

Table 3-42: Adjusted Water Cost of Service Allocation (FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]
Line	Cost Causation Component	Preliminary COS Allocation	Reallocation of Public Fire Protection Costs	Reallocation of Private Fire Protection Costs	Adjusted COS Allocation
1	Customer	\$1,728,851			\$1,728,851
2	Meter	\$14,589	\$1,040,629		\$1,055,218
3	Field Services	\$4,434,306			\$4,434,306
4	Fire Protection	\$0		\$301,750	\$301,750
5	Water Supply	\$3,067,396			\$3,067,396
6	Base Delivery	\$7,732,962			\$7,732,962
7	Max Day	\$3,593,272	(\$843,390)	(\$244,557)	\$2,505,324
8	Max Hour	\$378,192	(\$197,238)	(\$57,193)	\$123,760
9	Conservation	\$97,221			\$97,221
10	Revenue Offsets	(\$1,404,367)			(\$1,404,367)
11	Total	\$19,642,422	\$0	\$0	\$19,642,422

3.4.11.WATER COST ALLOCATION TO CUSTOMER CLASSES

The final cost of service allocation determines how much revenue must be generated from water rates. Each cost causation component is allocated for recovery by Meter Size Availability Fees, Fire Service Availability Fees, or Water Consumption Charges (see Table 3-43). The basis for specific exclusions is described in further detail in Section 3.5.

Table 3-43: Recovery of Water Cost Causation Components by Charge Type

[A]	[B]	[C]
Line	Cost Causation Component	Associated Charge
1	Customer	Meter Size Availability Fee; Fire Service Availability Fee
2	Meter	Meter Size Availability Fee; Fire Service Availability Fee
3	Field Services	Meter Size Availability Fee
4	Fire Protection	Fire Service Availability Fee
5	Water Supply	Water Consumption Charges
6	Base Delivery	Water Consumption Charges
7	Max Day	Water Consumption Charges
8	Max Hour	Water Consumption Charges
9	Conservation	Water Consumption Charges
10	Revenue Offsets	Water Consumption Charges

Table 3-44 shows projected FY 2020 rate revenues by charge based on current rates (Current COS) and the updated COS analysis presented in this section (Proposed COS). All proposed COS projections for FY 2020 are for illustrative purposes to demonstrate the distributional impacts of the updated COS allocations on each customer class. However, no changes to current rates will be implemented prior to FY 2022. Note that the results shown are based on detailed calculations that are dependent on rate design considerations addressed subsequently in Section 3.5.

Table 3-44: Cost to Serve by Water Customer Class

[A]	[B]	[C]	[D]	[E]	[F]
Line	Charge/Customer Class	Current COS FY 2020 (\$)	Proposed COS FY 2020 (\$)	Current COS FY 2020 (%)	Proposed COS FY 2020 (%)
1	Meter Size Availability Fees	\$7,575,979	\$7,156,415	38.6%	36.4%
2	Fire Size Availability Fees	\$253,751	\$363,710	1.3%	1.9%
3	Residential Water Consumption Charges	\$8,010,304	\$8,410,892	40.8%	42.8%
4	Non-Residential Water Consumption Charges	\$1,928,327	\$1,863,449	9.8%	9.5%
5	Industrial Water Consumption Charges	\$838,793	\$822,649	4.3%	4.2%
6	Irrigation Water Consumption Charges	\$1,035,268	\$1,025,308	5.3%	5.2%
7	Total	\$19,642,422	\$19,642,422	100.0%	100.0%

3.5. Proposed Water Rates

Section 3.5 shows detailed calculations of proposed water rates through FY 2026. All proposed rates are first calculated directly from the results of the COS analysis (in Section 3.4) for FY 2020 (i.e., the “test year”). Note that proposed rates will not be implemented until FY 2022. Therefore, all FY 2020 “COS” rates and charges shown represent intermediate results of the rate design process that will not be implemented. However, FY 2020 “COS” rates and charges must be calculated to provide a basis for proposed rates for FY 2022 through FY 2026 (shown in Section 3.5.5).

3.5.1.PROPOSED WATER RATE STRUCTURE MODIFICATIONS

Raftelis worked closely with City staff to evaluate potential changes to the existing water rate structure. All proposed water rates presented in subsequent sections incorporate the following recommended revisions to the existing water rate structure.

1. **Eliminate Additional Unit Charges for Meter Size Availability Fees:** The City's current schedule of Meter Size Availability Fees includes an Additional Unit Charge per additional dwelling unit for multi-family residential customers. Raftelis recommends that the City eliminate the Additional Unit Charge to simplify its water rate structure and improve customer equity.
2. **Differentiate Meter Size Availability Fees based on AWWA meter capacity:** The current schedule of Meter Size Availability Fees is differentiated by meter size based on meter capacity ratios provided by City staff during the previous water rate study in 2015. Meter capacity refers to the maximum amount of safe operating flow through a water meter in gallons per minute (gpm). Raftelis recommends that proposed Meter Size Availability Fees are differentiated based on meter capacity values from AWWA's *Manual M1*. Although this will result in distributional impacts to customers with different water meter sizes, this proposed change will better align the City's rate structure with current rate-setting norms in California.
3. **Implement a single schedule of Fire Service Availability Fees for Inside City and Outside City Customers:** The City's current schedule of Fire Service Availability Fees includes separate charges for Inside City and Outside City customers. Raftelis recommends that the City consolidate its Fire Service Availability Fee rate structure so that Inside City and Outside City customers are subject to the same schedule of charges. This proposed change will simplify the City's water rate structure.
4. **Update Residential Tier Allotments:** Raftelis recommends that the City update its current residential monthly tier allotments to account for changes in the City's water supply conditions and customer water use patterns since the last water rate study was conducted in 2015. The current tier definitions are based on previous estimates of Chromium 6 treatment needs. Raftelis recommends that the City simplify the basis for monthly tier allotments so that Tier 1 provides for average indoor water use, Tier 2 provides for average outdoor water use, and Tier 3 includes all additional water use. The proposed basis for residential tier allotments will improve customer understanding and increase the amount of water charged at Tier 1 and Tier 2 rates. The current and proposed residential monthly tier allotments and the underlying basis for each is described in detail in Table 3-45.

Table 3-45: Proposed Changes to Residential Tier Allotments

Residential Tier	Current Monthly Allotment	Current Basis	Proposed Monthly Allotment	Proposed Basis
Tier 1	0-5 HCF	Based on the quantity of water not requiring Chromium 6 treatment	0-6 HCF	Average indoor water use (based on residential average monthly water during lowest use winter month in FY 2019)
Tier 2	6-10 HCF	All remaining efficient indoor water needs (based on 55 gallons per capita per day for a family of four)	7-12 HCF	Average peak summer outdoor water use (based on residential average monthly water use during highest use summer month in FY 2019)
Tier 3	>10 HCF	All use in excess of Tier 2	>12 HCF	All use in excess of Tier 2

Error! Reference source not found. shows estimated residential water use by tier under the current and proposed residential tier allotments. All projections are based on detailed account-level analysis of FY 2019 residential water use. Raftelis projects that approximately 63 percent of all residential water use will fall within Tier 1 under the proposed tier allotments.

Table 3-46: Projected FY 2020 Residential Water Use by Tier – Current versus Proposed

Residential Tier	Current Water Use by Tier (HCF)	Proposed Water Use by Tier (HCF)	Current Water Use by Tier (%)	Proposed Water Use by Tier (%)
Tier 1	955,478	1,126,771	53.7%	63.3%
Tier 2	446,393	409,721	25.1%	23.0%
Tier 3	377,705	243,084	21.2%	13.7%
Total	1,779,576	1,779,576	100.0%	100.0%

3.5.2.METER SIZE AVAILABILITY FEES (TEST YEAR FY 2020)

Table 3-47 shows the calculation of equivalent meter units (EMUs), which is necessary to differentiate proposed Meter Size Availability Fees by meter size. Meter capacity ratios (Column D) are first calculated by dividing AWWA meter capacity (Column C) by 20 gallons per minute (gpm). Meter capacity ratios (Column D) are multiplied by the number of water meters at each meter size in Column E (from Table 3-6 and Table 3-7) to determine EMUs (Column F). EMUs represent the potential demand on the water system relative to a base meter size of 5/8-inch.

Although the AWWA's *Manual M1* rates 3/4-inch meters at 30 gpm, Raftelis is applying the 5/8-inch meter capacity value of 20 gpm to 3/4-meters. This is because the City's 3/4-inch meters are generally older residential water meters that were installed before the City used 5/8-inch meters. Because customers with 3/4-inch water meters could theoretically be served by 5/8-inch meters based on current water use patterns, Raftelis recommends that Meter Size Availability Fees for 5/8-inch and 3/4-inch water meters remain undifferentiated. Additionally, all private fire lines have a dedicated water meter, which can vary in size between customers. Therefore, Raftelis applied the 5/8-inch meter capacity of 20 gpm to all private fire lines (from Table 3-8 and Table 3-9), which tend to have smaller meters.

Table 3-47: Units of Service for Meter Size Availability Fees (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]
Line	Meter Size	Meter Capacity (gallons per minute)	Meter Capacity Ratio	Number of Meters	Number of EMUs
1	Water Meters (Inside City)				
2	5/8"	20	1.00	8,075	8,075
3	3/4"	20	1.00	531	531
4	1"	50	2.50	1,689	4,223
5	1.5"	100	5.00	239	1,195
6	2"	160	8.00	254	2,032
7	3"	320	16.00	35	560
8	4"	500	25.00	27	675
9	6"	1,000	50.00	6	300
10	8"	1,600	80.00	1	80
11	Subtotal			10,857	17,671
12					
13	Water Meters (Outside City)				
14	5/8"	20	1.00	2,657	2,657
15	3/4"	20	1.00	206	206
16	1"	50	2.50	562	1,405
17	1.5"	100	5.00	43	215
18	2"	160	8.00	51	408
19	3"	320	16.00	11	176
20	4"	500	25.00	7	175
21	6"	1,000	50.00	1	50
22	8"	1,600	80.00	0	0
23	Subtotal			3,538	5,292
24					
25	Private Fire Lines				
26	Inside City	20	1.00	341	341
11	Outside City	20	1.00	41	41
12	Subtotal			382	382
13					
14	Total			14,777	23,345

Meter Size Availability Fees are designed to recover costs associated with the Customer, Meter, and Field Services cost causation components. Raftelis recommends that the City continue to differentiate Meter Size Availability Fees between Inside City and Outside City customers based on the Field Service cost causation component. The Field Services cost causation component primarily includes distribution-related costs for which Outside City customers are disproportionately responsible due to greater distances associated with water delivery. To equitably allocate Field Services costs between Inside City and Outside City customers, Raftelis first calculated the percentage of water distribution mains inside versus outside city limits (see Table 3-48). The total Field Services cost causation component was then allocated to Inside City and Outside City customers based on the proportional share of distribution mains.

Table 3-48: Allocation of Field Services to Inside City and Outside City Water Meters

Description	Inside City	Outside City	Total
Miles of Distribution Mains	123.1	49.1	172.2
% of Distribution Mains	71.5%	28.5%	100.0%
Field Services COS Allocation	\$3,169,569	\$1,264,737	\$4,434,306

Table 3-49 shows the calculation of unit charges for the Customer, Meter, and Field Services cost causation components as follows:

$$\text{Unit Charge} = \text{COS Allocation} \div \text{Units of Service} \div 12 \text{ Monthly Billing Periods}$$

Customer costs do not vary based on meter size. Therefore, Customer units of service are equal to total number of water meters (including private fire lines) in FY 2020 (from Table 3-47). Meter and Field Services costs do vary based on meter size. Larger meters impose larger demand; are more expensive to install, maintain, and replace than smaller meters; and have greater capacity potential within the water system. Therefore, Meter and Field Services units of service are equal to total EMUs in FY 2020 (from Table 3-47). Note that different unit charges for the Field Services cost causation component are calculated for Inside City and Outside City customers. This provides a basis for differentiated Inside City and Outside City Meter Size Availability Fees.

Table 3-49: Meter Size Availability Fee Unit Charge Calculation (Test Year FY 2020)

Cost Causation Component	COS Allocation	Units of Service	Unit Charge
Customer	\$1,728,851	14,777 Meters	\$9.750 per Bill
Meter	\$1,055,218	23,345 EMUs	\$3.767 per EMU
Field Services (Inside City)	\$3,169,569	17,671 EMUs	\$14.948 per EMU
Field Services (Outside City)	\$1,264,737	5,292 EMUs	\$19.916 per EMU

Table 3-50 shows the detailed calculation of monthly Meter Size Availability Fees for the test year FY 2020 based on Customer, Meter, and Field Services unit charges. Customer costs do not vary by meter size. Therefore, the Customer unit charge (from Table 3-49) is applied uniformly to all Meter Size Availability Fees (Column D). Because Meter costs vary by meter size based on hydraulic capacity, AWWA capacity ratios in Column C (from Table 3-47, Columns D) are used to differentiate Meter unit charges by meter size. Meter charges (Column E) are calculated by multiplying the Meter unit charge (from Table 3-49) by the AWWA capacity ratio (Column C). Field Services charges also vary based on meter size; therefore, they are calculated using the same method as described above for Meter charges. FY 2020 COS Meter Size Availability Fees (Column G) equal the sum of Columns D-F, and are compared to current monthly charges in Columns H-J. Distributional impacts are primarily due to updating meter capacity values based on the AWWA's *Manual M1*.

Table 3-50: Meter Size Availability Fee Calculation (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Line	Meter Size	Meter Capacity Ratio	Customer	Meter	Field Services	COS Monthly Charge	Current Monthly Charge	Difference (\$)	Difference (%)
1	Inside City								
2	5/8"	1.00	\$9.750	\$3.767	\$14.948	\$28.47	\$33.54	(\$5.07)	-15.1%
3	3/4"	1.00	\$9.750	\$3.767	\$14.948	\$28.47	\$33.54	(\$5.07)	-15.1%
4	1"	2.50	\$9.750	\$9.417	\$37.369	\$56.54	\$47.12	\$9.42	20.0%
5	1.5"	5.00	\$9.750	\$18.834	\$74.738	\$103.33	\$81.00	\$22.33	27.6%
6	2"	8.00	\$9.750	\$30.135	\$119.580	\$159.47	\$121.64	\$37.83	31.1%
7	3"	16.00	\$9.750	\$60.269	\$239.161	\$309.18	\$230.00	\$79.18	34.4%
8	4"	25.00	\$9.750	\$94.171	\$373.689	\$477.61	\$351.96	\$125.65	35.7%
9	6"	50.00	\$9.750	\$188.342	\$747.378	\$945.47	\$567.20	\$378.27	66.7%
10	8"	80.00	\$9.750	\$301.347	\$1,195.804	\$1,506.91	\$1,275.07	\$231.84	18.2%
11									
12	Outside City								
13	5/8"	1.00	\$9.750	\$3.767	\$19.916	\$33.44	\$37.77	(\$4.33)	-11.5%
14	3/4"	1.00	\$9.750	\$3.767	\$19.916	\$33.44	\$37.77	(\$4.33)	-11.5%
15	1"	2.50	\$9.750	\$9.417	\$49.790	\$68.96	\$53.38	\$15.58	29.2%
16	1.5"	5.00	\$9.750	\$18.834	\$99.579	\$128.17	\$92.37	\$35.80	38.8%
17	2"	8.00	\$9.750	\$30.135	\$159.327	\$199.22	\$139.13	\$60.09	43.2%
18	3"	16.00	\$9.750	\$60.269	\$318.654	\$388.68	\$263.80	\$124.88	47.3%
19	4"	25.00	\$9.750	\$94.171	\$497.896	\$601.82	\$404.12	\$197.70	48.9%
21	6"	50.00	\$9.750	\$188.342	\$995.793	\$1,193.89	\$651.75	\$542.14	83.2%
22	8"	80.00	\$9.750	\$301.347	\$1,593.269	\$1,904.37	\$1,466.18	\$438.19	29.9%

3.5.3.FIRE SERVICE AVAILABILITY FEES (TEST YEAR FY 2020)

Fire Service Availability Fees are designed to recover costs associated with the Customer, Meter, and Fire Protection cost causation components. Customer and Meter unit charges were previously calculated in Table 3-49, but are shown again below in Table 3-51. The Fire Protection unit charge is calculated using the same method as previously described for Customer, Meter, and Field Services unit charges:

$$\text{Unit Charge} = \text{COS Allocation} \div \text{Units of Service} \div 12 \text{ Monthly Billing Periods}$$

Fire Protection units of service are equal to equivalent fire demand units associated with private fire lines (from Table 3-36). Fire Protection demand equivalents are used to allocate Fire Protection costs by connection size because larger connections are more expensive to install, maintain, and replace than smaller fire lines, and also have greater capacity potential on the water system.

Table 3-51: Fire Service Availability Fee Unit Charge Calculation (Test Year FY 2020)

Cost Causation Component	COS Allocation	Units of Service	Unit Charge
Customer	\$1,728,851	14,777 Meters	\$9.750 per Bill
Meter	\$1,055,218	23,345 EMUs	\$3.767 per EMU
Fire Protection	\$301,750	40,766 Equivalent Fire Demand Units	\$14.95 per Equivalent Fire Demand Unit

Table 3-52 shows the detailed calculation of monthly Fire Service Availability Fees for the test year FY 2020 based on Customer, Meter, and Fire Protection unit charges. All fire lines are subject to the same Customer and Meter unit charges (from Table 3-51), which are applied uniformly to all connection sizes (Column D-E). Because Fire Protection costs vary by connection size based on capacity, fire demand factors in Column C (from Table 3-36, Columns C) are used to differentiate Fire Protection unit charges by connection size. The Fire Protection charges (Column F) are calculated by multiplying the Fire Protection unit charge (from Table 3-51) by the fire demand factors (Column C). FY 2020 COS monthly Fire Service Availability Charges (Column G) equal the sum of Columns D-F and are compared to current monthly charges in Columns H-J. Note that COS charges for fire service are not differentiated for Inside City and Outside City customers unlike the current monthly fire service charges.

Table 3-52: Fire Service Availability Fee Calculation (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Line	Meter Size	Fire Demand Factor	Customer	Meter	Fire Protection	COS Monthly Charge	Current Monthly Charge	Difference (\$)	Difference (%)
1	Inside City								
2	2" and smaller	6.19	\$9.750	\$3.767	\$3.818	\$17.34	\$19.25	(\$1.91)	-9.9%
3	4"	38.32	\$9.750	\$3.767	\$23.637	\$37.16	\$53.33	(\$16.17)	-30.3%
4	6"	111.31	\$9.750	\$3.767	\$68.661	\$82.18	\$59.26	\$22.92	38.7%
5	8"	237.21	\$9.750	\$3.767	\$146.319	\$159.84	\$65.84	\$94.00	142.8%
6	10"	426.58	\$9.750	\$3.767	\$263.132	\$276.65	\$72.45	\$204.20	281.8%
7									
8	Outside City								
9	2" and smaller	6.19	\$9.750	\$3.767	\$3.818	\$17.34	\$23.29	(\$5.95)	-25.5%
10	4"	38.32	\$9.750	\$3.767	\$23.637	\$37.16	\$62.38	(\$25.22)	-40.4%
11	6"	111.31	\$9.750	\$3.767	\$68.661	\$82.18	\$68.46	\$13.72	20.0%
12	8"	237.21	\$9.750	\$3.767	\$146.319	\$159.84	\$75.08	\$84.76	112.9%
13	10"	426.58	\$9.750	\$3.767	\$263.132	\$276.65	\$81.66	\$194.99	238.8%

3.5.4.WATER VOLUME RATES (TEST YEAR FY 2021)

Water Consumption Charge rates are designed to recover the portion of the rate revenue requirement allocated to the following cost causation components: Water Supply, Base Delivery, Peaking (Max Day and Max Hour), Conservation, and Revenue Offsets. However, the costs associated with each cost causation component listed above are not uniformly applied to each customer class and tier. Customer classes and tiers are only subject to unit rates for each cost causation component if the service they receive contributes to the Water Enterprise incurring costs associated with that specific cost causation component. Table 3-53 shows the unit rate components (Columns C-G) applicable to each customer class/tier (Lines 1-6).

Table 3-53: Allocation of Unit Rates to Customer Classes

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Line	Customer Class/Tier	Water Supply	Base Delivery	Peaking	Conservation	Revenue Offset
1	Residential Tier 1	✓	✓	✓		✓
2	Residential Tier 2	✓	✓	✓		✓
3	Residential Tier 3	✓	✓	✓	✓	
4	Non-Residential	✓	✓	✓	✓	✓
5	Industrial	✓	✓		✓	✓
6	Irrigation	✓	✓	✓	✓	✓

Water Supply Unit Rate

Water Supply unit rates are applied uniformly to all customer classes and tiers because each unit of water used contributes equally to the City incurring Water Supply-related costs. Table 3-54 shows the calculation of Water Supply unit rates. The revenue requirement associated with the Water Supply cost causation component (from Table 3-42, Column F, Line 5) is divided by total water use (from Table 3-10) to determine the Water Supply unit rate.

Table 3-54: Water Supply Unit Rate (Test Year FY 2020)

Description	Water Supply
COS Allocation	\$3,067,396
Billing Units	2,553,962 CCF
Unit Rate	\$1.201 per CCF

Base Delivery Unit Rate

Base Delivery unit rates are applied uniformly to all customer classes and tiers as these are costs for providing water during average daily demand conditions. Table 3-55 shows the calculation of Base Delivery unit rates. The revenue requirement associated with the Base Delivery cost causation component (from Table 3-42, Column F, Line 6) is divided by total water use (from Table 3-10) to determine the Base Delivery unit rate.

Table 3-55: Base Delivery Unit Rate (Test Year FY 2020)

Description	Base Delivery
COS Allocation	\$7,732,962
Billing Units	2,553,962 CCF
Unit Rate	\$3.028 per CCF

Peaking Unit Rate

Peaking unit rates vary by customer class and tier based on peak water use characteristics. Before unit rates can be differentiated by customer class and tier, Table 3-56 shows the calculation of Max Day and Max Hour unit costs. The revenue requirement associated with the Max Day and Max Hour cost causation components (from Table 3-42, Column F, Lines 7-8) is divided by total Max Day and Max Hour requirements not associated with fire protection (from Table 3-41, Columns C and E, Lines 1-5) to determine the Max Day and Max Hour unit costs.

Table 3-56: Peaking Unit Costs (Test Year FY 2020)

Description	Max Day	Max Hour
COS Allocation	\$2,505,324	\$123,760
Billing Units	2,955 CCF/Day	3,121 CCF/Day
Unit Cost	\$847.749 per CCF/Day	\$39.652 per CCF/Day

Table 3-57 shows the development of Peaking unit rates for each customer class and tier. Total Max Day and Max Hour unit costs are allocated to each customer class and tier based on Max Day and Max Hour requirements, respectively. Max Day requirements in Column C (from Table 3-41, Column C) are multiplied by the Max Day unit cost (from Table 3-56) to determine allocated Max Day costs (Column D). Max Hour requirements in Column E (from Table 3-41, Column E) are multiplied by the Max Hour unit cost (from Table 3-56) to determine allocated Max Hour costs (Column F). Total allocated Peaking costs (Column G) equal the sum of allocated Max Day costs (Column D) and allocated Max Hour costs (Column F). The Peaking unit rate (Column I) is calculated by dividing total allocated peaking costs (Column G) by projected FY 2021 water use in Column H (from Table 3-46 for residential customers and Table 3-10 for all other customer classes). Industrial customers are not subject to a Peaking unit rate because they do not contribute to peaking during periods of system-wide maximum water use in the summer.

Table 3-57: Peaking Unit Rates (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]
Line	Customer Class/ Tier	Max Day Require- ments (CCF/Day)	Allocated Max Day Costs	Max Hour Require- ments (CCF/Day)	Allocated Max Hour Costs	Total Allocated Peaking Costs	FY 2020 Water Use (CCF)	Peaking Unit Rate (\$/CCF)
1	Residential Tier 1	356	\$301,723	1,150	\$45,585	\$347,308	1,126,771	\$0.308
2	Residential Tier 2	702	\$595,456	609	\$24,167	\$619,622	409,721	\$1.512
3	Residential Tier 3	953	\$807,743	541	\$21,440	\$829,182	243,084	\$3.411
4	Non-Residential	424	\$359,357	507	\$20,097	\$379,454	399,240	\$0.950
5	Industrial	0	\$0	0	\$0	\$0	221,317	\$0.000
6	Irrigation	520	\$441,046	315	\$12,472	\$453,518	153,829	\$2.948

Conservation Unit Rate

Conservation costs are allocated equally to all customer classes in proportion to water use. Residential Conservation unit rates are differentiated by tier, however. Table 3-58 shows the preliminary calculation of Conservation unit rates before differentiation by residential tier. The revenue requirement associated with the Conservation cost causation component (from Table 3-42, Column F, Line 9) is divided by total water use (from Table 3-10) to determine the uniform Conservation unit rate.

Table 3-58: Preliminary Conservation Unit Rate (Test Year FY 2020)

Description	Conservation
COS Allocation	\$97,221
Billing Units	2,553,962 CCF
Unit Rate	\$0.038 per CCF

Conservation costs are applied to all customer classes, but are differentiated by residential tier. This is necessary because conservation efforts are generally aimed at curtailing excessive water use represented by Tier 3 only. Tier 1 and Tier 2 represent efficient indoor and outdoor water use that conservation and efficiency efforts typically do not aim to address. Therefore, Raftelis recommends that no Conservation costs are allocated to Tier 1 or Tier 2. Table 3-59 shows the calculation of Conservation unit rates for the residential tiers. Because Conservation costs are allocated to all customer classes proportionally, the residential customer class must recover its fair share of Conservation costs based on total residential water use.

Total residential water use in Line 5 (from Table 3-46) is multiplied by the uniform Conservation unit rate in Line 7 (from Table 3-58) to determine the total Conservation revenue requirement for residential customers (Line 9). Tier 1 and Tier 2 water use (Lines 2-3) is subtracted from total residential water use (Line 5) to determine the adjusted units of service (Line 11) subject to the Conservation component. The adjusted unit rate (Line 13) equals the residential Conservation revenue requirement (Line 9) divided by the adjusted units of service (Line 11). This represents the Conservation unit rate to be applied to Tier 3 (Line 17). Tier 1 and tier 2 are excluded from Conservation cost recovery (Lines 15-16).

Table 3-59: Residential Conservation Unit Rates by Tier (Test Year FY 2020)

[A]	[B]	[C]	[D]
Line	Description	FY 2020	Notes
1	Residential Water Use (CCF)		
2	Tier 1	1,126,771	
3	Tier 2	409,721	
4	Tier 3	243,084	
5	Total Residential Water Use (CCF)	1,779,576	
6			
7	Conservation Unit Cost (per CCF)	\$0.038	
8			
9	Residential Conservation Revenue Requirement	\$67,743	= Line 5 × Line 7
10			
11	Adjusted Units of Service (CCF)	243,084	= Tier 3 Water Use only (Line 4)
12			
13	Adjusted Unit Rate (per CCF)	\$0.279	= Line 9 ÷ Line 11
14			
15	Tier 1 Conservation Unit Rate (per CCF)	\$0.000	
16	Tier 2 Conservation Unit Rate (per CCF)	\$0.000	
17	Tier 3 Conservation Unit Rate (per CCF)	\$0.279	= Line 13

Table 3-60 summarizes Conservation unit rates by customer class and tier based on Table 3-59 for residential customers and Table 3-58 for all other customer classes.

Table 3-60: Conservation Unit Rates by Customer Class and Tier (Test Year FY 2020)

Customer Class/Tier	Conservation Unit Rate (per CCF)
Residential Tier 1	\$0.000
Residential Tier 2	\$0.000
Residential Tier 3	\$0.279
Non-Residential	\$0.038
Industrial	\$0.038
Irrigation	\$0.038

Revenue Offset Unit Rate

Revenue Offsets are allocated equally to all customer classes in proportion to water use. Residential Revenue Offsets are differentiated by tier, however. Table 3-61 shows the preliminary calculation of the Revenue Offset unit rate before differentiation by residential tier. The revenue requirement associated with Revenue Offsets (from Table 3-42, Column F, Line 10) is divided by total water use (from Table 3-10) to determine the uniform Revenue Offset unit rate.

Table 3-61: Preliminary Revenue Offset Unit Rate (Test Year FY 2020)

Description	Revenue Offset
COS Allocation	(\$1,404,367)
Billing Units	2,553,962 CCF
Unit Rate	(\$0.550) per CCF

Revenue Offsets are applied to all customer classes but are differentiated by residential tier. Raftelis recommends that Revenue Offsets be applied only to Tier 1 and Tier 2 residential rates to provide for affordability for efficient water use and to incentivize efficiency and conservation. Table 3-62 shows the calculation of Revenue Offset unit rates for the residential tiers. Because Revenue Offsets are allocated to all customer classes proportionally, the residential customer class is apportioned Revenue Offsets based on total residential water use.

Total residential water use in Line 5 (from Table 3-46) is multiplied by the uniform Revenue Offset unit rate in Line 7 (from Table 3-61) to determine total Revenue Offsets allocated to residential customers (Line 9). Tier 3 water use (Lines 4) is subtracted from total residential water use (Line 5) to determine the adjusted units of service (Line 11) for residential Revenue Offsets. The adjusted unit rate (Line 13) equals the residential Revenue Offset revenue requirement (Line 9) divided by the adjusted units of service (Line 11). This represents the Revenue Offset unit rate to be applied to Tier 1 and Tier 2 (Lines 15-16). Tier 3 does not receive any Revenue Offset.

Table 3-62: Residential Conservation Unit Rates by Tier (Test Year FY 2020)

[A]	[B]	[C]	[D]
Line	Description	FY 2020	Notes
1	Residential Water Use (CCF)		
2	Tier 1	1,126,771	
3	Tier 2	409,721	
4	Tier 3	243,084	
5	Total Residential Water Use (CCF)	1,779,576	
6			
7	Revenue Offset Unit Cost (per CCF)	(\$0.550)	
8			
9	Residential Revenue Offset Revenue Requirement	(\$978,549)	= Line 5 × Line 7
10			
11	Adjusted Units of Service (CCF)	1,536,492	= Tier 1-2 Water Use only (Line 2-3)
12			
13	Adjusted Unit Rate (per CCF)	(\$0.637)	= Line 9 ÷ Line 11
14			
15	Tier 1 Revenue Offset Unit Rate (per CCF)	(\$0.637)	= Line 13
16	Tier 2 Revenue Offset Unit Rate (per CCF)	(\$0.637)	= Line 13
17	Tier 3 Revenue Offset Unit Rate (per CCF)	\$0.000	

Table 3-63 summarizes Revenue Offset unit rates by customer class and tier based on Table 3-62 for residential customers and Table 3-61 for all other customer classes.

Table 3-63: Revenue Offset Unit Rates by Customer Class and Tier (Test Year FY 2020)

Customer Class/Tier	Revenue Offset Unit Rate (per CCF)
Residential Tier 1	(\$0.637)
Residential Tier 2	(\$0.637)
Residential Tier 3	\$0.000
Non-Residential	(\$0.550)
Industrial	(\$0.550)
Irrigation	(\$0.550)

Water Consumption Charge Rate Calculation (Test Year FY 2020)

Table 3-64 shows the calculation of Water Consumption Charge rates for the test year FY 2020. Unit rates are applied to each customer class and in accordance with Table 3-53. The COS rate (Column H) is calculated by summing the following unit rates (Columns C-G):

- » Water Supply Unit Rates (from Table 3-54)
- » Base Delivery Unit Rates (from Table 3-55)
- » Peaking Unit Rates (from Table 3-57)
- » Conservation Unit Rates (from Table 3-60)
- » Revenue Offset Unit Rates (from Table 3-63)

Table 3-64: Proposed Water Consumption Charge Rate Calculation (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]	[K]
Line	Customer Class	Water Supply Unit Rate	Base Delivery Unit Rate	Peaking Unit Rate	Conservation Unit Rate	Revenue Offset Unit Rate	COS Rate (per CCF)	Current Rate (per CCF)	Difference (\$)	Difference (%)
1	Residential Tier 1	\$1.201	\$3.028	\$0.308	\$0.000	(\$0.637)	\$3.91	\$3.84	\$0.07	1.8%
2	Residential Tier 2	\$1.201	\$3.028	\$1.512	\$0.000	(\$0.637)	\$5.11	\$4.53	\$0.58	12.8%
3	Residential Tier 3	\$1.201	\$3.028	\$3.411	\$0.279	\$0.000	\$7.92	\$6.14	\$1.78	29.0%
4	Non-Residential	\$1.201	\$3.028	\$0.950	\$0.038	(\$0.550)	\$4.67	\$4.83	(\$0.16)	-3.3%
5	Industrial	\$1.201	\$3.028	\$0.000	\$0.038	(\$0.550)	\$3.72	\$3.79	(\$0.07)	-1.8%
6	Irrigation	\$1.201	\$3.028	\$2.948	\$0.038	(\$0.550)	\$6.67	\$6.73	(\$0.06)	-0.9%

3.5.5. PROPOSED FIVE-YEAR WATER RATE SCHEDULE

Table 3-65 to Table 3-67 show the proposed five-year schedule of water rates for FY 2022 to FY 2026. Proposed FY 2022 water rates were calculated by increasing FY 2020 COS Meter Size Availability Fees (from Table 3-50), Fire Service Availability Fees (from Table 3-52), and Water Consumptions Charge rates (from Table 3-64) by the proposed FY 2022 revenue adjustment of one percent (from Table 3-26). All proposed rates in subsequent years are then increased by one percent per year based on the schedule of proposed revenue adjustments (from Table 3-26). All proposed rates are rounded up to the nearest cent to ensure adequate revenue recovery. Current water rates (from Table 3-1 to Table 3-5) are also shown.

Table 3-65: Proposed Schedule of Meter Size Availability Fees

Monthly Meter Size Availability Fee	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Inside City Limits						
5/8"	\$33.54	\$28.76	\$29.05	\$29.34	\$29.63	\$29.93
3/4"	\$33.54	\$28.76	\$29.05	\$29.34	\$29.63	\$29.93
1"	\$47.12	\$57.11	\$57.68	\$58.26	\$58.84	\$59.43
1.5"	\$81.00	\$104.37	\$105.41	\$106.47	\$107.53	\$108.61
2"	\$121.64	\$161.07	\$162.68	\$164.31	\$165.95	\$167.61
3"	\$230.00	\$312.28	\$315.40	\$318.55	\$321.74	\$324.96
4"	\$351.96	\$482.39	\$487.21	\$492.09	\$497.01	\$501.98
6"	\$567.20	\$954.93	\$964.48	\$974.12	\$983.86	\$993.70
8"	\$1,275.07	\$1,521.98	\$1,537.20	\$1,552.58	\$1,568.10	\$1,583.78
Additional Unit Charge	\$5.43	N/A	N/A	N/A	N/A	N/A
Outside City Limits						
5/8"	\$37.77	\$33.78	\$34.12	\$34.46	\$34.80	\$35.15
3/4"	\$37.77	\$33.78	\$34.12	\$34.46	\$34.80	\$35.15
1"	\$53.38	\$69.65	\$70.35	\$71.05	\$71.77	\$72.48
1.5"	\$92.37	\$129.46	\$130.75	\$132.06	\$133.38	\$134.71
2"	\$139.13	\$201.22	\$203.23	\$205.26	\$207.31	\$209.39
3"	\$263.80	\$392.57	\$396.50	\$400.46	\$404.47	\$408.51
4"	\$404.12	\$607.84	\$613.92	\$620.06	\$626.26	\$632.52
6"	\$651.75	\$1,205.83	\$1,217.89	\$1,230.07	\$1,242.37	\$1,254.80
8"	\$1,466.18	\$1,923.42	\$1,942.65	\$1,962.08	\$1,981.70	\$2,001.52
Additional Unit Charge	\$5.43	N/A	N/A	N/A	N/A	N/A

Table 3-66: Proposed Schedule of Fire Service Availability Fees

Monthly Fire Service Availability Fee	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Inside City Limits						
2" and smaller	\$19.25	\$17.52	\$17.69	\$17.87	\$18.05	\$18.23
4"	\$53.33	\$37.54	\$37.91	\$38.29	\$38.67	\$39.06
6"	\$59.26	\$83.01	\$83.84	\$84.68	\$85.52	\$86.38
8"	\$65.84	\$161.44	\$163.06	\$164.69	\$166.34	\$168.00
10"	\$72.45	\$279.42	\$282.22	\$285.04	\$287.89	\$290.77
Outside City Limits						
2" and smaller	\$23.29	\$17.52	\$17.69	\$17.87	\$18.05	\$18.23
4"	\$62.38	\$37.54	\$37.91	\$38.29	\$38.67	\$39.06
6"	\$68.46	\$83.01	\$83.84	\$84.68	\$85.52	\$86.38
8"	\$75.08	\$161.44	\$163.06	\$164.69	\$166.34	\$168.00
10"	\$81.66	\$279.42	\$282.22	\$285.04	\$287.89	\$290.77

Table 3-67: Proposed Schedule of Water Consumption Charge Rates

Water Consumption Charge Rates (per CCF)	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Residential Tiered Rates						
Tier 1 (Current: 1-5 CCF / Proposed 1-6 CCF)	\$3.84	\$3.95	\$3.99	\$4.03	\$4.07	\$4.11
Tier 2 (Current: 6-10 CCF / Proposed 7-12 CCF)	\$4.53	\$5.17	\$5.22	\$5.27	\$5.32	\$5.38
Tier 3 (Current: >10 CCF / Proposed: >12 CCF)	\$6.14	\$8.00	\$8.08	\$8.16	\$8.25	\$8.33
Non-Residential Uniform Rates						
Non-Residential	\$4.83	\$4.72	\$4.77	\$4.82	\$4.86	\$4.91
Industrial	\$3.79	\$3.76	\$3.80	\$3.84	\$3.88	\$3.91
Irrigation	\$6.73	\$6.74	\$6.81	\$6.88	\$6.95	\$7.02

4. Wastewater Rate Study

Raftelis developed a wastewater rate model in Microsoft Excel to project financial calculations over the five-year rate-setting period through FY 2026 (i.e., the “study period”). The City’s fiscal year spans from July 1 through June 30. Projections in future years were generally made based on actual or estimated data from FY 2019 and FY 2020 and the revised budget for FY 2021 using the key assumptions outlined below. Assumptions were discussed with and reviewed by City staff to ensure that the City wastewater system’s unique characteristics are accurately addressed. Note that most table values shown throughout this report are rounded to the last digit shown and may not sum precisely to the totals shown.

4.1. Wastewater Enterprise Revenue Requirements

Section 4.1 includes estimates and projections of annual revenues, O&M expenses, debt service payments, capital expenditures, and reserve funding targets through FY 2026 for the Wastewater Enterprise (Fund 710). These projections are necessary to determine annual wastewater rate revenues required over the study period to achieve sufficient cash flow, maintain adequate reserves, and meet debt coverage requirements.

4.1.1. REVENUE FROM CURRENT WASTEWATER RATES

Current Wastewater Rates

The City’s current wastewater rates have been in effect since July 2019 and are shown below in Table 4-1. Wastewater customers are billed monthly. The City’s wastewater rate structure varies by customer class. Residential customers are subject to a fixed charge per dwelling unit. Commercial customers are subject to a fixed charge plus a variable charge per CCF of water use. Commercial customers classified as eating/ food preparation establishments and bakeries are subject to a higher variable charge rate due the relatively higher wastewater strength¹² of these establishments. Industrial customers pay three different charges: per million gallons of wastewater flows, per 1,000 pounds of biological oxygen demand (BOD), and per 1,000 pounds of suspended solids (SS) based on actual measurement of each industrial customer’s wastewater discharge.

¹² Wastewater strength refers to the concentration of organic and particulate matter in wastewater.

Table 4-1: Current Wastewater Rates

Current Wastewater Rates	Effective July 2019
Residential Fixed Charge	
Single & Multiple Family Residential Monthly Charge (per dwelling unit)	\$42.84
Commercial Fixed Charge	
Minimum Monthly Fee for Commercial Accounts	\$23.63
Commercial Charges per Unit of Water Consumed (CCF)	
High-Strength: Eating and food preparation establishments; bakeries	\$5.50
Low-Strength: Laundries; other commercial	\$3.17
Industrial Charges	
Flow (per million gallons)	\$2,225.48
Biological Oxygen Demand (per 1,000 pounds)	\$221.70
Suspended Solids (per 1,000 pounds)	\$533.50

Projected Wastewater Billing Units

Wastewater connection growth projections are necessary to estimate rate revenues over the study period. City staff provided Raftelis with the number of wastewater connections, commercial water use, and industrial loadings for FY 2019 and FY 2020. Raftelis applied a 0.52 percent annual account growth rate to all residential and commercial billing units in FY 2020 to project the number of billing units each year over the study period (see Table 4-2). This is consistent with account growth assumptions used in the water rate study in Section 3.¹³ City staff directed Raftelis to set industrial billing units equal to FY 2019 actuals in FY 2021-FY 2026 as FY 2019 was a more representative year than FY 2020 for industrial wastewater loadings. No industrial account growth is assumed over the study period as there are currently fewer than ten industrial wastewater connections in the City.

¹³ Estimated by Raftelis based on 15-year water service area population growth estimates through 2035 from the City's recent update to its Water Master Plan.

Table 4-2: Wastewater Billing Units

Billing Units	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Residential							
Number of Dwelling Units	14,803	14,880	14,958	15,035	15,114	15,192	15,271
Commercial							
Number of Connections	935	940	945	950	955	960	965
High-Strength Water Use (CCF)	34,532	34,712	42,883	43,106	43,330	43,556	43,783
Low-Strength Water Use (CCF)	219,023	220,163	249,857	251,158	252,465	253,780	255,101
Industrial							
Flow (million gallons)	295	313	313	313	313	313	313
BOD (1,000 pounds)	1,888	2,151	2,151	2,151	2,151	2,151	2,151
SS (1,000 pounds)	820	996	996	996	996	996	996

Projected Wastewater Enterprise Revenue Under Current Rates

The Wastewater Enterprise's revenue sources consist of wastewater rates, septic load charges, connection fees, operating and capital contributions from three outside sewers districts, interest earnings on cash reserves, and other miscellaneous revenues. The rate revenue projections shown in this section assume that current wastewater rates are effective throughout the study period and, represent estimated revenues in the absence of any wastewater rate increases. This status quo scenario provides a baseline from which Raftelis evaluated the need for revenue adjustments (i.e., gross rate revenue increases).

Raftelis projected annual wastewater rate revenues from residential, commercial, and industrial wastewater rates over the study period based on current wastewater rates (from Table 4-1) and projected number of billing units (from Table 4-2). Table 4-3 shows projected wastewater rate revenues under current rates over the study period, calculated as follows:

$$\text{Fixed charge revenue}^{14} = [\text{current monthly charge}] \times [\text{number of billing units}] \times [12 \text{ bills per year}]$$

$$\text{Variable charge revenue} = [\text{current rate}] \times [\text{number of billing units}]$$

¹⁴ Pertains to residential fixed charges and commercial minimum monthly fees only. All other wastewater rates are variable.

Table 4-3: Wastewater Enterprise Rate Revenue from Current Rates

Rate Revenue	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Residential							
Fixed Charges	\$7,609,926	\$7,649,542	\$7,689,365	\$7,729,395	\$7,769,633	\$7,810,081	\$7,850,739
Subtotal	\$7,609,926	\$7,649,542	\$7,689,365	\$7,729,395	\$7,769,633	\$7,810,081	\$7,850,739
Commercial							
Minimum Monthly Fees	\$265,129	\$266,509	\$267,896	\$269,291	\$270,693	\$272,102	\$273,518
High-Strength Charges	\$189,928	\$190,917	\$235,854	\$237,082	\$238,316	\$239,557	\$240,804
Low-Strength Charges	\$694,303	\$697,917	\$792,047	\$796,171	\$800,315	\$804,482	\$808,670
Subtotal	\$1,149,360	\$1,155,343	\$1,295,798	\$1,302,544	\$1,309,325	\$1,316,141	\$1,322,992
Industrial							
Flow	\$656,537	\$695,901	\$695,901	\$695,901	\$695,901	\$695,901	\$695,901
BOD	\$418,628	\$476,862	\$476,862	\$476,862	\$476,862	\$476,862	\$476,862
SS	\$437,299	\$531,553	\$531,553	\$531,553	\$531,553	\$531,553	\$531,553
Subtotal	\$1,512,463	\$1,704,316	\$1,704,316	\$1,704,316	\$1,704,316	\$1,704,316	\$1,704,316
Total	\$10,271,749	\$10,509,201	\$10,689,478	\$10,736,254	\$10,783,273	\$10,830,537	\$10,878,047

Table 4-4 shows all non-rate Wastewater Enterprise revenues. All non-rate revenues in FY 2021 are based on the City's FY 2021 revised budget, with the exception of outside sewer districts' share of capital costs and the Clean Water State Revolving Fund (CWSRF) reimbursement.¹⁵ Non-rate revenues are held constant over the study period at the projected FY 2021 amount with the following exceptions:

- » City staff directed Raftelis to assume \$800,000 in septic load charges each year.
- » Interest earnings are estimated by Raftelis beyond FY 2021 based on projected fund balances and an assumed annual interest rate of 1.5 percent.
- » The outside sewer districts' share of operations costs¹⁶ are escalated annually in proportion to annual projected increases in "Wastewater Treatment" O&M expenses (see Table 4-6). The City charges each outside district annually for a portion of "Wastewater Treatment" O&M expenses based on each districts' share of total annual wastewater loadings entering the wastewater treatment plant.
- » The outside sewer districts' share of capital costs¹⁷ are projected based on detailed calculations in Table 4-10. The City charges each outside district annually for a portion of treatment-related CIP project costs based on each districts' share of wastewater treatment plant capacity.
- » The CWSRF reimbursement in FY 2021 is a one-time disbursement of funds to the City.

¹⁵ The City financed its Airport Freedom Trunk Sewer Replacement CIP project with a Clean Water State Revolving Fund (CWSRF) loan in FY 2020. The project was completed in FY 2020. However, debt proceeds associated with the CWSRF loan will not be received by the City until FY 2021 (hence the one-time reimbursement in FY 2021).

¹⁶ See "Freedom Share – Operations Costs", "Pajaro Share – Operations Costs", and "Pajaro Share – Operations Costs."

¹⁷ See "Freedom Share – Capital Costs", "Pajaro Share – Capital Costs", and "Pajaro Share – Capital Costs."

- » The PVWMA operational charges are set equal to “Recycling Operations” O&M expenses (see Table 4-6), as PVWMA is responsible for reimbursing the Wastewater Enterprise for O&M costs associated with producing recycled water.

Table 4-4: Wastewater Enterprise Miscellaneous Revenue

Miscellaneous Revenue	Actual FY 2020	Revised Budget FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Septic Load Charges	\$862,039	\$600,000	\$800,000	\$800,000	\$800,000	\$800,000	\$800,000
Connection Fees	\$108,538	\$32,005	\$32,005	\$32,005	\$32,005	\$32,005	\$32,005
Interest Earnings	\$266,165	\$55,000	\$96,536	\$66,323	\$69,653	\$76,904	\$96,142
Freedom Share - Operations Costs	\$371,791	\$400,000	\$416,490	\$433,706	\$451,681	\$470,451	\$490,051
Pajaro Share - Operations Costs	\$602,025	\$550,000	\$572,674	\$596,346	\$621,062	\$646,870	\$673,820
Salsipuedes Share - Operations Costs	\$133,327	\$110,000	\$114,535	\$119,269	\$124,212	\$129,374	\$134,764
Freedom Share - Capital Costs	\$23,008	\$73,016	\$139,495	\$32,128	\$24,045	\$45,722	\$10,654
Pajaro Share - Capital costs	\$89,767	\$284,875	\$544,247	\$125,347	\$93,813	\$178,386	\$41,569
Salsipuedes Share - Capital Costs	\$7,987	\$25,347	\$48,426	\$11,153	\$8,347	\$15,872	\$3,699
CWSRF Reimbursement	\$0	\$4,600,840	\$0	\$0	\$0	\$0	\$0
Clean Program Revenue	\$720	\$0	\$0	\$0	\$0	\$0	\$0
PVWMA Operational Charges	\$1,489,959	\$2,061,140	\$2,130,988	\$2,203,285	\$2,278,121	\$2,355,587	\$2,435,781
Banner Installation	\$1,800	\$0	\$0	\$0	\$0	\$0	\$0
Grant Proceeds	\$48,392	\$0	\$0	\$0	\$0	\$0	\$0
Other Revenue	\$285,978	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Total	\$4,291,497	\$8,842,223	\$4,945,395	\$4,469,561	\$4,552,939	\$4,801,171	\$4,768,484

4.1.2.WASTEWATER ENTERPRISE O&M EXPENSES

Wastewater Enterprise operations and maintenance (O&M) expenses are annual recurring expenses necessary to operate and maintain the wastewater system. Wastewater Enterprise expenses excluded from O&M expenses in this study include debt service payments, Capital Improvement Plan (CIP) expenditures, and non-cash expenses (such as depreciation). Raftelis projected Wastewater Enterprise O&M expenses over the study period based on the City’s FY 2021 revised budget and annual inflationary assumptions shown in Table 4-5. All inflationary assumptions are consistent with assumptions used in the water rate study in Section 3. The general inflation rate is consistent with long-term changes in the Consumer Price Index (CPI). All other O&M expense inflationary assumptions shown were developed by Raftelis based on professional judgement and industry trends and reviewed by City staff.

Table 4-5: Inflationary Assumptions for Wastewater Enterprise O&M Expenses

Inflationary Category	Annual Inflation
General	3.0%
Salary	5.0%
Benefits	5.0%
Utilities	4.0%
Chemicals	5.0%
Inter-Dept charges	5.0%

Table 4-6 shows a summary of projected Wastewater Enterprise O&M expenses over the study period. It is projected that O&M expenses will increase by approximately 4.0 percent per year on average over the study period. All O&M expenses in FY 2021 are from the City's FY 2021 revised budget. All O&M projections for FY 2022-FY 2026 were calculated by increasing FY 2021 revised budget amounts by the assumed annual inflationary increases in Table 4-5 (each line item O&M expense from the FY 2021 revised budget was assigned to one of the six inflationary categories shown).

Table 4-6: Wastewater Enterprise O&M Expenses

O&M Expenses	Actual FY 2020	Revised Budget FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Wastewater Treatment (530)							
Personnel	\$3,437,927	\$2,717,225	\$2,853,086	\$2,995,741	\$3,145,528	\$3,302,804	\$3,467,944
Operations	\$6,471,243	\$8,073,336	\$8,382,314	\$8,704,085	\$9,039,207	\$9,388,262	\$9,751,859
Subtotal	\$9,909,170	\$10,790,561	\$11,235,400	\$11,699,825	\$12,184,734	\$12,691,066	\$13,219,803
Sewer Maintenance (531)							
Personnel	\$538,274	\$632,114	\$663,720	\$696,906	\$731,751	\$768,339	\$806,755
Operations	\$254,032	\$238,271	\$246,637	\$255,310	\$264,299	\$273,619	\$283,281
Subtotal	\$792,306	\$870,385	\$910,357	\$952,215	\$996,050	\$1,041,957	\$1,090,036
Recycling Operations (532)							
Personnel	\$334,936	\$165,690	\$173,975	\$182,673	\$191,807	\$201,397	\$211,467
Operations	\$1,541,738	\$1,895,450	\$1,957,014	\$2,020,612	\$2,086,314	\$2,154,190	\$2,224,314
Subtotal	\$1,876,674	\$2,061,140	\$2,130,988	\$2,203,285	\$2,278,121	\$2,355,587	\$2,435,781
Engineering & Administration (540)							
Personnel	\$3,547,462	\$3,527,064	\$3,703,417	\$3,888,588	\$4,083,017	\$4,287,168	\$4,501,527
Operations	(\$3,547,462)	(\$3,458,753)	(\$3,703,417)	(\$3,888,588)	(\$4,083,017)	(\$4,287,168)	(\$4,501,527)
Subtotal	\$0	\$68,311	\$0	\$0	\$0	\$0	\$0
Laboratory (541)							
Personnel	\$374,011	\$466,141	\$489,448	\$513,920	\$539,616	\$566,597	\$594,927
Operations	(\$374,011)	(\$466,141)	(\$489,448)	(\$513,920)	(\$539,616)	(\$566,597)	(\$594,927)
Subtotal	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$12,578,150	\$13,790,397	\$14,276,745	\$14,855,326	\$15,458,905	\$16,088,611	\$16,745,620

4.1.3.WASTEWATER ENTERPRISE CAPITAL IMPROVEMENT PLAN

The City has planned approximately \$31.5 million in Wastewater Enterprise capital expenditures between FY 2021 and FY 2026. This amounts to \$5.3 million per year on average over the study period. Detailed CIP project costs are shown through FY 2026 in Table 4-7. City staff provided all CIP project costs estimates in current dollars. Raftelis then inflated all costs by 2 percent per year beginning in FY 2022 based on long-term changes in the Engineering-News Record Construction Cost Index. The most significant CIP project costs over the study period are associated with main switchgear and energy recovery electrical system improvements (\$15.0 million in FY 2024).

Although the study period only extends through FY 2026, annual capital expenditures through FY 2030 were considered in this study due to the substantial level of expenditure anticipated beyond FY 2026. Annual average CIP project costs in FY 2027-FY 2030 amount to \$10.8 million per year. Financial plan projections through FY 2026 must therefore account for the need to maintain cash reserves and debt capacity through FY 2026 to ensure sufficient funding for CIP projects through FY 2030. Detailed CIP project costs are shown for FY 2027-FY 2030 in Table 4-8. The most significant CIP project costs beyond FY 2026 are associated with replacing the headworks diversion structure (\$15.0 million in FY 2028).

Table 4-7: Detailed Wastewater Enterprise Capital Improvement Plan (FY 2020-FY 2026)

Wastewater Enterprise CIP Projects	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Airport Freedom Trunk Sewer Replacement (14128)	\$4,570,982	\$391,800	\$0	\$0	\$0	\$0	\$0
Atkinson Freedom Sydney and Jehl Storm Sewer Install and Upgrade (14622)	\$23,792	\$0	\$0	\$0	\$0	\$0	\$0
Boom Truck (14839)	\$0	\$222,325	\$0	\$0	\$0	\$0	\$0
City Wide IT Equipment (14486)	\$769	\$0	\$0	\$0	\$0	\$0	\$0
Clarifier and Thickener Drive Replacement (14627)*	\$125,207	\$448,598	\$0	\$0	\$0	\$0	\$0
Clean Ductwork - City Hall (14436)	\$0	\$1,500	\$0	\$0	\$0	\$0	\$0
Collection Vehicles (14626)	\$60,936	\$69,966	\$0	\$0	\$0	\$0	\$0
Digester 1 and 2 Rehabilitation*	\$0	\$0	\$1,632,000	\$0	\$0	\$0	\$0
Emergency Infrastructure Repairs (14332)	\$8,246	\$55,034	\$102,000	\$104,040	\$106,121	\$108,243	\$110,408
Freedom Blvd - Sewer Replacement - Alta Vista to Green Valley (14623)	\$0	\$900,000	\$0	\$0	\$0	\$0	\$0
Freedom Blvd - Sewer Replacement - Compton Terrace to Burchell	\$0	\$400,000	\$0	\$0	\$0	\$0	\$0
CCTV Sewer Inspection Software (14628)	\$0	\$38,109	\$20,400	\$20,808	\$21,224	\$21,649	\$22,082
Grease Holding Tank (14032)*	\$0	\$125,000	\$0	\$0	\$0	\$0	\$0
Levy Embankment Stabilization Project (14795)*	\$0	\$200,000	\$0	\$572,220	\$0	\$0	\$0
Longview Sewer Abandonment (14540)	\$57,244	\$152,756	\$0	\$0	\$0	\$0	\$0
Madison Alley Sewer Replacement (14620)	\$0	\$220,000	\$0	\$0	\$0	\$0	\$0
Manana Lane Sewer Replacement (14123)	\$246,013	\$0	\$0	\$0	\$0	\$0	\$0
Manhole Lid Raising/Replacement (14039)	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0
New Carpets - City Hall (14435)	\$0	\$21,658	\$0	\$0	\$0	\$0	\$0
Parking Lot Repairs - City Hall (14438)	\$0	\$2,357	\$0	\$0	\$0	\$0	\$0
PW Conservation Headquarters/Nature Center Building (14794)	\$0	\$100,000	\$357,000	\$0	\$0	\$0	\$0
Replace Laboratory 1996 Dodge 4 X 4 Truck (14625)	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0
Replace Vactor Series 2100 Sewer Cleaning Truck (14624)	\$502,353	\$500,000	\$0	\$0	\$0	\$0	\$0
Replace Headworks Diversion Structure (14410)*	\$34,791	\$100,000	\$0	\$0	\$0	\$0	\$0
Roach Road Sanitary Sewer (14580)	\$838,861	\$0	\$0	\$0	\$0	\$0	\$0
3 Sanitary Sewer Projects (Nona, Progress & O'Reilly) (14412)	\$0	\$114,085	\$0	\$0	\$0	\$0	\$0
Sanitary Sewer Lift Station Improvements (14621)	\$84,998	\$115,002	\$102,000	\$104,040	\$233,466	\$108,243	\$110,408
Sanitary Sewer Main Replacement (14409)	\$116,052	\$100,000	\$102,000	\$104,040	\$106,121	\$108,243	\$110,408

Wastewater Enterprise CIP Projects	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Server Infrastructure Upgrade (14093)	\$5,160	\$0	\$0	\$0	\$0	\$0	\$0
Sub Basin 7 Sanitary Sewer Infrastructure Repairs Martinelli to Beach	\$0	\$0	\$0	\$520,200	\$0	\$0	\$0
Upgrade Storm Pump Station #2 at Delta Way (14338)	\$124,922	\$0	\$0	\$0	\$0	\$0	\$0
Waste Gas Burner Replacement (14544)	\$2,389	\$0	\$0	\$0	\$0	\$0	\$0
West Beach at Rodriguez Sewer Replacement	\$0	\$0	\$102,000	\$0	\$0	\$0	\$0
WWTP Infrastructure Repairs/Replacement (14328)*	\$405,166	\$500,000	\$255,000	\$260,100	\$265,302	\$789,093	\$276,020
Solids Thickening Process Improvements*	\$54,819	\$0	\$0	\$0	\$0	\$0	\$0
Digester 1 & 2 Dome Crack Repair (14796)*	\$0	\$118,000	\$153,000	\$0	\$0	\$0	\$0
Pre-Aeration & Gravity Thickeners Channel Repair/Coating*	\$0	\$0	\$553,860	\$0	\$357,627	\$0	\$0
Main Switchgear and Energy Recovery Electrical System Improvements*	\$6,800	\$0	\$1,020,000	\$0	\$15,000,000	\$0	\$0
Lee Road Storm Sewer Replacement	\$55,293	\$0	\$510,000	\$0	\$0	\$0	\$0
Replace Sewer Pump Station 10 - Miles Lane	\$0	\$150,000	\$1,122,000	\$0	\$0	\$0	\$0
Sewer Pump Station Controls/PLC/SCADA Upgrades*	\$0	\$400,000	\$0	\$0	\$0	\$395,410	\$0
Total	\$7,389,793	\$5,546,190	\$6,031,260	\$1,685,448	\$16,089,861	\$1,530,882	\$629,326

**Projects costs with asterisk are to be shared with Freedom County Sanitation District, Pajaro County Sanitation District, and Salsipuedes Sanitary District in proportion to allocated treatment plant capacity*

Table 4-8: Detailed Wastewater Enterprise Capital Improvement Plan (FY 2027-FY 2030)

Wastewater Enterprise CIP Projects	Projected FY 2027	Projected FY 2028	Projected FY 2029	Projected FY 2030
Atkinson Freedom Sydney and Jehl Storm Sewer Install and Upgrade (14622)	\$817,828	\$0	\$0	\$0
Digester 1 and 2 Rehabilitation	\$0	\$0	\$0	\$3,585,278
Emergency Infrastructure Repairs (14332)	\$112,616	\$114,869	\$117,166	\$119,509
CCTV Sewer Inspection Software (14628)	\$22,523	\$22,974	\$23,433	\$23,902
Replace Headworks Diversion Structure (14410)*	\$583,783	\$15,000,000	\$0	\$0
Sanitary Sewer Lift Station Improvements (14621)	\$112,616	\$114,869	\$117,166	\$119,509
Sanitary Sewer Main Replacement (14409)	\$112,616	\$114,869	\$117,166	\$119,509
Solids Dewatering Building Improvements	\$0	\$269,922	\$325,690	\$0
Sub Basin 7 Sanitary Sewer Infrastructure Repairs Martinelli to Beach ()	\$1,481,953	\$0	\$0	\$0
WWTP Infrastructure Repairs/Replacement (14328)*	\$281,541	\$287,171	\$292,915	\$298,773
Sewer Pump Station Controls/PLC/SCADA Upgrades*	\$2,632,911	\$0	\$3,551,233	\$1,461,218
WWTP Fan Replacement Project*	\$707,471	\$0	\$0	\$166,289
Gravity Thickeners and Pump/MCC Room Improvements*	\$0	\$574,343	\$0	\$0
Miscellaneous Odor Control Improvements*	\$68,170	\$0	\$0	\$1,210,016
Secondary Treatment Process Area Improvements*	\$0	\$0	\$333,527	\$0
Blackburn/Center Street Sewer Installation	\$1,733,675	\$0	\$0	\$0
Clifford Sewer Installation	\$0	\$0	\$0	\$1,700,990
Sub Basin 2 Sanitary Sewer Improvements	\$0	\$1,179,042	\$0	\$0
Cabrillo Shopping Center Sanitary Sewer Upgrade	\$866,839	\$0	\$0	\$0
West Beach/Union to Walker - MWH#14	\$0	\$0	\$0	\$2,313,345
Total	\$9,534,544	\$17,678,057	\$4,878,295	\$11,118,338

** Projects costs with asterisk are to be shared with Freedom County Sanitation District, Pajaro County Sanitation District, and Salsipuedes Sanitary District in proportion to allocated treatment plant capacity*

CIP projects are primarily funded by rates and cash reserves (referred to as “pay-as-you-go”) or by issuing debt. Potential grant funding for CIP projects through FY 2030 is uncertain; therefore, it was not considered in this study. Due to the substantial level of CIP expenditures through FY 2030, the City expects to issue new debt over the next ten years to finance its largest planned Wastewater Enterprise CIP projects. Raftelis worked with City staff to determine the assumed mix of new debt and pay-as-you-go funding for Wastewater Enterprise CIP expenditures over the next ten years (see Table 4-9).

Debt funding for the Airport/Freedom trunk sewer replacement via a CWSRF loan is already finalized. All other debt funding assumptions shown are for preliminary planning purposes only and are subject to refinement or change. A commercial loan is assumed to be issued to finance the new Vactor Series 2100 sewer cleaning truck (\$500,000 in FY 2021). Revenue bonds are assumed to be issued to finance electrical upgrades (\$15.0 million in FY 2024) and the headworks diversion structure replacement (\$15.0 million in FY 2028). Estimates of annual debt service associated with new debt issues are shown in Section 4.1.4. All other CIP expenditures are assumed to be pay-as-you-go funded.

Table 4-9: Wastewater Enterprise CIP Funding Summary

Fiscal Year	Debt Funded	Pay-as-you-go	Total CIP	Notes
FY 2020	\$4,600,840	\$2,788,953	\$7,389,793	<i>Debt funding is for Airport/Freedom Trunk Sewer Replacement (CWSRF Loan)</i>
FY 2021	\$500,000	\$5,046,190	\$5,546,190	<i>Debt funding is for Vactor Series 2100 Sewer Cleaning Truck Replacement (commercial loan)</i>
FY 2022	\$0	\$6,031,260	\$6,031,260	
FY 2023	\$0	\$1,685,448	\$1,685,448	
FY 2024	\$15,000,000	\$1,089,861	\$16,089,861	<i>Debt funding for Main Switchgear and Energy Recovery Electrical System Improvements (revenue bonds)</i>
FY 2025	\$0	\$1,530,882	\$1,530,882	
FY 2026	\$0	\$629,326	\$629,326	
FY 2027	\$0	\$9,534,544	\$9,534,544	
FY 2028	\$15,000,000	\$2,678,057	\$17,678,057	<i>Debt funding for Headworks Diversion Structure Replacement (revenue bonds)</i>
FY 2029	\$0	\$4,878,295	\$4,878,295	
FY 2030	\$0	\$11,118,338	\$11,118,338	

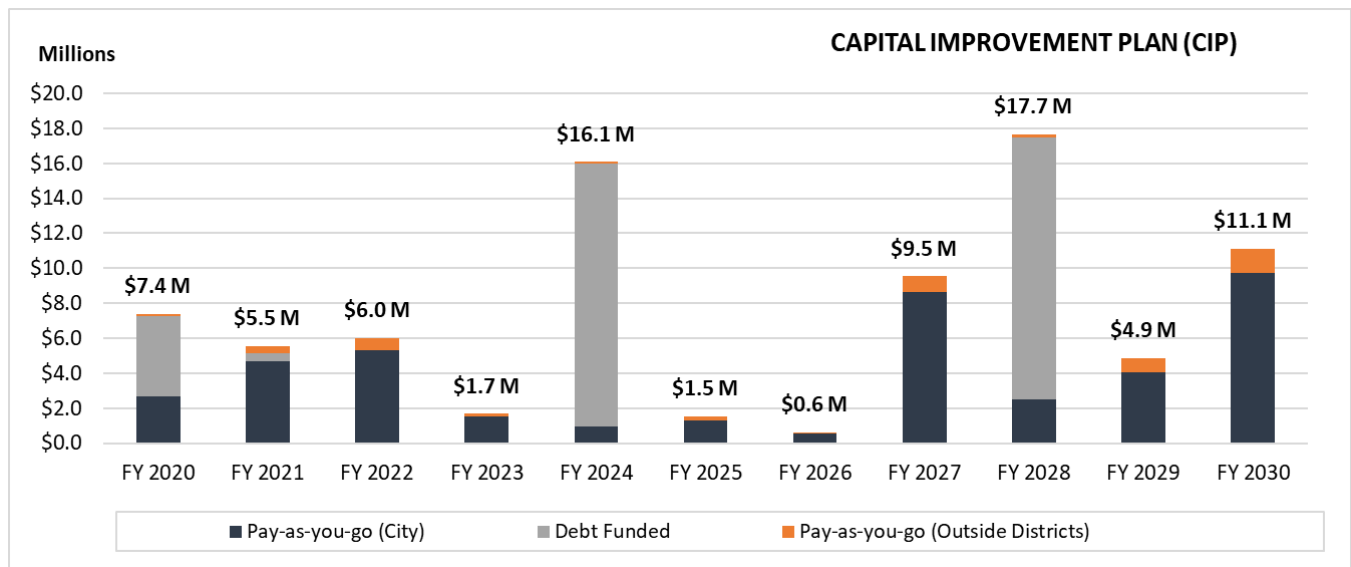
The Wastewater Enterprise receives and treats wastewater from Freedom County Sanitation District, Pajaro County Sanitation District, and Salsipuedes Sanitary District (referred to as outside districts). Per agreements with each outside district, the City allocates a portion of wastewater treatment-related CIP expenditures to each outside district based on allocated wastewater treatment plant capacity. Collectively, the three outside districts are allocated 20.3 percent of total treatment plant capacity. Therefore, 20.3 percent of treatment-related Wastewater Enterprise CIP expenditures are charged to the outside districts. Table 4-10 shows the capital contribution of each outside district for pay-as-you-go CIP expenditures (from Table 4-9) based on treatment capacity. Allocation of debt service associated with treatment-related CIP is addressed subsequently in Section 4.1.4.

Table 4-10: Wastewater Enterprise CIP Allocation to Outside Districts (Pay-as-you-go CIP Only)

Fiscal Year	Pay-as-you-go CIP: Freedom County Sanitation District (3.9% Allocation)	Pay-as-you-go CIP: Pajaro County Sanitation District (15.1% Allocation)	Pay-as-you-go CIP: Salsipuedes Sanitary District (1.3% Allocation)	Pay-as-you-go CIP: All Outside Districts (20.3% Allocation)
FY 2020	\$23,008	\$89,767	\$7,987	\$120,763
FY 2021	\$73,016	\$284,875	\$25,347	\$383,238
FY 2022	\$139,495	\$544,247	\$48,426	\$732,168
FY 2023	\$32,128	\$125,347	\$11,153	\$168,628
FY 2024	\$24,045	\$93,813	\$8,347	\$126,205
FY 2025	\$45,722	\$178,386	\$15,872	\$239,980
FY 2026	\$10,654	\$41,569	\$3,699	\$55,922
FY 2027	\$164,972	\$643,646	\$57,270	\$865,887
FY 2028	\$33,254	\$129,744	\$11,544	\$174,543
FY 2029	\$161,258	\$629,158	\$55,981	\$846,397
FY 2030	\$259,453	\$1,012,269	\$90,069	\$1,361,791

Figure 16 shows a graphical summary of the Wastewater Enterprise CIP by funding source through FY 2030. Note the large amount of new debt financing in FY 2024 and FY 2028 for electrical upgrades and headworks diversion structure replacement.

Figure 16: Wastewater Enterprise CIP Summary



4.1.4.WASTEWATER ENTERPRISE DEBT SERVICE

The Wastewater Enterprise existing debt service consists of two CWSRF loans and a PG&E loan for lighting upgrades and replacement (see Table 4-11). Both CWSRF loans shown are 20-year loans that will extend beyond FY 2035. Note that debt service shown for the Airport Freedom CWSRF loan only includes the Wastewater Enterprise's share of debt service (as Freedom County Sanitation District is responsible for 50 percent of total Airport Freedom CWSRF debt service). The CWSRF debt coverage requirement stipulates that the Wastewater

Enterprise's ratio of net revenues to debt service must exceed 1.25 in all years over the life of the loans. The PG&E lighting loan repayment extends through FY 2023 and has no associated debt coverage requirement.

Table 4-11: Wastewater Existing Debt

Existing Debt Service	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
California Clean Water SRF (Manana Lane)							
Principal	\$69,004	\$66,471	\$67,535	\$68,615	\$69,713	\$70,829	\$71,962
Interest	\$19,450	\$21,983	\$20,920	\$19,839	\$18,741	\$17,626	\$16,493
Subtotal	\$88,455	\$88,455	\$88,455	\$88,455	\$88,455	\$88,455	\$88,455
California Clean Water SRF (Airport Freedom)							
Principal	\$0	\$48,770	\$49,599	\$50,442	\$51,299	\$52,171	\$53,058
Interest	\$0	\$19,554	\$18,724	\$17,881	\$17,024	\$16,152	\$15,265
Subtotal	\$0	\$68,323	\$68,323	\$68,323	\$68,323	\$68,323	\$68,323
PG&E Loan							
Principal	\$10,555	\$10,555	\$10,555	\$7,036	\$0	\$0	\$0
Interest	\$32,974	\$32,974	\$13,739	\$0	\$0	\$0	\$0
Subtotal	\$43,529	\$43,529	\$24,294	\$7,036	\$0	\$0	\$0
Total	\$131,984	\$200,307	\$181,072	\$163,814	\$156,778	\$156,778	\$156,778

Raftelis estimated annual proposed debt service associated with assumed new debt issues to fund ten years of CIP expenditures (from Table 4-9). Debt service associated with the proposed commercial loan in FY 2021 was estimated based on the following assumptions:

- » Debt instrument: commercial loan
- » Term: 6 years
- » Annual interest rate: 1.5 percent
- » Issuance costs (as a percent of total debt proceeds): 1.5 percent
- » Annual debt service payments are amortized over the life of the loan beginning in the year of issue (i.e., level principal plus interest payments each year)

Debt service associated with the proposed revenue bonds in FY 2024 was estimate based on the following assumptions:

- » Debt instrument: revenue bond
- » Term: 30 years
- » Annual interest rate: 5 percent
- » Issuance costs (as a percent of total debt proceeds): 1.5 percent
- » Annual debt service payments are amortized over the life of the loan beginning in the year of issue (i.e., level principal plus interest payments each year)
- » Debt service payments shown only include the City's share of total debt service, as the outside districts are assumed to be responsible for 20.3 percent of proposed FY 2024 debt service to finance electrical upgrades (based on the outside districts' share of allocated wastewater treatment plant capacity)

All proposed debt service payments (see Table 4-12) represent preliminary estimates, and all debt assumptions are intended to be sufficiently conservative to avoid underestimating future debt service. Proposed debt service estimates are only shown for new debt issues through the end of the study period in FY 2026.

Table 4-12: Wastewater Enterprise Proposed Debt Service

Proposed Debt Service	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
FY 2021 Proposed Debt	\$0	\$89,099	\$89,099	\$89,099	\$89,099	\$89,099	\$89,099
FY 2024 Proposed Debt	\$0	\$0	\$0	\$0	\$789,929	\$789,929	\$789,929
Total	\$0	\$89,099	\$89,099	\$89,099	\$879,028	\$879,028	\$879,028

Table 4-13 shows a summary of total debt service payments each year over the study period, including both existing and proposed debt service. Assumed debt financing for the new sewer cleaning truck and electrical upgrades is projected to result in annual debt service payments of \$879,028 by the end of the study period.

Table 4-13: Wastewater Enterprise Debt Service Summary

Water Existing Debt	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Existing Debt Service	\$131,984	\$200,307	\$181,072	\$163,814	\$156,778	\$156,778	\$156,778
Proposed Debt service	\$0	\$89,099	\$89,099	\$89,099	\$879,028	\$879,028	\$879,028
Total	\$131,984	\$289,406	\$270,171	\$252,913	\$1,035,806	\$1,035,806	\$1,035,806

4.1.5.WASTEWATER ENTERPRISE FINANCIAL POLICIES

Debt Coverage

Debt coverage indicates whether an agency is able to meet annual debt service payments and is defined as the ratio of net operating revenues (total revenues less operating expenses) to annual debt service. The Wastewater Enterprise's outstanding CWSRF loans require a debt coverage ratio of at least 1.25. Additionally, maintaining sufficient debt coverage may benefit the Wastewater Enterprise by providing lower cost debt financing options over the next ten years.

Reserve Targets

Adequate cash reserves are required to meet operating, capital, and debt service requirements. No changes are proposed to the Wastewater Enterprise's existing reserve policies. Operating reserves provide funds to meet ongoing cash flow requirements related to operating expenses. The current operating reserve target is equal to 25 percent of annual O&M expenses or three months of working capital. Capital reserves are maintained to provide available funds for CIP project costs. The current capital reserve target is equal to 2 percent of the replacement cost of the Wastewater Enterprise capital assets. Table 4-14 summarizes the Wastewater Enterprise's key financial policies relevant to this rate study. Table 4-15 shows projected operating and capital reserve targets over the study period based on the reserve policies outlined.

Table 4-14: Wastewater Enterprise Financial Policies

Financial Policy	Target/Requirement
Debt Coverage	
Required Debt Coverage Ratio	N/A
Reserve Targets	
Operating Reserve Target	25% of annual Wastewater Enterprise O&M expenses
Capital Reserve Target	2% of replacement cost of Wastewater Enterprise capital assets

Table 4-15: Wastewater Enterprise Reserve Targets

Reserve	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Operating Reserve ¹⁸	\$3,144,537	\$3,447,599	\$3,569,186	\$3,713,831	\$3,864,726	\$4,022,153	\$4,186,405
Capital Reserve ¹⁹	\$4,658,079	\$4,658,079	\$4,751,240	\$4,846,265	\$4,943,191	\$5,042,054	\$5,142,896
Total	\$7,802,616	\$8,105,678	\$8,320,427	\$8,560,097	\$8,807,917	\$9,064,207	\$9,329,301

4.2. Wastewater Enterprise Status Quo Financial Plan

To evaluate the Wastewater Enterprise's need for revenue adjustments (i.e., increases to gross rate revenues), Raftelis first developed a status quo financial plan. The status quo financial plan assumes that current rates remain unchanged over the study period. Table 4-16 combines projected revenues (from Table 4-3 and Table 4-4), O&M expenses (from Table 4-6), CIP expenditures (from Table 4-9), debt service (from Table 4-13), and reserve targets (from Table 4-15) to generate cash flow projections under the status quo for the Wastewater Enterprise. Note that other revenue (Line 4) is less than what is shown in Table 4-4 (which reflects the proposed financial plan) to account for reduced interest earnings due to depletion of interest-bearing reserves. Interest earnings under the status quo and proposed financial plan scenarios are calculated by averaging the beginning and ending reserve balance in each year and then multiplying by the assumed interest rate.

The key results shown in the status quo financial plan proforma include projected Wastewater Enterprise reserve balances and projected debt coverage each year over the study period. In the absence of any revenue adjustments, Wastewater Enterprise reserves are projected to be fully depleted in FY 2024. Additionally, projected debt coverage is projected to fall below the coverage requirement beginning in FY 2024. The status quo financial plan is insufficient to meet the Wastewater Enterprise's financial needs over the study period. This demonstrates a need for revenue adjustments over the study period to increase rate revenues and ensure the financial viability of the Wastewater Enterprise.

¹⁸ Equal to 25 percent of annual projected Wastewater Enterprise O&M expenses (from Table 4-6).

¹⁹ Equal to 2 percent of current replacement cost of Wastewater Enterprise capital assets \$232,903,945) in FY 2021, and escalated by 2 percent each subsequent year to account for capital cost inflation (consistent with inflationary assumptions used to escalate CIP project costs).

Table 4-16: Status Quo Wastewater Enterprise Financial Plan Proforma

Line	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
1	Revenue						
2	Wastewater Rate Revenue from Current Rates	\$10,509,201	\$10,689,478	\$10,736,254	\$10,783,273	\$10,830,537	\$10,878,047
3	Revenue Adjustments	\$0	\$0	\$0	\$0	\$0	\$0
4	Other Revenue	\$8,842,223	\$4,939,382	\$4,444,914	\$4,495,795	\$4,696,325	\$4,599,274
5	Total Revenue	\$19,351,424	\$15,628,861	\$15,181,168	\$15,279,068	\$15,526,862	\$15,477,321
6							
7	O&M Expenses						
8	Water Treatment	\$10,790,561	\$11,235,400	\$11,699,825	\$12,184,734	\$12,691,066	\$13,219,803
9	Sewer Maintenance	\$870,385	\$910,357	\$952,215	\$996,050	\$1,041,957	\$1,090,036
10	Recycling Operations	\$2,061,140	\$2,130,988	\$2,203,285	\$2,278,121	\$2,355,587	\$2,435,781
11	Engineering & Administration	\$68,311	\$0	\$0	\$0	\$0	\$0
12	Laboratory	\$0	\$0	\$0	\$0	\$0	\$0
13	Total O&M Expenses	\$13,790,397	\$14,276,745	\$14,855,326	\$15,458,905	\$16,088,611	\$16,745,620
14							
15	Net Revenues [Line 5 – Line 13]	\$5,561,027	\$1,352,116	\$325,843	(\$179,837)	(\$561,749)	(\$1,268,299)
16							
17	Debt Service						
18	Existing Debt Service	\$200,307	\$181,072	\$163,814	\$156,778	\$156,778	\$156,778
19	Proposed Debt Service	\$89,099	\$89,099	\$89,099	\$879,028	\$879,028	\$879,028
20	Total Debt Service	\$289,406	\$270,171	\$252,913	\$1,035,806	\$1,035,806	\$1,035,806
21							
22	CIP Expenditures						
23	Debt Funded	\$500,000	\$0	\$0	\$15,000,000	\$0	\$0
24	Pay-as-you-go	\$5,046,190	\$6,031,260	\$1,685,448	\$1,089,861	\$1,530,882	\$629,326
25	Total CIP Expenditures	\$5,546,190	\$6,031,260	\$1,685,448	\$16,089,861	\$1,530,882	\$629,326
26							
27	Net Cash Change [Line 15 – Line 20 -Line 24]	\$225,431	(\$4,949,315)	(\$1,612,518)	(\$2,305,504)	(\$3,128,437)	(\$2,933,431)
28							
29	Beginning Fund Balance	\$8,329,347	\$8,554,778	\$3,605,463	\$1,992,945	(\$312,559)	(\$3,440,996)
30	Ending Fund Balance	\$8,554,778	\$3,605,463	\$1,992,945	(\$312,559)	(\$3,440,996)	(\$6,374,427)
31							
32	Operating Reserve Target	\$3,447,599	\$3,569,186	\$3,713,831	\$3,864,726	\$4,022,153	\$4,186,405
33	Total Reserve Target	\$8,105,678	\$8,320,427	\$8,560,097	\$8,807,917	\$9,064,207	\$9,329,301
34							
35	Projected Debt Coverage [Line 15 ÷ Line 20]	22.62	5.50	1.33	-0.17	-0.54	-1.22
36	Required Debt Coverage	1.25	1.25	1.25	1.25	1.25	1.25

4.3.Wastewater Enterprise Proposed Financial Plan

The Wastewater Enterprise must increase its revenues from wastewater rates over the study period to adequately fund its operating and capital expenditures, meet required debt coverage, and maintain sufficient reserve funding. Raftelis worked closely with City staff to determine appropriate wastewater revenue adjustments. Substantial capital needs over the next ten years will clearly require increased rate revenues to ensure sufficient debt capacity and reserves to fund planned CIP projects. Customer affordability was a key consideration as well due to the magnitude of revenue adjustments considered over the study period. Raftelis and City staff recommend that 7.5 percent revenue adjustments be implemented annually over the next five fiscal years (see Table 4-17). Revenue adjustments represent annual percent increases in total rate revenue relative to rate revenue generated by the prior year's wastewater rates.

Table 4-17: Proposed Wastewater Enterprise Revenue Adjustments

Fiscal Year	Effective Date	Revenue Adjustment
FY 2022	July 1, 2021	7.5%
FY 2023	July 1, 2022	7.5%
FY 2024	July 1, 2023	7.5%
FY 2025	July 1, 2024	7.5%
FY 2026	July 1, 2025	7.5%

Proposed financial plan results are shown in Table 4-18, and were calculated in the same manner as described for the status quo financial plan proforma in Section 4.2. Revenue adjustments (Line 3) represent additional rate revenues collected each year as a result of proposed revenue adjustments in Table 4-17. With the addition of proposed revenue adjustments, Raftelis projects that Wastewater Enterprise reserve balances will remain above the operating reserve target in all years. The total reserve target (equal to the operating plus capital reserve target) is not projected to be met beyond FY 2021. City staff determined that the magnitude of revenue adjustments necessary to achieve the total reserve target by the end of the study period was not feasible due to the unacceptably high impact on customer affordability.

Under the proposed financial plan, required debt coverage is projected to be met in all years over the study period. Ensuring sufficient debt capacity beyond FY 2026 will be critical under the assumed CIP financing plan, in which \$15.0 million in CIP project costs associated with headworks diversion structure replacement in FY 2028 are assumed to be debt financed. The proposed revenue adjustments are necessary to ensure sufficient funding of the ten-year Wastewater Enterprise CIP.

Table 4-18: Proposed Wastewater Enterprise Financial Plan Proforma

Line	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
1	Revenue						
2	Wastewater Rate Revenue from Current Rates	\$10,509,201	\$10,689,478	\$10,736,254	\$10,783,273	\$10,830,537	\$10,878,047
3	Revenue Adjustments	\$0	\$801,711	\$1,670,830	\$2,612,753	\$3,633,311	\$4,738,796
4	Other Revenue	\$8,842,223	\$4,945,395	\$4,469,561	\$4,552,939	\$4,801,171	\$4,768,484
5	Total Revenue	\$19,351,424	\$16,436,584	\$16,876,645	\$17,948,965	\$19,265,019	\$20,385,327
6							
7	O&M Expenses						
8	Water Treatment	\$10,790,561	\$11,235,400	\$11,699,825	\$12,184,734	\$12,691,066	\$13,219,803
9	Sewer Maintenance	\$870,385	\$910,357	\$952,215	\$996,050	\$1,041,957	\$1,090,036
10	Recycling Operations	\$2,061,140	\$2,130,988	\$2,203,285	\$2,278,121	\$2,355,587	\$2,435,781
11	Engineering & Administration	\$68,311	\$0	\$0	\$0	\$0	\$0
12	Laboratory	\$0	\$0	\$0	\$0	\$0	\$0
13	Total O&M Expenses	\$13,790,397	\$14,276,745	\$14,855,326	\$15,458,905	\$16,088,611	\$16,745,620
14							
15	Net Revenues [Line 5 – Line 13]	\$5,561,027	\$2,159,840	\$2,021,319	\$2,490,060	\$3,176,408	\$3,639,707
16							
17	Debt Service						
18	Existing Debt Service	\$200,307	\$181,072	\$163,814	\$156,778	\$156,778	\$156,778
19	Proposed Debt Service	\$89,099	\$89,099	\$89,099	\$879,028	\$879,028	\$879,028
20	Total Debt Service	\$289,406	\$270,171	\$252,913	\$1,035,806	\$1,035,806	\$1,035,806
21							
22	CIP Expenditures						
23	Debt Funded	\$500,000	\$0	\$0	\$15,000,000	\$0	\$0
24	Pay-as-you-go	\$5,046,190	\$6,031,260	\$1,685,448	\$1,089,861	\$1,530,882	\$629,326
25	Total CIP Expenditures	\$5,546,190	\$6,031,260	\$1,685,448	\$16,089,861	\$1,530,882	\$629,326
26							
27	Net Cash Change [Line 15 – Line 20 -Line 24]	\$225,431	(\$4,141,591)	\$82,958	\$364,393	\$609,720	\$1,974,575
28							
29	Beginning Fund Balance	\$8,329,347	\$8,554,778	\$4,413,187	\$4,496,145	\$4,860,538	\$5,470,259
30	Ending Fund Balance	\$8,554,778	\$4,413,187	\$4,496,145	\$4,860,538	\$5,470,259	\$7,444,833
31							
32	Operating Reserve Target	\$3,447,599	\$3,569,186	\$3,713,831	\$3,864,726	\$4,022,153	\$4,186,405
33	Total Reserve Target	\$8,105,678	\$8,320,427	\$8,560,097	\$8,807,917	\$9,064,207	\$9,329,301
34							
35	Projected Debt Coverage [Line 15 ÷ Line 20]	22.62	8.78	8.22	2.40	3.07	3.51
36	Required Debt Coverage	1.25	1.25	1.25	1.25	1.25	1.25

Figure 17 compares the status quo and proposed financial plans. Revenues under the proposed financial plan and status quo financial plan are represented by the blue and red dashed lines, respectively. Revenue requirements including O&M expenses, debt service, pay-as-you-go CIP, and reserve funding are represented by the various stacked bars. Green bars represent drawdown of reserves when negative and buildup of reserves when positive. Current revenues under the status quo fail to sufficiently recover O&M expenses by the end of the study period. Proposed revenue adjustments are projected to generate \$13.5 million more rate revenue over the study period relative to the status quo.

Figure 17: Wastewater Enterprise Status Quo Versus Proposed Financial Plan

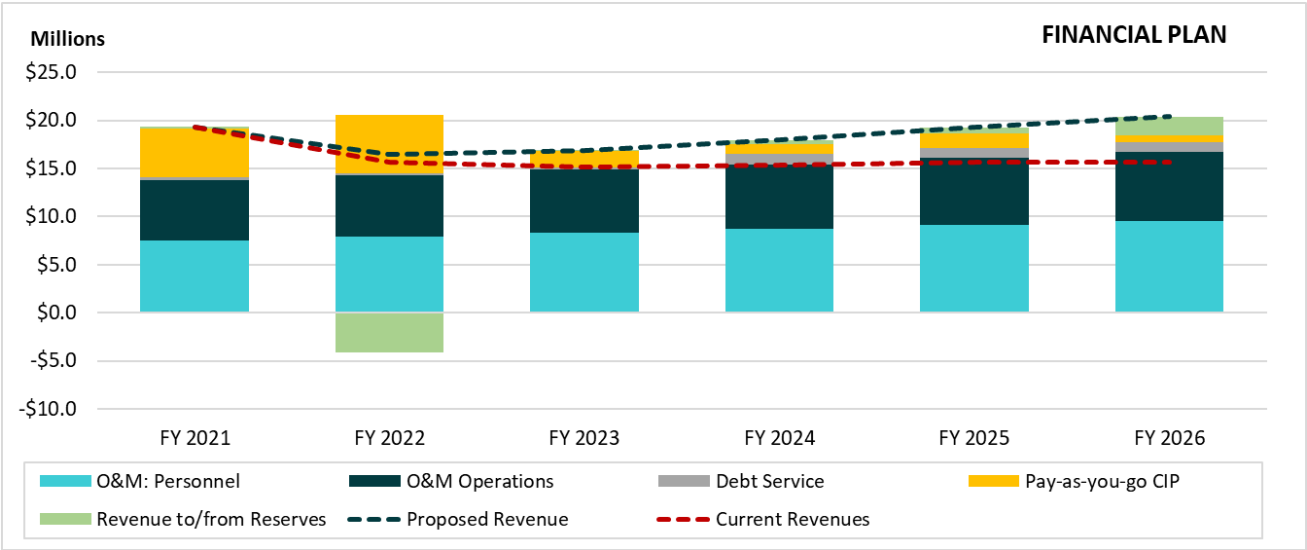
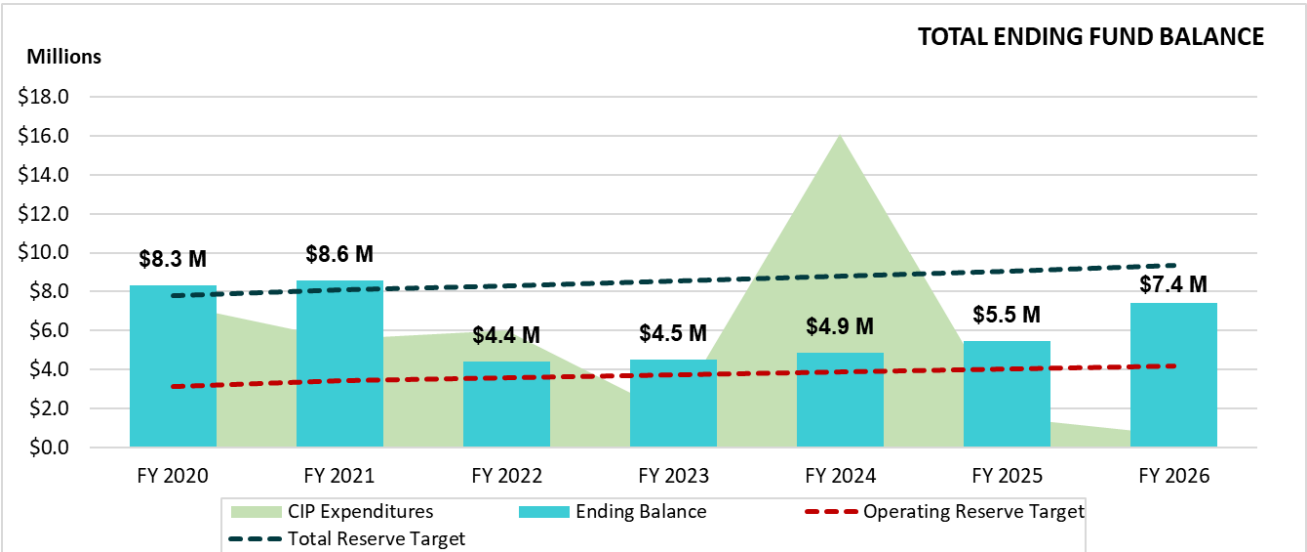


Figure 18 shows the Wastewater Enterprise’s projected ending reserve balance under the proposed financial plan. The light blue bars indicate the ending balance. The operating reserve target and total (operating plus capital) reserve target are represented by the red and blue dashed lines, respectively. Total annual CIP expenditures are represented by the shaded green area. Under the proposed financial plan, reserves are drawn down to cover a portion of pay-as-you-go CIP in FY 2022, before slowly building back up through the end of the study period.

Figure 18: Proposed Wastewater Enterprise Financial Plan – Projected Reserve Ending Balance



4.4. Proposed Wastewater Rates

Raftelis did not conduct a wastewater cost of service (COS) analysis as part of this study. It is recommended that the City conduct a wastewater COS analysis during the next wastewater rate study (which will be necessary to establish wastewater rates beyond FY 2026). In this study, proposed wastewater rates are determined by simply increasing current rates each year by the proposed wastewater revenue adjustments.

Table 4-19 shows the proposed five-year schedule of wastewater rates for FY 2022 to FY 2026. Proposed FY 2022 water rates were calculated by increasing current rates (from Table 4-1) by the proposed FY 2022 revenue adjustment of 7.5 percent (from Table 4-17). All proposed rates in subsequent years are then increased by 7.5 percent per year based on the schedule of proposed revenue adjustments (from Table 4-17). All proposed rates are rounded up to the nearest cent to ensure adequate revenue recovery.

Table 4-19: Proposed Schedule of Wastewater Rates

Wastewater Rates	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Residential Fixed Charge						
Single & Multiple Family Residential Monthly Charge (per dwelling unit)	\$42.84	\$46.06	\$49.51	\$53.22	\$57.22	\$61.51
Commercial Fixed Charge						
Minimum Monthly Fee for Commercial Accounts	\$23.63	\$25.41	\$27.31	\$29.36	\$31.56	\$33.93
Commercial Charges per Unit of Water Consumed (CCF)						
High-Strength: Eating and food preparation establishments; bakeries	\$5.50	\$5.92	\$6.36	\$6.84	\$7.35	\$7.90
Low-Strength: Laundries; other commercial	\$3.17	\$3.41	\$3.67	\$3.94	\$4.24	\$4.56
Industrial Charges						
Flow (per million gallons)	\$2,225.48	\$2,392.40	\$2,571.83	\$2,764.71	\$2,972.06	\$3,194.97
Biological Oxygen Demand (per 1,000 pounds)	\$221.70	\$238.33	\$256.21	\$275.42	\$296.08	\$318.28
Suspended Solids (per 1,000 pounds)	\$533.50	\$573.52	\$616.53	\$662.77	\$712.48	\$765.91

5. Solid Waste Rate Study

Raftelis developed a solid waste rate model in Microsoft Excel to project financial calculations over the five-year rate-setting period through FY 2026 (i.e., the “study period”). The City’s fiscal year spans from July 1 through June 30. Projections in future years were generally made based on actual or estimated data from FY 2020 and the revised budget for FY 2021 using key assumptions outlined below. Assumptions were discussed with and reviewed by City staff to ensure that the Solid Waste Enterprise’s unique characteristics are accurately addressed. Note that most table values shown throughout this report are rounded to the last digit shown and may not sum precisely to the totals shown.

5.1. Solid Waste Enterprise Revenue Requirements

Section 5.1 includes estimates and projections of annual revenues, O&M expenses, debt service payments, capital expenditures, and reserve funding targets through FY 2026 for the Solid Waste Enterprise (Fund 740 and Fund 741). These projections are necessary to determine annual solid waste rate revenues required over the study period to achieve sufficient cash flow and maintain adequate reserves and debt coverage.

5.1.1. REVENUE FROM CURRENT SOLID WASTE RATES

Current Solid Waste Rates

The Solid Waste Enterprise provides garbage, compactor, recycling, and yard waste services for residential and commercial customers. The majority of Solid Waste Enterprise operations is associated with weekly pickup services. However, the Solid Waste Enterprise does also provide one-time temporary services. The City’s current solid waste rates have been in effect since July 2019 and are shown in Table 5-1 (for weekly pickup services) and Table 5-2 (for temporary services). Customers receiving weekly pickup services are billed monthly.

Table 5-1: Current Solid Waste Rates for Weekly Pickup Services

Current Solid Waste Rates - Monthly Charge per Weekly Pickup	Effective July 2019
Cart Service	
32 gal	\$35.60
68 gal	\$57.41
95 gal	\$73.76
Container Service	
1 cu yd	\$138.56
1.5 cu yd	\$199.73
2 cu yd	\$260.91
3 cu yd	\$383.25
4 cu yd	\$505.61
6 cu yd	\$750.31
8 cu yd	\$995.00
Drop Box Service	
20 cu yd	\$2,463.19
25 cu yd	\$3,078.99
30 cu yd	\$3,694.79
35 cu yd	\$4,310.58
40 cu yd	\$4,910.17
Compactor Drop Box Service	
3 cu yd	\$1,103.11
4 cu yd	\$1,470.80
10 cu yd	\$3,676.98
15 cu yd	\$5,515.45
20 cu yd	\$7,353.93
22 cu yd	\$8,089.32
25 cu yd	\$9,192.39
30 cu yd	\$11,030.89
35 cu yd	\$12,869.36
40 cu yd	\$14,707.83
Solid Waste (Organics) Collections	
68 gal	\$43.75
1 cu yd	\$94.99
2 cu yd	\$177.37
3 cu yd	\$259.75

Table 5-2: Current Solid Waste Rates for Temporary Services

Current Solid Waste Rates - Charge per Temporary Service	Effective July 2019
Temporary Use Containers	
1 cu yd	\$34.65
1.5 cu yd	\$51.97
2 cu yd	\$65.25
3 cu yd	\$95.83
4 cu yd	\$126.41
6 cu yd	\$187.60
8 cu yd	\$248.77
Drop Box Service	
20 cu yd (<1/2 full)	\$309.94
20 cu yd	\$615.81
25 cu yd	\$768.75
30 cu yd	\$921.69
35 cu yd	\$1,074.63
40 cu yd	\$1,227.55
50 cu yd	\$1,534.45
Compactor Drop Box Service	
3 yd Compactor	\$276.12
4 yd Compactor	\$368.14
10 yd Compactor	\$920.34
12 yd Compactor	\$1,104.40
15 yd Compactor	\$1,380.49
20 yd Compactor	\$1,839.31
22 yd Compactor	\$2,024.72
25 yd Compactor	\$2,300.82
30 yd Compactor	\$2,756.92
40 yd Compactor	\$2,845.28
Temporary Special Use Containers* (Wood Waste, Yard Trimmings, & Scrap Metal)	
4 cu yd	\$102.77
6 cu yd	\$131.30
20 cu yd	\$363.07
25 cu yd	\$428.17
30 cu yd	\$494.36
35 cu yd	\$560.58
40 cu yd	\$593.72
Temporary Recycling	
3 cu yd	\$95.83
6 cu yd	\$187.60
15 cu yd	\$462.88
30 cu yd	\$921.69

Projected Solid Waste Billing Units

Solid waste customer account growth projections are necessary to estimate rate revenues over the study period. City staff provided Raftelis with the number of weekly pickups by service type and size for FY 2020. Raftelis applied a 0.52 percent annual account growth rate to all weekly pickup services in FY 2020 to project the number of weekly pickups each year over the study period (see Table 5-3). This is consistent with account growth assumptions used in the water rate study in Section 3 and wastewater rate study in Section 4.²⁰ City staff provided the number of temporary services by service type and size for FY 2019 and FY 2020. City staff directed Raftelis to set the number of temporary services equal to FY 2019 actuals in FY 2021-FY 2026 as FY 2019 was a more representative year than FY 2020 for temporary solid waste services. No growth in temporary services is assumed over the study period as the amount of temporary solid waste service does not increase reliably with population growth in the same manner as weekly pickup service.

²⁰ Estimated by Raftelis based on 15-year water service area population growth estimates through 2035 from the City's recent update to its Water Master Plan.

Table 5-3: Projected Solid Waste Weekly Pickups

Number of Weekly Pickups	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Cart Service							
32 gal	5,432	5,460	5,489	5,517	5,546	5,575	5,604
68 gal	4,542	4,566	4,589	4,613	4,637	4,661	4,686
95 gal	1,122	1,128	1,134	1,140	1,146	1,152	1,158
Container Service							
1 cu yd	45	45	45	45	45	46	46
1.5 cu yd	12	12	12	12	12	12	12
2 cu yd	162	163	164	165	165	166	167
3 cu yd	202	203	204	205	206	207	208
4 cu yd	258	259	261	262	263	265	266
6 cu yd	200	201	202	203	204	205	206
8 cu yd	70	70	71	71	71	72	72
Drop Box Service							
20 cu yd	1	1	1	1	1	1	1
25 cu yd	2	2	2	2	2	2	2
30 cu yd	3	3	3	3	3	3	3
35 cu yd	0	0	0	0	0	0	0
40 cu yd	2	2	2	2	2	2	2
Compactor Drop Box Service							
3 cu yd	6	6	6	6	6	6	6
4 cu yd	2	2	2	2	2	2	2
10 cu yd	0	0	0	0	0	0	0
15 cu yd	0	0	0	0	0	0	0
20 cu yd	0	0	0	0	0	0	0
22 cu yd	0	0	0	0	0	0	0
25 cu yd	0	0	0	0	0	0	0
30 cu yd	0	0	0	0	0	0	0
35 cu yd	0	0	0	0	0	0	0
40 cu yd	0	0	0	0	0	0	0
Solid Waste (Organics)							
68 gal	3	3	3	3	3	3	3
1 cu yd	10	10	10	10	10	10	10
2 cu yd	23	23	23	23	23	24	24
3 cu yd	3	3	3	3	3	3	3

Table 5-4: Projected Solid Waste Temporary Services

Number of Services	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Temporary Use Containers							
1 cu yd	25	14	14	14	14	14	14
1.5 cu yd	1	1	1	1	1	1	1
2 cu yd	58	53	53	53	53	53	53
3 cu yd	41	45	45	45	45	45	45
4 cu yd	92	119	119	119	119	119	119
6 cu yd	125	100	100	100	100	100	100
8 cu yd	23	34	34	34	34	34	34
On-Call Drop Box Service							
20 cu yd (<1/2 full)	181	23	23	23	23	23	23
20 cu yd	180	218	218	218	218	218	218
25 cu yd	37	64	64	64	64	64	64
30 cu yd	358	439	439	439	439	439	439
35 cu yd	95	91	91	91	91	91	91
40 cu yd	248	266	266	266	266	266	266
50 cu yd	0	0	0	0	0	0	0
On-call Compactor Drop Box Service							
3 yd Compactor	0	0	0	0	0	0	0
4 yd Compactor	0	0	0	0	0	0	0
10 yd Compactor	0	0	0	0	0	0	0
12 yd Compactor	0	0	0	0	0	0	0
15 yd Compactor	25	27	27	27	27	27	27
20 yd Compactor	100	70	70	70	70	70	70
22 yd Compactor	0	0	0	0	0	0	0
25 yd Compactor	0	0	0	0	0	0	0
30 yd Compactor	57	45	45	45	45	45	45
40 yd Compactor	48	73	73	73	73	73	73
Temporary Special Use Containers* (Wood Waste, Yard Trimmings, & Scrap Metal)							
4 cu yd	0	0	0	0	0	0	0
6 cu yd	0	0	0	0	0	0	0
20 cu yd	0	0	0	0	0	0	0
25 cu yd	0	0	0	0	0	0	0
30 cu yd	0	0	0	0	0	0	0
35 cu yd	0	0	0	0	0	0	0
40 cu yd	0	0	0	0	0	0	0
Temporary Recycling							
3 cu yd	0	0	0	0	0	0	0
6 cu yd	0	0	0	0	0	0	0
15 cu yd	0	0	0	0	0	0	0
30 cu yd	0	0	0	0	0	0	0

Projected Solid Waste Enterprise Revenue Under Current Rates

The Solid Waste Enterprise's revenue sources consist of solid waste rates, interest earnings on cash reserves, and other miscellaneous revenues. The rate revenue projections shown in this section assume that current solid waste rates are effective throughout the study period and represent estimated revenues in the absence of any solid waste rate increases. This status quo scenario provides a baseline from which Raftelis evaluated the need for revenue adjustments (i.e., gross rate revenue increases).

Raftelis projected annual solid waste rate revenues from weekly pickup and temporary services over the study period based on current rates (from Table 5-1 and Table 5-2) and projected number of billing units (from Table 5-3 and Table 5-4). Table 5-5 shows projected solid waste rate revenues under current rates over the study period, calculated as follows:

$$\text{Weekly pickup service revenue} = [\text{current monthly charge}] \times [\text{number of weekly pickups}] \times [12 \text{ bills per year}]$$

$$\text{Temporary service revenue} = [\text{current charge}] \times [\text{number of number of temporary services}]$$

Table 5-5: Projected Solid Waste Enterprise Rate Revenue

Rate Revenue	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Weekly Pickups Services							
Cart Service	\$6,442,730	\$6,476,270	\$6,509,984	\$6,543,874	\$6,577,941	\$6,612,185	\$6,646,607
Container Service	\$5,734,070	\$5,763,921	\$5,793,927	\$5,824,090	\$5,854,409	\$5,884,886	\$5,915,522
Drop Box Service	\$324,850	\$326,541	\$328,241	\$329,949	\$331,667	\$333,394	\$335,129
Compactor Drop Box Service	\$114,723	\$115,320	\$115,921	\$116,524	\$117,131	\$117,741	\$118,353
Solid Waste (Organics)	\$71,279	\$71,650	\$72,023	\$72,398	\$72,775	\$73,154	\$73,535
Subtotal	\$12,687,652	\$12,753,702	\$12,820,096	\$12,886,836	\$12,953,923	\$13,021,359	\$13,089,146
Temporary Services							
Temporary Use Containers	\$49,433	\$50,569	\$50,569	\$50,569	\$50,569	\$50,569	\$50,569
On-call Drop Box Service	\$931,876	\$1,019,517	\$1,019,517	\$1,019,517	\$1,019,517	\$1,019,517	\$1,019,517
On-call Compactor Drop Box Service	\$512,161	\$497,792	\$497,792	\$497,792	\$497,792	\$497,792	\$497,792
Temporary Special Use Containers	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Temporary Recycling	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal	\$1,493,470	\$1,567,877	\$1,567,877	\$1,567,877	\$1,567,877	\$1,567,877	\$1,567,877
Total	\$14,181,122	\$14,321,579	\$14,387,973	\$14,454,713	\$14,521,800	\$14,589,236	\$14,657,024

Table 5-6 shows all non-rate Solid Waste Enterprise revenues. All non-rate revenues in FY 2021 are based on the City's FY 2021 revised budget. Interest earnings are estimated by Raftelis beyond FY 2021 based on projected fund balances and an assumed annual interest rate of 1.5 percent. All other non-rate revenues are held constant over the study period at the FY 2021 revised budget amount.

Table 5-6: Projected Solid Waste Enterprise Miscellaneous Revenue

Miscellaneous Revenue	Actual FY 2020	Revised Budget FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Drop Off Facility	\$188,427	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000	\$230,000
Interest Earnings	\$97,802	\$20,000	\$94,258	\$73,534	\$60,585	\$73,521	\$79,332
Other Revenue	\$122,236	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Grants	\$14,337	\$10,000	\$0	\$0	\$0	\$0	\$0
Operating Transfers In	\$0	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761
Total	\$422,801	\$510,761	\$575,019	\$554,295	\$541,346	\$554,282	\$560,093

5.1.2.SOLID WASTE ENTERPRISE O&M EXPENSES

Solid Waste Enterprise operations and maintenance (O&M) expenses are annual recurring expenses necessary to operate and maintain the solid waste collection and disposal system. Solid Waste Enterprise expenses excluded from O&M expenses in this study include debt service payments, Capital Improvement Plan (CIP) expenditures, and non-cash expenses (such as depreciation). Raftelis projected Solid Waste O&M expenses over the study period based on the City's FY 2021 revised budget and annual inflationary assumptions shown in Table 5-7. All inflationary assumptions are consistent with assumptions used in the water rate study in Section 3 and wastewater rate study in Section 4. The general inflation rate is consistent with long-term changes in the Consumer Price Index (CPI). All other O&M expense inflationary assumptions shown were developed by Raftelis based on professional judgement and industry trends and reviewed by City staff.

Table 5-7: Inflationary Assumptions for Solid Waste Enterprise O&M Expenses

Inflationary Category	Annual Inflation
General	3.0%
Salary	5.0%
Benefits	5.0%
Utilities	4.0%
Inter-Dept charges	5.0%

Table 5-8 shows a summary of projected Solid Waste Enterprise O&M expenses over the study period. It is projected that O&M expenses will increase by approximately 4.0 percent per year on average over the study period. All O&M expenses in FY 2021 are from the City's FY 2021 revised budget with the following exceptions:

- » **Collections – Personnel:** \$300,000 was added to the FY 2021 revised budget to account for additional costs associated with the Solid Waste Enterprise's new food waste program.
- » **Collections – Operations:** \$167,500 was added to the FY 2021 revised budget to account for additional costs associated with the Solid Waste Enterprise's new food waste program
- Landfill – Personnel:** \$100,000 was removed from the FY 2021 revised budget to account for reduced personnel costs associated with the landfill (which is now closed).

All O&M projections for FY 2022-FY 2026 were calculated by increasing FY 2021 revised budget amounts by the assumed annual inflationary increases in Table 5-7 (each line item O&M expense from the FY 2021 revised budget was assigned to one of the five inflationary categories shown).

Table 5-8: Solid Waste Enterprise O&M Expenses

O&M Expenses	Actual FY 2020	Revised Budget FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Collections (570)							
Personnel	\$2,579,584	\$3,588,954	\$3,753,401	\$3,926,071	\$4,107,375	\$4,297,744	\$4,497,631
Operations	\$6,302,862	\$8,457,184	\$8,905,561	\$9,206,523	\$9,518,204	\$9,841,009	\$10,175,361
Subtotal	\$8,882,446	\$12,046,138	\$12,658,962	\$13,132,594	\$13,625,579	\$14,138,753	\$14,672,992
Street Sweeping (571)							
Personnel	\$196,029	\$211,302	\$221,867	\$232,960	\$244,608	\$256,839	\$269,681
Operations	\$123,516	\$151,941	\$156,499	\$161,194	\$166,030	\$171,011	\$176,141
Subtotal	\$319,545	\$363,243	\$378,366	\$394,155	\$410,639	\$427,850	\$445,822
Material Recycling (572)							
Personnel	\$871,347	\$913,154	\$958,811	\$1,006,752	\$1,057,089	\$1,109,944	\$1,165,441
Operations	\$503,285	\$705,616	\$726,984	\$749,002	\$771,688	\$795,064	\$819,150
Subtotal	\$1,374,633	\$1,618,770	\$1,685,796	\$1,755,754	\$1,828,778	\$1,905,008	\$1,984,591
Landfill (575)							
Personnel	\$319,738	\$321,257	\$337,320	\$354,186	\$371,895	\$390,490	\$410,014
Operations	\$560,425	\$586,011	\$604,421	\$623,425	\$643,043	\$663,295	\$684,202
Subtotal	\$880,163	\$907,268	\$941,741	\$977,611	\$1,014,938	\$1,053,785	\$1,094,216
Landfill Closure (576)							
Personnel	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Operations	\$0	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761
Subtotal	\$0	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761
Total	\$11,456,786	\$15,086,179	\$15,815,626	\$16,410,875	\$17,030,694	\$17,676,156	\$18,348,382

5.1.3.SOLID WASTE ENTERPRISE CAPITAL IMPROVEMENT PLAN

The City has planned approximately \$13.6 million in Solid Waste Enterprise capital expenditures between FY 2021 and FY 2026. This amounts to \$2.3 million per year on average over the study period. Detailed CIP project costs are shown through FY 2026 in Table 5-9. City staff provided all CIP project costs estimates in current dollars. Raftelis then inflated all costs by 2 percent per year beginning in FY 2022 based on long-term changes in the Engineering-News Record Construction Cost Index. The most significant CIP project costs over the study period are associated with replacing collection vehicles (\$2.0 million in FY 2021), closure of the City's Cell III of the landfill (\$2.6 million in FY 2023), and Cell IV opening costs (\$4.1 million in FY 2024).

Although the study period only extends through FY 2026, annual capital expenditures through FY 2030 were considered in this study to account for the ten-year capital funding needs. Annual average CIP project costs in FY 2027-FY 2030 amount to \$1.2 million per year. Detailed CIP project costs are shown for FY 2027-FY 2030 in Table 5-10. The most significant CIP project costs beyond FY 2026 are associated with replacing collection vehicles (approximately \$900,000 per year from FY 2027-FY 2030).

Table 5-9: Detailed Solid Waste Enterprise Capital Improvement Plan (FY 2020-FY 2026)

Solid Waste Enterprise CIP Projects	Actual FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023	Projected FY 2024	Projected FY 2025	Projected FY 2026
Server Infrastructure Upgrade (14093)	\$5,160	\$0	\$0	\$0	\$0	\$0	\$0
Collection Vehicles (14353)	\$376,055	\$2,043,711	\$0	\$832,320	\$0	\$0	\$883,265
Street Sweeper (14355)	\$0	\$300,000	\$0	\$0	\$0	\$0	\$0
Flat Bed with Hoist	\$0	\$0	\$45,900	\$0	\$0	\$0	\$0
Solid Waste Management Software (14359)	\$1,514	\$0	\$0	\$0	\$0	\$0	\$0
Roofing Repair (14360)	\$0	\$170,650	\$0	\$0	\$0	\$0	\$0
Container Truck (14419)	\$0	\$0	\$0	\$0	\$0	\$0	\$154,571
Gas Emission Monitoring System (GEMS) (14420)	\$0	\$0	\$0	\$20,808	\$0	\$0	\$0
Roll-Off Truck (14421)	\$806,747	\$0	\$0	\$0	\$0	\$0	\$375,387
New Carpet - City Hall (14435)	\$0	\$21,658	\$0	\$0	\$0	\$0	\$0
Clean Duct-work City Hall (14436)	\$0	\$1,500	\$0	\$0	\$0	\$0	\$0
Parking Lot Repairs - City Hall (14438)	\$0	\$2,357	\$0	\$0	\$0	\$0	\$0
Interior Remodel - Municipal Services Center (14439)	\$33,885	\$66,115	\$0	\$0	\$0	\$0	\$0
Repair Sewer Line - Municipal Service Center (14440)	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0
City-Wide IT Equipment (14486)	\$577	\$0	\$0	\$0	\$0	\$0	\$0
Public Drop-Off Improvements (14566)	\$0	\$100,000	\$76,500	\$78,030	\$79,591	\$81,182	\$82,806
Forklift for Public Drop Off (14568)	\$62,780	\$0	\$0	\$0	\$0	\$0	\$0
Other Contract Services (14578)	\$88,958	\$0	\$0	\$0	\$0	\$0	\$0
Rear Loader (14640)	\$0	\$180,000	\$0	\$0	\$0	\$0	\$0
Excavator for Public Drop Off (14641)	\$130,294	\$0	\$0	\$0	\$0	\$0	\$0
Solid Waste - Field Services Truck (14804)	\$0	\$60,000	\$61,200	\$62,424	\$0	\$0	\$0
Organics Waste Methane Reduction (14805)	\$0	\$400,000	\$0	\$0	\$0	\$0	\$0
Landfill Water Truck	\$0	\$0	\$0	\$0	\$0	\$0	\$276,020
Landfill Gas Wells	\$21,012	\$60,000	\$30,600	\$0	\$0	\$0	\$0
Landfill Property Improvements	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0
Landfill Closure	\$0	\$0	\$0	\$2,601,000	\$0	\$0	\$0
Landfill Cell IV Opening	\$0	\$0	\$0	\$0	\$4,138,711	\$0	\$0
Total	\$1,526,982	\$3,705,991	\$214,200	\$3,594,582	\$4,218,302	\$81,182	\$1,772,050

Table 5-10: Detailed Solid Waste Enterprise Capital Improvement Plan (FY 2027-FY 2030)

Solid Waste Enterprise CIP Projects	Projected FY 2027	Projected FY 2028	Projected FY 2029	Projected FY 2030
Collection Vehicles (14353)	\$900,930	\$918,949	\$937,328	\$956,074
Container Truck (14419)	\$0	\$235,808	\$0	\$0
Roll-Off Truck (14421)	\$0	\$390,553	\$0	\$0
Public Drop-Off Improvements (14566)	\$84,462	\$86,151	\$87,874	\$89,632
Forklift for Public Drop Off (14568)	\$0	\$0	\$0	\$114,987
Forklift for Solid Waste Collections (14642)	\$0	\$0	\$0	\$114,987
Total	\$985,392	\$1,631,461	\$1,025,202	\$1,275,680

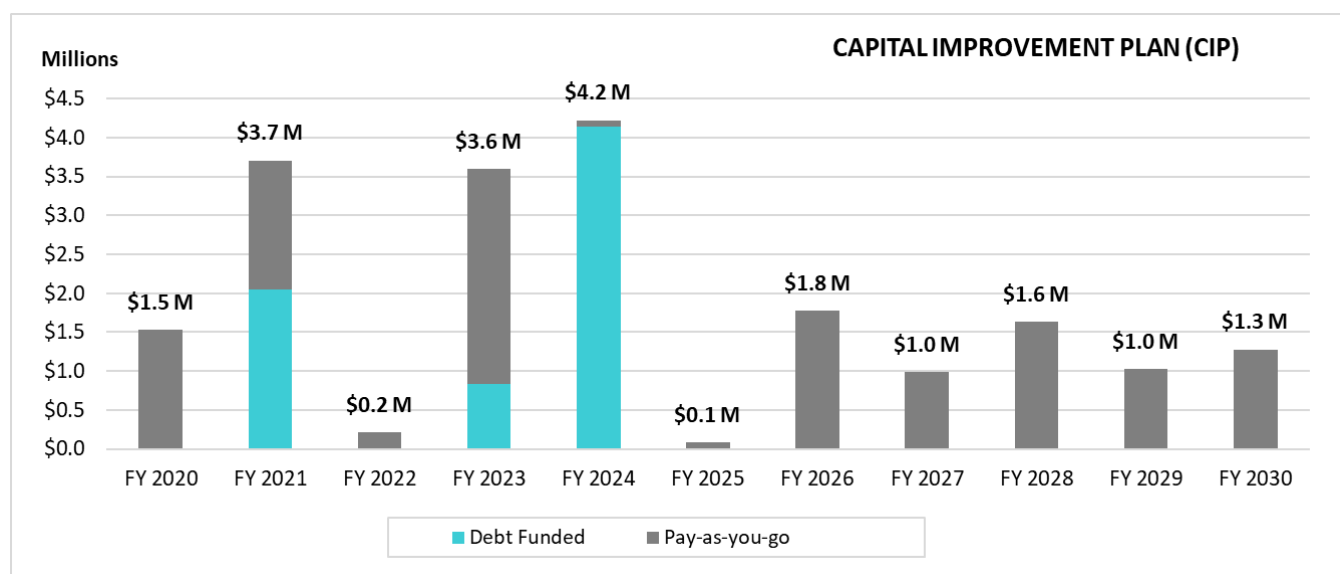
CIP projects are primarily funded by rates and cash reserves (referred to as “pay-as-you-go”) or by issuing debt. Potential grant funding for CIP projects through FY 2030 is uncertain and was not considered in this study. Due to the substantial level of CIP expenditures through FY 2030, the City expects to issue new debt over the next ten years to finance certain Solid Waste Enterprise CIP projects. Raftelis worked with City staff to determine the assumed mix of new debt and pay-as-you-go funding for Solid Waste Enterprise CIP expenditures over the next ten years (see Table 5-11 and Figure 19).

All new debt issuance assumptions shown are for preliminary planning purposes only and are subject to refinement or change. Commercial loans are assumed to be issued to finance collection vehicle replacement (\$2.0 million in FY 2021 and \$0.8 million in FY 2023). A California Infrastructure and Economic Development Bank (IBank) loan is assumed to be utilized to finance Cell IV opening costs (\$4.1 million in FY 2024). Estimates of annual debt service associated with new debt are shown in Section 5.1.4. All other CIP expenditures are assumed to be pay-as-you-go funded.

Table 5-11: Solid Waste Enterprise CIP Funding Summary

Fiscal Year	Debt Funded	Pay-as-you-go	Total CIP	Notes
FY 2020	\$0	\$1,526,982	\$1,526,982	
FY 2021	\$2,043,711	\$1,662,280	\$3,705,991	Debt funding for collection vehicles (commercial loan)
FY 2022	\$0	\$214,200	\$214,200	
FY 2023	\$832,320	\$2,762,262	\$3,594,582	Debt funding for collection vehicles (commercial loan)
FY 2024	\$4,138,711	\$79,591	\$4,218,302	Debt funding for Landfill Cell IV Opening (IBank loan)
FY 2025	\$0	\$81,182	\$81,182	
FY 2026	\$0	\$1,772,050	\$1,772,050	
FY 2027	\$0	\$985,392	\$985,392	
FY 2028	\$0	\$1,631,461	\$1,631,461	
FY 2029	\$0	\$1,025,202	\$1,025,202	
FY 2030	\$0	\$1,275,680	\$1,275,680	

Figure 19: Solid Waste Enterprise CIP Summary



5.1.4.SOLID WASTE ENTERPRISE DEBT SERVICE

The Solid Waste Enterprise's only existing debt service is for a 2019 PG&E loan for lighting upgrades and replacement (see Table 5-12). Associated debt service will extend through FY 2023. The 2019 PG&E loan does not have a debt coverage requirement.

Table 5-12: Solid Waste Enterprise Existing Debt Service

Existing Debt Service	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
PG&E 2019 Notes	\$1,551	\$1,551	\$1,551	\$776	\$0	\$0	\$0
Total	\$1,551	\$1,551	\$1,551	\$776	\$0	\$0	\$0

Raftelis estimated annual proposed debt service associated with assumed new debt issues to fund ten years of CIP expenditures (from Table 5-11). Debt service associated with the proposed commercial loans in FY 2021 and FY 2023 was estimated based on the following assumptions:

- » Debt instrument: commercial loan
- » Term: 6 years
- » Annual interest rate: 1.5 percent for the FY 2021 loan; 2.0 percent for the FY 2023 loan²¹
- » Issuance costs (as a percent of total debt proceeds): 1.5 percent
- » Annual debt service payments are amortized over the life of the loan beginning in the year of issue (i.e., level principal plus interest payments each year)

Debt service associated with the IBank loan in FY 2024 was estimate based on the following assumptions:

- » Debt instrument: IBank loan
- » Term: 20 years
- » Annual interest rate: 2.5 percent
- » No issuance costs
- » Annual debt service payments are amortized over the life of the loan beginning in the year of issue (i.e., level principal plus interest payments each year)

All proposed debt service payments (see Table 5-13) represent preliminary estimates, and all debt assumptions are intended to be sufficiently conservative to avoid underestimating future debt service.

Table 5-13: Solid Waste Enterprise Proposed Debt Service

Proposed Debt Service	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
FY 2021 Proposed Debt	\$0	\$364,186	\$364,186	\$364,186	\$364,186	\$364,186	\$364,186
FY 2023 Proposed Debt	\$0	\$0	\$0	\$150,853	\$150,853	\$150,853	\$150,853
FY 2024 Proposed Debt	\$0	\$0	\$0	\$0	\$265,486	\$265,486	\$265,486
Total	\$0	\$364,186	\$364,186	\$515,039	\$780,525	\$780,525	\$780,525

Table 5-14 shows a summary of total debt service payments each year over the study period, including both existing and proposed debt service. Assumed debt financing for collection vehicle replacement and landfill Cell IV opening is expected to result in annual debt service payments of approximately \$780,000 by the end of the study period.

²¹ The assumed interest rate is higher in FY 2023 due to uncertainty surrounding future interest rates.

Table 5-14: Solid Waste Enterprise Debt Service Summary

Solid Waste Existing Debt	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Existing Debt Service	\$1,551	\$1,551	\$1,551	\$776	\$0	\$0	\$0
Proposed Debt service	\$0	\$364,186	\$364,186	\$515,039	\$780,525	\$780,525	\$780,525
Total	\$1,551	\$365,737	\$365,737	\$515,815	\$780,525	\$780,525	\$780,525

5.1.5.SOLID WASTE ENTERPRISE FINANCIAL POLICIES

Debt Coverage

Debt coverage indicates whether an agency is able to meet annual debt service payments and is defined as the ratio of net operating revenues (total revenues less operating expenses) to annual debt service. Although the Solid Waste Enterprise currently has no debt service coverage requirement on its existing debt, maintaining sufficient debt coverage may benefit the Solid Waste Enterprise by providing lower cost debt financing options over the next ten years.

Reserve Targets

Adequate cash reserves are required to meet operating, capital, and debt service requirements. No changes are proposed to the Solid Waste Enterprise's existing reserve policies. Operating reserves provide funds to meet ongoing cash flow requirements related to operating expenses. The current operating reserve target is equal to 25 percent of annual O&M expenses or three months of working capital. Capital reserves are maintained to provide available funds for CIP project costs. The current capital reserve target is equal to 2 percent of the replacement cost of the Solid Waste Enterprise capital assets. Table 5-15 summarizes the Solid Waste Enterprise's key financial policies relevant to this rate study. Table 5-16 shows projected operating and capital reserve targets over the study period based on the reserve policies outlined.

Table 5-15: Solid Waste Enterprise Financial Policies

Financial Policy	Target/Requirement
Debt Coverage	
Required Debt Coverage Ratio	N/A
Reserve Targets	
Operating Reserve Target	25% of annual Solid Waste Enterprise O&M expenses
Capital Reserve Target	2% of replacement cost of Solid Waste Enterprise capital assets

Table 5-16: Solid Waste Enterprise Reserve Targets

Reserve	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Operating Reserve ²²	\$2,864,197	\$3,771,545	\$3,953,907	\$4,102,719	\$4,257,674	\$4,419,039	\$4,587,096
Capital Reserve ²³	\$543,142	\$543,142	\$554,005	\$565,085	\$576,386	\$587,914	\$599,672
Total	\$3,407,338	\$4,314,687	\$4,507,911	\$4,667,804	\$4,834,060	\$5,006,953	\$5,186,768

²² Equal to 25 percent of annual projected Solid Waste Enterprise O&M expenses (from Table 5-8).

²³ Equal to 2 percent of current replacement cost of Solid Waste Enterprise capital assets \$27,157,092) in FY 2021 and escalated by 2 percent each subsequent year to account for capital cost inflation (consistent with inflationary assumptions used to escalate CIP project costs).

5.2.Solid Waste Enterprise Status Quo Financial Plan

To evaluate the Solid Waste Enterprise's need for revenue adjustments (i.e., increases to gross rate revenues), Raftelis first developed a status quo financial plan. The status quo financial plan assumes that current rates remain unchanged over the study period. Table 5-17 combines projected revenues (from Table 5-5 and Table 5-6), O&M expenses (from Table 5-8), CIP expenditures (from Table 5-11), debt service (from Table 5-14), and reserve targets (from Table 5-16) to generate cash flow projections under the status quo for the Solid Waste Enterprise. Note that other revenue (Line 4) is less than what is shown in Table 5-6 (which reflects the proposed financial plan) to account for reduced interest earnings due to depletion of interest-bearing reserves. Interest earnings under the status quo and proposed financial plan scenarios are calculated by averaging the beginning and ending reserve balance in each year and then multiplying by the assumed interest rate.

The key results shown in the status quo financial plan proforma include projected Solid Waste Enterprise reserve balances and projected debt coverage each year over the study period. In the absence of any revenue adjustments, Solid Waste Enterprise reserves are projected to be fully depleted in FY 2024. More critically, net revenues are projected to be negative in all years throughout the study period. This means that Solid Waste Enterprise O&M expenses would exceed revenues in all years, indicating a serious operating deficit. The status quo financial plan is insufficient to meet the Solid Waste Enterprise's financial needs over the study period. This demonstrates a need for revenue adjustments over the study period to increase rate revenues and ensure the financial viability of the Solid Waste Enterprise.

Table 5-17: Status Quo Solid Waste Enterprise Financial Plan Proforma

Line	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
1	Revenue						
2	Solid Waste Rate Revenue from Current Rates	\$14,321,579	\$14,387,973	\$14,454,713	\$14,521,800	\$14,589,236	\$14,657,024
3	Revenue Adjustments	\$0	\$0	\$0	\$0	\$0	\$0
4	Other Revenue	\$510,761	\$566,926	\$521,116	\$464,409	\$416,492	\$346,296
5	Total Revenue	\$14,832,340	\$14,954,899	\$14,975,829	\$14,986,208	\$15,005,729	\$15,003,319
6							
7	O&M Expenses						
8	Collections	\$12,046,138	\$12,658,962	\$13,132,594	\$13,625,579	\$14,138,753	\$14,672,992
9	Street Sweeping	\$363,243	\$378,366	\$394,155	\$410,639	\$427,850	\$445,822
10	Material Recycling	\$1,618,770	\$1,685,796	\$1,755,754	\$1,828,778	\$1,905,008	\$1,984,591
11	Landfill	\$907,268	\$941,741	\$977,611	\$1,014,938	\$1,053,785	\$1,094,216
12	Landfill Closure	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761
13	Total O&M Expenses	\$15,086,179	\$15,815,626	\$16,410,875	\$17,030,694	\$17,676,156	\$18,348,382
14							
15	Net Revenues [Line 5 – Line 13]	(\$253,839)	(\$860,727)	(\$1,435,046)	(\$2,044,486)	(\$2,670,427)	(\$3,345,063)
16							
17	Debt Service						
18	Existing Debt Service	\$1,551	\$1,551	\$776	\$0	\$0	\$0
19	Proposed Debt Service	\$364,186	\$364,186	\$515,039	\$780,525	\$780,525	\$780,525
20	Total Debt Service	\$365,737	\$365,737	\$515,815	\$780,525	\$780,525	\$780,525
21							
22	CIP Expenditures						
23	Debt Funded	\$2,043,711	\$0	\$832,320	\$4,138,711	\$0	\$0
24	Cash Funded	\$1,662,280	\$214,200	\$2,762,262	\$79,591	\$81,182	\$1,772,050
25	Total CIP Expenditures	\$3,705,991	\$214,200	\$3,594,582	\$4,218,302	\$81,182	\$1,772,050
26							
27	Net Cash Change [Line 15 – Line 20 -Line 24]	(\$2,281,856)	(\$1,440,664)	(\$4,713,123)	(\$2,904,602)	(\$3,532,135)	(\$5,897,638)
28							
29	Beginning Fund Balance	\$8,789,609	\$6,507,753	\$5,067,090	\$353,966	(\$2,550,635)	(\$6,082,771)
30	Ending Fund Balance [Line 27 + Line 29]	\$6,507,753	\$5,067,090	\$353,966	(\$2,550,635)	(\$6,082,771)	(\$11,980,409)
31							
32	Operating Reserve Target	\$3,771,545	\$3,953,907	\$4,102,719	\$4,257,674	\$4,419,039	\$4,587,096
33	Total Reserve Target	\$4,314,687	\$4,507,911	\$4,667,804	\$4,834,060	\$5,006,953	\$5,186,768
34							
35	Projected Debt Coverage [Line 15 ÷ Line 20]	-0.70	-2.36	-2.79	-2.62	-3.42	-4.29
36	Required Debt Coverage	N/A	N/A	N/A	N/A	N/A	N/A

5.3.Solid Waste Enterprise Proposed Financial Plan

The Solid Waste Enterprise must increase its revenues from rates over the study period to adequately fund its operating and capital expenditures, meet required debt coverage, and maintain sufficient reserve funding. Raftelis worked closely with City staff to determine appropriate solid waste revenue adjustments. Operating and capital funding needs over the next five years will necessitate significant increases in rate revenues to ensure the financial viability of Solid Waste Enterprise. Customer affordability was a key consideration as well due to the magnitude of revenue adjustments considered over the study period. Raftelis and City staff recommend that 7.5 percent revenue adjustments be implemented annually over the next three fiscal years, followed by 5 percent annual revenue adjustments in the final two fiscal years of the study period (see Table 5-18). Revenue adjustments represent annual percent increases in total rate revenue relative to rate revenue generated by the prior year's solid waste rates.

Table 5-18: Proposed Solid Waste Enterprise Revenue Adjustments

Fiscal Year	Effective Date	Revenue Adjustment
FY 2022	July 1, 2021	7.5%
FY 2023	July 1, 2022	7.5%
FY 2024	July 1, 2023	7.5%
FY 2025	July 1, 2024	5.0%
FY 2026	July 1, 2025	5.0%

Proposed financial plan results are shown in Table 5-19 and were calculated in the same manner as described for the status quo financial plan proforma in Section 5.2. Revenue adjustments (Line 3) represent additional rate revenues collected each year as a result of proposed revenue adjustments in Table 5-18. With the addition of proposed revenue adjustments, Raftelis projects that the Solid Waste Enterprise reserve balances will remain above the operating reserve target in all years except FY 2023. The total reserve target (equal to the operating plus capital reserve target) is not projected to be met beyond FY 2021. City staff determined that the magnitude of revenue adjustments necessary to remain above the operating reserve target throughout the study period was not feasible due to the unacceptably high impacts on customer affordability.

Under the proposed financial plan, debt coverage is projected to be strong by end of the study period. Note that the Solid Waste Enterprise currently has no formal debt coverage requirement. However, projected debt coverage ratios of over 1.5 beginning in FY 2023 demonstrate the ability to meet proposed debt service obligations and potentially take on additional future debt beyond the study period. The proposed revenue adjustments are necessary to address the Solid Waste Enterprise's current operating deficit and to ensure viable funding for planned CIP projects over the next ten years.

Table 5-19: Proposed Solid Waste Enterprise Financial Plan Proforma

Line	Description	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
1	Revenue						
2	Solid Waste Rate Revenue from Current Rates	\$14,321,579	\$14,387,973	\$14,454,713	\$14,521,800	\$14,589,236	\$14,657,024
3	Revenue Adjustments	\$0	\$1,079,098	\$2,249,515	\$3,518,587	\$4,441,134	\$5,417,709
4	Other Revenue	\$510,761	\$575,019	\$554,295	\$541,346	\$554,282	\$560,093
5	Total Revenue	\$14,832,340	\$16,042,090	\$17,258,523	\$18,581,733	\$19,584,653	\$20,634,826
6							
7	O&M Expenses						
8	Collections	\$12,046,138	\$12,658,962	\$13,132,594	\$13,625,579	\$14,138,753	\$14,672,992
9	Street Sweeping	\$363,243	\$378,366	\$394,155	\$410,639	\$427,850	\$445,822
10	Material Recycling	\$1,618,770	\$1,685,796	\$1,755,754	\$1,828,778	\$1,905,008	\$1,984,591
11	Landfill	\$907,268	\$941,741	\$977,611	\$1,014,938	\$1,053,785	\$1,094,216
12	Landfill Closure	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761	\$150,761
13	Total O&M Expenses	\$15,086,179	\$15,815,626	\$16,410,875	\$17,030,694	\$17,676,156	\$18,348,382
14							
15	Net Revenues [Line 5 – Line 13]	(\$253,839)	\$226,464	\$847,648	\$1,551,039	\$1,908,497	\$2,286,444
16							
17	Debt Service						
18	Existing Debt Service	\$1,551	\$1,551	\$776	\$0	\$0	\$0
19	Proposed Debt Service	\$364,186	\$364,186	\$515,039	\$780,525	\$780,525	\$780,525
20	Total Debt Service	\$365,737	\$365,737	\$515,815	\$780,525	\$780,525	\$780,525
21							
22	CIP Expenditures						
23	Debt Funded	\$2,043,711	\$0	\$832,320	\$4,138,711	\$0	\$0
24	Cash Funded	\$1,662,280	\$214,200	\$2,762,262	\$79,591	\$81,182	\$1,772,050
25	Total CIP Expenditures	\$3,705,991	\$214,200	\$3,594,582	\$4,218,302	\$81,182	\$1,772,050
26							
27	Net Cash Change [Line 15 – Line 20 -Line 24]	(\$2,281,856)	(\$353,473)	(\$2,430,429)	\$690,923	\$1,046,789	(\$266,131)
28							
29	Beginning Fund Balance	\$8,789,609	\$6,507,753	\$6,154,281	\$3,723,852	\$4,414,774	\$5,461,563
30	Ending Fund Balance [Line 27 + Line 29]	\$6,507,753	\$6,154,281	\$3,723,852	\$4,414,774	\$5,461,563	\$5,195,432
31							
32	Operating Reserve Target	\$3,771,545	\$3,953,907	\$4,102,719	\$4,257,674	\$4,419,039	\$4,587,096
33	Total Reserve Target	\$4,314,687	\$4,507,911	\$4,667,804	\$4,834,060	\$5,006,953	\$5,186,768
34							
35	Projected Debt Coverage [Line 15 ÷ Line 20]	-0.70	0.62	1.65	1.99	2.45	2.93
36	Required Debt Coverage	N/A	N/A	N/A	N/A	N/A	N/A

Figure 20 compares the status quo and proposed financial plans. Revenues under the proposed financial plan and status quo financial plan are represented by the blue and red dashed lines, respectively. Revenue requirements including O&M expenses, debt service, pay-as-you-go CIP, and reserve funding are represented by the various stacked bars. Green bars represent drawdown of reserves when negative and buildup of reserves when positive. Current revenues under the status quo fail to sufficiently recover O&M expenses in all years. Proposed revenue adjustments are projected to generate \$16.7 million more rate revenue over the study period relative to the status quo.

Figure 20: Solid Waste Enterprise Status Quo Versus Proposed Financial Plan

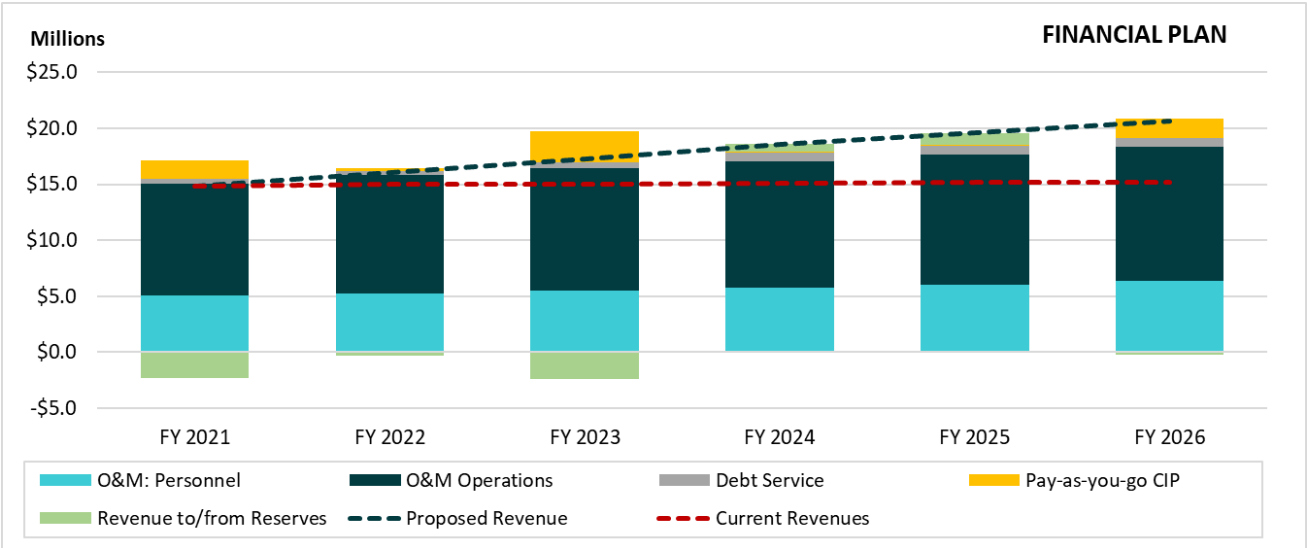
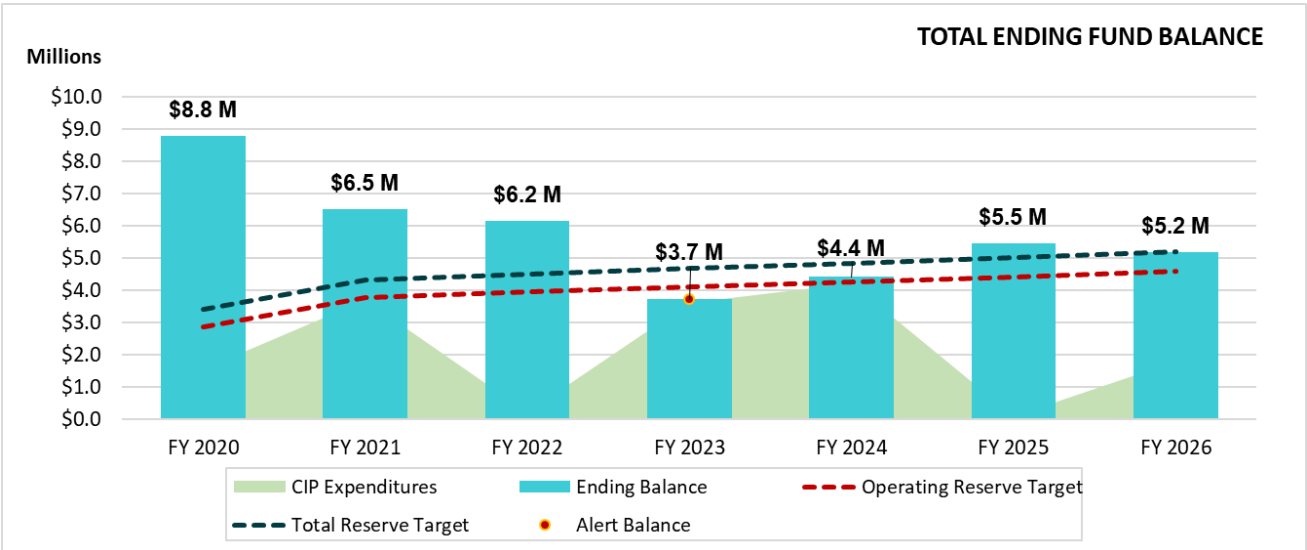


Figure 21 shows the Solid Waste Enterprise’s projected ending reserve balance under the proposed financial plan. The light blue bars indicate the ending balance. The operating reserve target and total (operating plus capital) reserve targets are represented by the red and blue dashed lines, respectively. Total annual CIP expenditures are represented by the shaded green area. Under the proposed financial plan, reserves are drawn down through FY 2023 before building back up to above the total reserve target in FY 2025 and FY 2026.

Figure 21: Proposed Solid Waste Enterprise Financial Plan – Projected Reserve Ending Balance



5.4.Solid Waste Cost of Service Analysis

Section 5.4 details the cost of service (COS) analysis performed for the Solid Waste Enterprise for FY 2020. The COS analysis allocates the overall rate revenue requirement to customer classes based on their proportional use of and burden on the solid waste system. This provides the basis for the development of proposed solid waste rates through FY 2026 in subsequent report sections.

5.4.1.METHODOLOGY

The framework utilized for the Solid Waste Enterprise COS analysis is similar to the methodical process used for the Water Enterprise COS analysis. The methodology presented in Section 5.4 is consistent with the prior solid waste rate study conducted in 2015. The primary steps of the Solid Waste Enterprise COS analysis are as follows:

1. **Revenue Requirement Determination:** The total solid waste rate revenue requirement is first broken down into separate operating and capital revenue requirements.
2. **Cost functionalization:** Solid Waste Enterprise expenses are categorized by their function in the system to provide a basis for allocating the operating and capital revenue requirements to various customer classes. Functional categories include collection and disposal.
3. **Unit cost development:** The revenue requirement for each functional category is divided by the appropriate units of service to determine the unit cost of each.
4. **Revenue requirement distribution:** The revenue requirement is distributed to customer classes based on unit costs and each customer class's individual service units.

5.4.2.SOLID WASTE RATE REVENUE REQUIREMENT

Table 5-20 shows the solid waste rate revenue requirement for FY 2020 (also referred to as the test year). The revenue requirement is split into operating and capital categories (Columns C-D). The revenue requirements (Lines 2-4) are equal to FY 2020 O&M expenses, debt service, and pay-as-you-go CIP. Revenue offsets (Lines 8-9) include grant funding and all other non-rate revenue. These revenues are applied as offsets to the final rate revenue requirement. All revenue requirement and revenue offset values shown are from Section 5.1 The reserve transfer adjustment (Line 13) is equal to the estimated contribution of rate revenues to reserves in FY 2020 after accounting for all revenue requirements and revenue offsets. Note that the total solid waste rate revenue requirement (Column E, Line 16) equals total calculated rate revenues under current rates in FY 2020 (from Table 5-5). This is because the COS analysis is based on FY 2020, which is before any revenue adjustments will be implemented. The final COS solid waste rate revenue requirement for the test year FY 2020 (Line 16) is calculated as follows:

Total revenue required from rates (Line 16) = Revenue requirements (Line 5) - Revenue offsets (Line 10) - Adjustments (Line 14)

Table 5-20: FY 2020 Solid Waste Rate Revenue Requirement

[A]	[B]	[C]	[D]	[E]
Line	Description	Operating Revenue Requirement	Capital Revenue Requirement	Total
1	Revenue Requirements			
2	O&M Expenses	\$11,456,786	\$0	\$11,456,786
3	Debt Service	\$0	\$1,551	\$1,551
4	Pay-as-you-go CIP	\$0	\$1,526,982	\$1,526,982
5	Total Revenue Requirements	\$11,456,786	\$1,528,533	\$12,985,319
6				
7	Less Revenue Offsets			
8	Grants	\$0	\$14,337	\$14,337
9	Other Miscellaneous Revenue	\$408,464	\$0	\$408,464
10	Total Revenue Offsets	\$408,464	\$14,337	\$422,801
11				
12	Less Adjustments			
13	Transfer from (to) Reserves	\$0	(\$1,618,604)	(\$1,618,604)
14	Total Adjustments	\$0	(\$1,618,604)	(\$1,618,604)
15				
16	Water Rate Revenue Requirement	\$11,048,322	\$3,132,800	\$14,181,122

5.4.3.SOLID WASTE ENTERPRISE COST ALLOCATION BASIS

The next step of the COS analysis is to develop an allocation basis for the revenue requirement based on the functionalization of the Solid Waste Enterprise's O&M expenses. Raftelis worked with City staff to assign O&M expenses to one of two functional categories:

- » **Collection:** costs that vary more closely based on the number of pickups or services provided; general costs that are mostly equitably distributed to customers based on the number of pickups or services provided
- » **Disposal:** costs that vary more closely based on the volume of solid waste generated; general costs that are mostly equitably distributed to customers based on the volume of solid waste generated

Table 5-21 shows a summary of FY 2020 O&M expenses by functional category. Raftelis worked with City staff to establish the proposed distribution of "Collections-Personnel" O&M expenses. All other O&M expenses were fully allocated to the Disposal functional category as most costs vary more closely based on the volume of solid waste generated. The overall cost allocation basis (Line 26) results in the attribution of 13.5 percent of O&M expenses to Collection and 86.5 percent to Disposal. This intermediate step is necessary to allocate the total revenue requirement.

Table 5-21: Solid Waste Cost of Service Allocation Basis (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Line	Description	Collection (%)	Disposal (%)	Collection (\$)	Disposal (\$)	FY 2020 O&M Expenses
1	COLLECTIONS					
2	Personnel	60.0%	40.0%	\$1,547,750	\$1,031,834	\$2,579,584
3	Operations	0.0%	100.0%	\$0	\$6,302,862	\$6,302,862
4	Subtotal			\$1,547,750	\$7,334,696	\$8,882,446
5						
6	STREET SWEEPING					
7	Personnel	0.0%	100.0%	\$0	\$196,029	\$196,029
8	Operations	0.0%	100.0%	\$0	\$123,516	\$123,516
9	Subtotal			\$0	\$319,545	\$319,545
10						
11	MATERIAL RECYCLING					
12	Personnel	0.0%	100.0%	\$0	\$871,347	\$871,347
13	Operations	0.0%	100.0%	\$0	\$503,285	\$503,285
14	Subtotal			\$0	\$1,374,633	\$1,374,633
15						
16	LANDFILL					
17	Personnel	0.0%	100.0%	\$0	\$319,738	\$319,738
18	Operations	0.0%	100.0%	\$0	\$560,425	\$560,425
19	Subtotal			\$0	\$880,163	\$880,163
20						
21	LANDFILL CLOSURE					
22	Personnel	0.0%	100.0%	\$0	\$0	\$0
23	Operations	0.0%	100.0%	\$0	\$0	\$0
24	Subtotal			\$0	\$0	\$0
25						
26	Total	13.5%	86.5%	\$1,547,750	\$9,909,036	\$11,456,786

5.4.4.SOLID WASTE COST OF SERVICE ALLOCATION

Table 5-22 shows the allocation of the operating and capital revenue requirements (from Table 5-20) to Collection and Disposal functional categories based on the overall allocation basis developed in the preceding section (from Table 5-21, Columns C-D, Line 26). Functionalization of O&M expenses provides the allocation for both the operating and capital revenue requirements. The total revenue requirement is allocated 13.5 percent to Collection and 86.5 percent to Disposal.

Table 5-22: Allocation of Solid Waste Enterprise Revenue Requirement (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]
Line	Revenue Requirement	Collection (%)	Disposal (%)	Collection (\$)	Disposal (\$)	FY 2020 O&M Expenses
1	Operating	13.5%	86.5%	\$1,492,569	\$9,555,753	\$11,048,322
2	Capital	13.5%	86.5%	\$423,224	\$2,709,575	\$3,132,800
3	Total	13.5%	86.5%	\$1,915,793	\$12,265,329	\$14,181,122

5.4.5.SOLID WASTE UNITS OF SERVICE

In order to develop unit costs for Collection and Disposal, units of service must be established for each functional category. The units of service used to develop Collection unit costs are total number of annual pickups and temporary services (referred to herein as “pickups”). The units of service used to develop Disposal unit costs is the total volume of solid waste generated (in gallons). Table 5-23 shows conversion factors and assumptions necessary to calculate units of service. Note that a factor of three is applied to determine solid waste volumes associated with compactor services.

Table 5-23: Cubic Yard and Compactor Conversions

Unit Conversion	
1 cubic yard =	201.97 gallons
Weighting for Compacting:	3x compacted waste

Table 5-24 and Table 5-25 show the calculation of FY 2020 units of service. For weekly collection services, it is assumed that there are 4 collections per month. Therefore, weekly pickups (Table 5-24, Column C) are multiplied by 48 weekly pickups per year²⁴ to determine pickups per year (Table 5-24, Column D). This is consistent with the calculation methodology used in the prior solid waste rate study in 2015. For all temporary services (Table 5-25), pickups per year (Column C) simply equals the total number of one-time services in FY 2020.

Volume (in gallons per pickup) is calculated in Table 5-24 (Column E) and Table 5-25 (Column D) based on volume in gallons or cubic yards of each type of service (Column B). Assumptions from Table 5-23 are used to convert cubic yards to gallons and to adjust the volume of compactor services based on the assumed weighting factor. Gallons per year is calculated as the number of pickups per year multiplied by the number of gallons per container. Volume in gallons per year in Table 5-24 (Column F) and Table 5-25 (Column E) is equal to pickups per year multiplied by gallons per pickup.

²⁴ 4 pickups per month × 12 months per year = 48 pickups per year

Table 5-24: Solid Waste Weekly Pickup Service Units of Service (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]
Line	Weekly Pickup Services	Weekly Pickups	Pickups/Year	Volume (Gallons/Pickup)	Volume (Gallons/Year)
1	Cart Service				
2	32 gal	5,432	260,736	32	8,343,552
3	68 gal	4,542	218,016	68	14,825,088
4	95 gal	1,122	53,856	95	5,116,320
5					
6	Container Service				
7	1 cu yd	45	2,136	202	431,417
8	1.5 cu yd	12	576	303	174,506
9	2 cu yd	162	7,776	404	3,141,100
10	3 cu yd	202	9,672	606	5,860,478
11	4 cu yd	258	12,384	808	10,004,985
12	6 cu yd	200	9,576	1,212	11,604,620
13	8 cu yd	70	3,360	1,616	5,429,062
14					
15	Drop Box Service				
16	20 cu yd	1	48	4,039	193,895
17	25 cu yd	2	96	5,049	484,738
18	30 cu yd	3	144	6,059	872,528
19	35 cu yd	0	0	7,069	0
20	40 cu yd	2	72	8,079	581,685
21					
22	Compactor Drop Box Service				
23	3 cu yd	6	288	1,818	523,517
24	4 cu yd	2	96	2,424	232,674
25	10 cu yd	0	0	6,059	0
26	15 cu yd	0	0	9,089	0
27	20 cu yd	0	0	12,118	0
28	22 cu yd	0	0	13,330	0
29	25 cu yd	0	0	15,148	0
30	30 cu yd	0	0	18,178	0
31	35 cu yd	0	0	21,207	0
32	40 cu yd	0	0	24,237	0
33					
34	Solid Waste (Organics) Collections				
35	68 gal	3	144	68	9,792
36	1 cu yd	10	480	202	96,948
37	2 cu yd	23	1,104	404	445,959
38	3 cu yd	3	144	606	87,253
39					
40	Total	12,098	580,704	160,529	68,460,115

Table 5-25: Solid Waste Temporary Service Units of Service (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]
Line	Temporary Services	Pickups/Year	Volume (Gallons/Pickup)	Volume (Gallons/Year)
1	Temporary Use Containers			
2	1 cu yd	25	202	5,049
3	1.5 cu yd	1	303	303
4	2 cu yd	58	404	23,429
5	3 cu yd	41	606	24,843
6	4 cu yd	92	808	74,326
7	6 cu yd	125	1,212	151,481
8	8 cu yd	23	1,616	37,163
9				
10	On-call Drop Box Service			
11	20 cu yd (<1/2 full)	181	2,020	365,573
12	20 cu yd	180	4,039	727,106
13	25 cu yd	37	5,049	186,826
14	30 cu yd	358	6,059	2,169,201
15	35 cu yd	95	7,069	671,564
16	40 cu yd	248	8,079	2,003,582
17	50 cu yd	0	10,099	0
18				
19	Compactor Drop Box Service			
20	3 yd Compactor	0	1,818	0
21	4 yd Compactor	0	2,424	0
22	10 yd Compactor	0	6,059	0
23	12 yd Compactor	0	7,271	0
24	15 yd Compactor	25	9,089	227,221
25	20 yd Compactor	100	12,118	1,211,844
26	22 yd Compactor	0	13,330	0
27	25 yd Compactor	0	15,148	0
28	30 yd Compactor	57	18,178	1,036,127
29	40 yd Compactor	48	24,237	1,163,370
30				
31	Temporary Special Use Containers* (Wood Waste, Yard Trimmings, & Scrap Metal)			
32	4 cu yd	0	808	0
33	6 cu yd	0	1,212	0
34	20 cu yd	0	4,039	0
35	25 cu yd	0	5,049	0
36	30 cu yd	0	6,059	0
37	35 cu yd	0	7,069	0
38	40 cu yd	0	8,079	0
39				
40	Temporary Recycling			
41	3 cu yd	0	606	0
42	6 cu yd	0	1,212	0
43	15 cu yd	0	3,030	0
44	30 cu yd	0	6,059	0
45				
46	Total	1,694	200,459	10,079,009

Table 5-26 shows of a summary of total units of service associated with weekly pickup services (from Table 5-24) and temporary services (from Table 5-25). The total number of pickups and total volume are used in the next section to develop Collection and Disposal unit costs.

Table 5-26: Summary of Solid Waste Units of Service (Test Year FY 2020)

Units of Service	Number of Pickups	Volume (gallons)
Weekly Pickup Services	580,704	68,460,115
Temporary Services	1,694	10,079,009
Total	582,398	78,539,124

5.4.6.SOLID WASTE COST OF SERVICE UNITS COSTS

Table 5-27 shows the calculation of Collection and Disposal unit costs based on the revenue requirement allocation (from Table 5-22) and total units of service (from Table 5-26) for the test year FY 2020. The portion of the revenue requirement allocated to Collection is divided by total annual pickups to determine a Collection unit cost per pickup. Similarly, the revenue requirement allocation to Disposal is divided by total gallons of solid waste to determine a Disposal unit cost per gallon.

Table 5-27: Solid Waste Unit Cost Calculation (Test Year FY 2020)

Description	Collection	Disposal
COS Allocation	\$1,915,793	\$12,265,329
Units of Service	582,398 pickups	78,539,124 gallons
Unit Cost	\$3.289 per pickup	\$0.156 per gallon

5.4.7.SOLID WASTE COST ALLOCATION TO CUSTOMER CLASSES

Table 5-28 shows projected FY 2020 rate revenues by charge based on current rates (Current COS) and the updated COS analysis presented in this section (Proposed COS). All proposed COS projections for FY 2020 are for illustrative purposes to demonstrate the distributional impacts of the updated COS allocations on each customer class. However, no changes to current rates will be implemented prior to FY 2022. Note that the results shown are based on detailed calculations that are dependent on rate design considerations addressed subsequently in Section 5.5.

Table 5-28: Cost to Serve by Solid Waste Customer Class

[A]	[B]	[C]	[D]	[E]	[F]
Line	Customer Class	Current COS FY 2020 (\$)	Proposed COS FY 2020 (\$)	Current COS FY 2020 (%)	Proposed COS FY 2020 (%)
1	Weekly Pickup Services				
2	Cart Service	\$6,442,730	\$6,169,226	45.4%	43.5%
3	Container Service	\$5,734,070	\$5,872,579	40.4%	41.4%
4	Drop Box Service	\$324,850	\$334,267	2.3%	2.4%
5	Compactor Drop Box Service	\$114,723	\$119,356	0.8%	0.8%
6	Solid Waste (Organics) Collections	\$71,279	\$106,098	0.5%	0.7%
7	Subtotal	\$12,687,652	\$12,601,527	89.5%	88.9%
8					
9	Temporary Services				
10	Temporary Use Containers	\$49,433	\$50,643	0.3%	0.4%
11	On-call Drop Box Service	\$931,876	\$959,967	6.6%	6.8%
12	On-call Compactor Drop Box Service	\$512,161	\$568,985	3.6%	4.0%
13	Temporary Special Use Containers* (Wood Waste, Yard Trimmings, & Scrap Metal)	\$0	\$0	0.0%	0.0%
14	Temporary Recycling	\$0	\$0	0.0%	0.0%
15	Subtotal	\$1,493,470	\$1,579,595	10.5%	11.1%
16					
17	Total	\$14,181,122	\$14,181,122	100.0%	100.0%

5.5. Proposed Solid Waste Rates

Section 5.5 shows detailed calculations of proposed solid waste rates through FY 2026. All proposed rates are first calculated directly from the results of the COS analysis (in Section 5.4) for FY 2020 (i.e., the “test year”). Note that proposed rates will not be implemented until FY 2022. Therefore, all FY 2020 “COS” rates shown represent intermediate results of the rate design process but will not be implemented. However, FY 2020 “COS” rates and charges must be calculated to provide a basis for proposed rates for FY 2022 through FY 2026 (shown in Section 5.5.3).

5.5.1. PROPOSED SOLID WASTE RATE STRUCTURE MODIFICATIONS

Raftelis worked with City staff to evaluate potential changes to the existing solid waste rate structure. All proposed solid waste rates presented in subsequent sections incorporate the following recommended revisions to the existing rate structure.

- 5. Solid Waste (Organics) to be charged the same rate as other weekly pickup services:** The current solid waste rate schedule for weekly pickup services includes unique rates for Solid Waste (Organics) customers. The Solid Waste Enterprise plans to significantly expand organics recycling due to recent legislation in the state that mandates the diversion of organic wastes from landfills (namely AB 1383 and SB 1383). The anticipated changes to the Solid Waste Enterprise’s cost structure over the study period make it challenging to develop unique Solid Waste (Organics) rates that are fair and equitable. Furthermore, differentiated rates for Solid Waste (Organics) may produce revenue instability as organics recycling expands. Therefore, Raftelis recommends that Solid Waste (Organics) customers be charged the same rates as other weekly pickup customers.

6. **Temporary Special Use Containers to be charged the same rate as other temporary services:** The current solid waste rate schedule for temporary services includes unique rates for Temporary Special Use Containers (Wood Waste, Yard Trimmings, & Scrap Metal). Raftelis recommends that Temporary Special Use Containers be charged the same rates as other temporary services. This proposed change will simplify the current solid waste rate structure.

5.5.2.SOLID WASTE RATES (TEST YEAR FY 2020)

Monthly COS charges for weekly pickup services are calculated for the test year FY 2020 in Table 5-29. All rates are composed of a Collection and Disposal component. The Collection component for each service type and size is based on the Collection unit cost (from Table 5-27) and the assumed four pickups per month. The Disposal component for each service type and size is based on the Disposal unit cost (from Table 5-27) and gallons per pickup (from Table 5-24, Column E). Monthly COS charges for weekly pickup service are calculated as follows:

$$\text{Collection component (Column E)} = \$3.289 \times 4 \text{ pickups per month}$$

$$\text{Disposal component (Column F)} = \$0.156 \text{ per gallon} \times \text{monthly volume in gallons (Column D)}^{25}$$

$$\text{COS monthly charge (Column G)} = \text{Collection component (Column E)} + \text{Disposal component (Column F)}$$

COS charges for temporary services are calculated for the test year FY 2020 in Table 5-30. All rates for temporary services are also composed of a Collection and Disposal component. The Collection component simply equals the Collection unit cost (from Table 5-27) because all temporary services are a one-time service. The Disposal component for each service type and size is based on the Disposal unit cost (from Table 5-27) and gallons per pickup (from Table 5-25, Column D). COS charges for weekly pickup service are calculated as follows:

$$\text{Collection component (Column E)} = \$3.289 \times 1 \text{ pickup}$$

$$\text{Disposal component (Column F)} = \$0.156 \text{ per gallon} \times \text{volume per service in gallons (Column D)}$$

$$\text{COS monthly charge (Column G)} = \text{Collection component (Column E)} + \text{Disposal component (Column F)}$$

²⁵ Monthly volume in gallons is equal to gallons per pickup (from Table 5-24, Column E) multiplied by four pickups per month.

Table 5-29: Solid Waste Weekly Pickup Service Rates Calculation (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Line	Weekly Pickup Services	Monthly Pickups	Monthly Volume (gallons)	Collection	Disposal	COS Monthly Charge	Current Monthly Charge	Difference (\$)	Difference (%)
1	Cart Service								
2	32 gal	4	128	\$13.16	\$19.99	\$33.15	\$35.60	(\$2.45)	-6.9%
3	68 gal	4	272	\$13.16	\$42.48	\$55.64	\$57.41	(\$1.77)	-3.1%
4	95 gal	4	380	\$13.16	\$59.34	\$72.51	\$73.76	(\$1.25)	-1.7%
5									
6	Container Service								
7	1 cu yd	4	808	\$13.16	\$126.17	\$139.33	\$138.56	\$0.77	0.6%
8	1.5 cu yd	4	1,212	\$13.16	\$189.25	\$202.41	\$199.73	\$2.68	1.3%
9	2 cu yd	4	1,616	\$13.16	\$252.34	\$265.50	\$260.91	\$4.59	1.8%
10	3 cu yd	4	2,424	\$13.16	\$378.50	\$391.67	\$383.25	\$8.42	2.2%
11	4 cu yd	4	3,232	\$13.16	\$504.67	\$517.83	\$505.61	\$12.22	2.4%
12	6 cu yd	4	4,847	\$13.16	\$757.01	\$770.17	\$750.31	\$19.86	2.6%
13	8 cu yd	4	6,463	\$13.16	\$1,009.34	\$1,022.51	\$995.00	\$27.51	2.8%
14									
15	Drop Box Service								
16	20 cu yd	4	16,158	\$13.16	\$2,523.36	\$2,536.52	\$2,463.19	\$73.33	3.0%
17	25 cu yd	4	20,197	\$13.16	\$3,154.20	\$3,167.36	\$3,078.99	\$88.37	2.9%
18	30 cu yd	4	24,237	\$13.16	\$3,785.04	\$3,798.20	\$3,694.79	\$103.41	2.8%
19	35 cu yd	4	28,276	\$13.16	\$4,415.87	\$4,429.04	\$4,310.58	\$118.46	2.7%
20	40 cu yd	4	32,316	\$13.16	\$5,046.71	\$5,059.88	\$4,910.17	\$149.71	3.0%
21									
22	Compactor Drop Box Service								
23	3 cu yd	4	7,271	\$13.16	\$1,135.51	\$1,148.67	\$1,103.11	\$45.56	4.1%
24	4 cu yd	4	9,695	\$13.16	\$1,514.01	\$1,527.18	\$1,470.80	\$56.38	3.8%
25	10 cu yd	4	24,237	\$13.16	\$3,785.04	\$3,798.20	\$3,676.98	\$121.22	3.3%
26	15 cu yd	4	36,355	\$13.16	\$5,677.55	\$5,690.72	\$5,515.45	\$175.27	3.2%
27	20 cu yd	4	48,474	\$13.16	\$7,570.07	\$7,583.23	\$7,353.93	\$229.30	3.1%
28	22 cu yd	4	53,321	\$13.16	\$8,327.08	\$8,340.24	\$8,089.32	\$250.92	3.1%
29	25 cu yd	4	60,592	\$13.16	\$9,462.59	\$9,475.75	\$9,192.39	\$283.36	3.1%
30	30 cu yd	4	72,711	\$13.16	\$11,355.11	\$11,368.27	\$11,030.89	\$337.38	3.1%
31	35 cu yd	4	84,829	\$13.16	\$13,247.62	\$13,260.79	\$12,869.36	\$391.43	3.0%
32	40 cu yd	4	96,948	\$13.16	\$15,140.14	\$15,153.30	\$14,707.83	\$445.47	3.0%
33									
34	Solid Waste (Organics) Collections								
35	68 gal	4	272	\$13.16	\$42.48	\$55.64	\$43.75	\$11.89	27.2%
36	1 cu yd	4	808	\$13.16	\$126.17	\$139.33	\$94.99	\$44.34	46.7%
37	2 cu yd	4	1,616	\$13.16	\$252.34	\$265.50	\$177.37	\$88.13	49.7%
38	3 cu yd	4	2,424	\$13.16	\$378.50	\$391.67	\$259.75	\$131.92	50.8%

Table 5-30: Solid Waste Temporary Service Rates Calculation (Test Year FY 2020)

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Line	Weekly Pickup Services	Pickups per Service	Volume per Service (gallons)	Collection	Disposal	COS Charge	Current Charge	Difference (\$)	Difference (%)
1	Temporary Use Containers								
2	1 cu yd	1	202	\$3.29	\$31.54	\$34.84	\$34.65	\$0.19	0.5%
3	1.5 cu yd	1	303	\$3.29	\$47.31	\$50.61	\$51.97	(\$1.36)	-2.6%
4	2 cu yd	1	404	\$3.29	\$63.08	\$66.38	\$65.25	\$1.13	1.7%
5	3 cu yd	1	606	\$3.29	\$94.63	\$97.92	\$95.83	\$2.09	2.2%
6	4 cu yd	1	808	\$3.29	\$126.17	\$129.46	\$126.41	\$3.05	2.4%
7	6 cu yd	1	1,212	\$3.29	\$189.25	\$192.55	\$187.60	\$4.95	2.6%
8	8 cu yd	1	1,616	\$3.29	\$252.34	\$255.63	\$248.77	\$6.86	2.8%
9									
10	On-call Drop Box Service								
11	20 cu yd (<1/2 full)	1	2,020	\$3.29	\$315.42	\$318.71	\$309.94	\$8.77	2.8%
12	20 cu yd	1	4,039	\$3.29	\$630.84	\$634.13	\$615.81	\$18.32	3.0%
13	25 cu yd	1	5,049	\$3.29	\$788.55	\$791.84	\$768.75	\$23.09	3.0%
14	30 cu yd	1	6,059	\$3.29	\$946.26	\$949.55	\$921.69	\$27.86	3.0%
15	35 cu yd	1	7,069	\$3.29	\$1,103.97	\$1,107.26	\$1,074.63	\$32.63	3.0%
16	40 cu yd	1	8,079	\$3.29	\$1,261.68	\$1,264.97	\$1,227.55	\$37.42	3.0%
17	50 cu yd	1	10,099	\$3.29	\$1,577.10	\$1,580.39	\$1,534.45	\$45.94	3.0%
18									
19	On-call Compactor Drop Box Service								
20	3 yd Compactor	1	1,818	\$3.29	\$283.88	\$287.17	\$276.12	\$11.05	4.0%
21	4 yd Compactor	1	2,424	\$3.29	\$378.50	\$381.80	\$368.14	\$13.66	3.7%
22	10 yd Compactor	1	6,059	\$3.29	\$946.26	\$949.55	\$920.34	\$29.21	3.2%
23	12 yd Compactor	1	7,271	\$3.29	\$1,135.51	\$1,138.80	\$1,104.40	\$34.40	3.1%
24	15 yd Compactor	1	9,089	\$3.29	\$1,419.39	\$1,422.68	\$1,380.49	\$42.19	3.1%
25	20 yd Compactor	1	12,118	\$3.29	\$1,892.52	\$1,895.81	\$1,839.31	\$56.50	3.1%
26	22 yd Compactor	1	13,330	\$3.29	\$2,081.77	\$2,085.06	\$2,024.72	\$60.34	3.0%
27	25 yd Compactor	1	15,148	\$3.29	\$2,365.65	\$2,368.94	\$2,300.82	\$68.12	3.0%
28	30 yd Compactor	1	18,178	\$3.29	\$2,838.78	\$2,842.07	\$2,756.92	\$85.15	3.1%
29	40 yd Compactor	1	24,237	\$3.29	\$3,785.04	\$3,788.33	\$2,845.28	\$943.05	33.1%
30									
31	Temporary Special Use Containers* (Wood Waste, Yard Trimmings, & Scrap Metal)								
32	4 cu yd	1	808	\$3.29	\$126.17	\$129.46	\$102.77	\$26.69	26.0%
33	6 cu yd	1	1,212	\$3.29	\$189.25	\$192.55	\$131.30	\$61.25	46.6%
34	20 cu yd	1	4,039	\$3.29	\$630.84	\$634.13	\$363.07	\$271.06	74.7%
35	25 cu yd	1	5,049	\$3.29	\$788.55	\$791.84	\$428.17	\$363.67	84.9%
36	30 cu yd	1	6,059	\$3.29	\$946.26	\$949.55	\$494.36	\$455.19	92.1%
37	35 cu yd	1	7,069	\$3.29	\$1,103.97	\$1,107.26	\$560.58	\$546.68	97.5%
38	40 cu yd	1	8,079	\$3.29	\$1,261.68	\$1,264.97	\$593.72	\$671.25	113.1%

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
Line	Weekly Pickup Services	Pickups per Service	Volume per Service (gallons)	Collection	Disposal	COS Charge	Current Charge	Difference (\$)	Difference (%)
39	Temporary Recycling								
40	3 cu yd	1	606	\$3.29	\$94.63	\$97.92	\$95.83	\$2.09	2.2%
41	6 cu yd	1	1,212	\$3.29	\$189.25	\$192.55	\$187.60	\$4.95	2.6%
42	15 cu yd	1	3,030	\$3.29	\$473.13	\$476.42	\$462.88	\$13.54	2.9%
43	30 cu yd	1	6,059	\$3.29	\$946.26	\$949.55	\$921.69	\$27.86	3.0%

5.5.3.PROPOSED FIVE-YEAR SOLID WASTE RATE SCHEDULE

Table 5-31 and Table 5-32 show the proposed five-year schedule of solid waste rates for FY 2022 to FY 2026. Proposed FY 2022 rates were calculated by increasing FY 2020 COS rates (from Table 5-29 and Table 5-30 by the proposed FY 2022 revenue adjustment of 7.5 percent (from Table 5-18). All proposed rates in subsequent years are then increased based on the schedule of proposed revenue adjustments (from Table 5-18). All proposed rates are rounded up to the nearest cent to ensure adequate revenue recovery. Current solid waste rates (from Table 5-1 and Table 5-2) are also shown.

Table 5-31: Proposed Schedule of Solid Waste Rates for Weekly Pickup Services

Monthly Charge per Weekly Pickup	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Cart Service						
32 gal	\$35.60	\$35.64	\$38.31	\$41.19	\$43.25	\$45.41
68 gal	\$57.41	\$59.82	\$64.30	\$69.13	\$72.58	\$76.21
95 gal	\$73.76	\$77.95	\$83.80	\$90.08	\$94.59	\$99.32
Container Service						
1 cu yd	\$138.56	\$149.78	\$161.02	\$173.09	\$181.75	\$190.84
1.5 cu yd	\$199.73	\$217.60	\$233.92	\$251.46	\$264.03	\$277.23
2 cu yd	\$260.91	\$285.42	\$306.82	\$329.83	\$346.33	\$363.64
3 cu yd	\$383.25	\$421.05	\$452.63	\$486.58	\$510.90	\$536.45
4 cu yd	\$505.61	\$556.67	\$598.42	\$643.30	\$675.47	\$709.24
6 cu yd	\$750.31	\$827.94	\$890.03	\$956.78	\$1,004.62	\$1,054.85
8 cu yd	\$995.00	\$1,099.20	\$1,181.64	\$1,270.27	\$1,333.78	\$1,400.47
Drop Box Service						
20 cu yd	\$2,463.19	\$2,726.76	\$2,931.27	\$3,151.12	\$3,308.67	\$3,474.10
25 cu yd	\$3,078.99	\$3,404.92	\$3,660.29	\$3,934.81	\$4,131.55	\$4,338.12
30 cu yd	\$3,694.79	\$4,083.07	\$4,389.30	\$4,718.50	\$4,954.42	\$5,202.14
35 cu yd	\$4,310.58	\$4,761.22	\$5,118.31	\$5,502.19	\$5,777.30	\$6,066.16
40 cu yd	\$4,910.17	\$5,439.38	\$5,847.33	\$6,285.88	\$6,600.17	\$6,930.18
Compactor Drop Box Service						
3 cu yd	\$1,103.11	\$1,234.83	\$1,327.44	\$1,426.99	\$1,498.34	\$1,573.26
4 cu yd	\$1,470.80	\$1,641.72	\$1,764.85	\$1,897.22	\$1,992.08	\$2,091.68
10 cu yd	\$3,676.98	\$4,083.07	\$4,389.30	\$4,718.50	\$4,954.42	\$5,202.14
15 cu yd	\$5,515.45	\$6,117.53	\$6,576.34	\$7,069.57	\$7,423.05	\$7,794.20
20 cu yd	\$7,353.93	\$8,151.98	\$8,763.38	\$9,420.63	\$9,891.66	\$10,386.24
22 cu yd	\$8,089.32	\$8,965.76	\$9,638.19	\$10,361.06	\$10,879.11	\$11,423.07
25 cu yd	\$9,192.39	\$10,186.44	\$10,950.42	\$11,771.70	\$12,360.28	\$12,978.30
30 cu yd	\$11,030.89	\$12,220.90	\$13,137.46	\$14,122.77	\$14,828.91	\$15,570.35
35 cu yd	\$12,869.36	\$14,255.35	\$15,324.51	\$16,473.84	\$17,297.53	\$18,162.41
40 cu yd	\$14,707.83	\$16,289.80	\$17,511.54	\$18,824.90	\$19,766.15	\$20,754.45
Solid Waste (Organics) Collections						
68 gal	\$43.75	\$59.82	\$64.30	\$69.13	\$72.58	\$76.21
1 cu yd	\$94.99	\$149.78	\$161.02	\$173.09	\$181.75	\$190.84
2 cu yd	\$177.37	\$285.42	\$306.82	\$329.83	\$346.33	\$363.64
3 cu yd	\$259.75	\$421.05	\$452.63	\$486.58	\$510.90	\$536.45

Table 5-32: Proposed Schedule of Solid Waste Rates for Temporary Services

Charge per Temporary Service	Current	Proposed July 2021	Proposed July 2022	Proposed July 2023	Proposed July 2024	Proposed July 2025
Temporary Use Containers						
1 cu yd	\$34.65	\$37.46	\$40.27	\$43.29	\$45.45	\$47.72
1.5 cu yd	\$51.97	\$54.41	\$58.49	\$62.88	\$66.02	\$69.32
2 cu yd	\$65.25	\$71.36	\$76.72	\$82.47	\$86.59	\$90.92
3 cu yd	\$95.83	\$105.27	\$113.16	\$121.65	\$127.73	\$134.12
4 cu yd	\$126.41	\$139.17	\$149.61	\$160.83	\$168.87	\$177.32
6 cu yd	\$187.60	\$207.00	\$222.52	\$239.21	\$251.17	\$263.73
8 cu yd	\$248.77	\$274.81	\$295.42	\$317.57	\$333.45	\$350.12
On-Call Drop Box Service						
20 cu yd (<1/2 full)	\$309.94	\$342.62	\$368.31	\$395.94	\$415.73	\$436.52
20 cu yd	\$615.81	\$681.69	\$732.82	\$787.78	\$827.17	\$868.53
25 cu yd	\$768.75	\$851.23	\$915.08	\$983.71	\$1,032.89	\$1,084.53
30 cu yd	\$921.69	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54
35 cu yd	\$1,074.63	\$1,190.31	\$1,279.58	\$1,375.55	\$1,444.33	\$1,516.54
40 cu yd	\$1,227.55	\$1,359.85	\$1,461.84	\$1,571.47	\$1,650.05	\$1,732.55
50 cu yd	\$1,534.45	\$1,698.92	\$1,826.34	\$1,963.32	\$2,061.48	\$2,164.56
On-call Compactor Drop Box Service						
3 yd Compactor	\$276.12	\$308.71	\$331.87	\$356.76	\$374.59	\$393.32
4 yd Compactor	\$368.14	\$410.44	\$441.22	\$474.31	\$498.03	\$522.93
10 yd Compactor	\$920.34	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54
12 yd Compactor	\$1,104.40	\$1,224.21	\$1,316.03	\$1,414.73	\$1,485.47	\$1,559.74
15 yd Compactor	\$1,380.49	\$1,529.39	\$1,644.09	\$1,767.40	\$1,855.77	\$1,948.55
20 yd Compactor	\$1,839.31	\$2,038.00	\$2,190.85	\$2,355.16	\$2,472.92	\$2,596.57
22 yd Compactor	\$2,024.72	\$2,241.44	\$2,409.55	\$2,590.27	\$2,719.78	\$2,855.77
25 yd Compactor	\$2,300.82	\$2,546.62	\$2,737.61	\$2,942.93	\$3,090.08	\$3,244.58
30 yd Compactor	\$2,756.92	\$3,055.23	\$3,284.37	\$3,530.70	\$3,707.23	\$3,892.60
40 yd Compactor	\$2,845.28	\$4,072.46	\$4,377.89	\$4,706.24	\$4,941.55	\$5,188.62
Temporary Special Use Containers* (Wood Waste, Yard Trimmings, & Scrap Metal)						
4 cu yd	\$102.77	\$139.17	\$149.61	\$160.83	\$168.87	\$177.32
6 cu yd	\$131.30	\$207.00	\$222.52	\$239.21	\$251.17	\$263.73
20 cu yd	\$363.07	\$681.69	\$732.82	\$787.78	\$827.17	\$868.53
25 cu yd	\$428.17	\$851.23	\$915.08	\$983.71	\$1,032.89	\$1,084.53
30 cu yd	\$494.36	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54
35 cu yd	\$560.58	\$1,190.31	\$1,279.58	\$1,375.55	\$1,444.33	\$1,516.54
40 cu yd	\$593.72	\$1,359.85	\$1,461.84	\$1,571.47	\$1,650.05	\$1,732.55
Temporary Recycling						
3 cu yd	\$95.83	\$105.27	\$113.16	\$121.65	\$127.73	\$134.12
6 cu yd	\$187.60	\$207.00	\$222.52	\$239.21	\$251.17	\$263.73
15 cu yd	\$462.88	\$512.16	\$550.57	\$591.86	\$621.45	\$652.53
30 cu yd	\$921.69	\$1,020.77	\$1,097.33	\$1,179.63	\$1,238.61	\$1,300.54

6. Customer Bill Impacts

6.1. Monthly Bill Impacts

Section 6 includes sample monthly bill impacts for single family residential customers receiving water, wastewater, and solid waste service from the City. Sample bills are shown for two representative customers:

1) Low-Impact Single Family Residential Customer:

- » Representative of a small household with 1-2 persons
- » Water service: 5/8-inch water meter using 6 CCF per month (*median water use for residential customers*)
- » Wastewater service: fixed monthly charge for one dwelling unit
- » Solid waste service: 32-gallon weekly cart service (*smallest cart size*)

2) Typical Single Family Residential Customer:

- » Representative of an average family household with 3-4 persons
- » Water service: 5/8-inch water meter using 8 CCF per month (*average water use for residential customers*)
- » Wastewater service: fixed monthly charge for one dwelling unit
- » Solid waste service: 68-gallon weekly cart service (*medium cart size*)

Monthly bill impacts for a low-impact single family residential customer are shown in Table 6-1 and Table 6-2. Low-impact customers will see an overall decrease of \$1.55 in combined water, wastewater, and solid waste monthly bills in FY 2022 primarily due to a one-time decrease in the Meter Size Availability Fee for 5/8-inch water meters. This is a result of basing the updated water COS analysis on AWWA-rated meter capacity ratios based on best industry practices. After the first year of proposed rates are implemented in FY 2022, a low-impact residential customer's combined monthly bill will increase by \$6.84 (4.7 percent) per year on average through FY 2026 due to subsequent year revenue adjustments.

Table 6-1: FY 2022 Monthly Bill Impacts for Low-Impact Single Family Residential Customers

Utility Service	Current Monthly Bill (FY 2021)	Proposed Monthly Bill (FY 2022)	Difference (\$)	Difference (%)
Water	\$57.27	\$52.46	(\$4.81)	-8.4%
Wastewater	\$42.84	\$46.06	\$3.22	7.5%
Solid Waste	\$35.60	\$35.64	\$0.04	0.1%
Total	\$135.71	\$134.16	(\$1.55)	-1.1%

Table 6-2: Monthly Bills through FY 2026 for Low-Impact Single Family Residential Customers

Utility Service	Current Monthly Bill (FY 2021)	Proposed Monthly Bill (FY 2022)	Proposed Monthly Bill (FY 2023)	Proposed Monthly Bill (FY 2024)	Proposed Monthly Bill (FY 2025)	Proposed Monthly Bill (FY 2026)
Water	\$57.27	\$52.46	\$52.99	\$53.52	\$54.05	\$54.59
Wastewater	\$42.84	\$46.06	\$49.51	\$53.22	\$57.22	\$61.51
Solid Waste	\$35.60	\$35.64	\$38.31	\$41.19	\$43.25	\$45.41
Total	\$135.71	\$134.16	\$140.81	\$147.93	\$154.52	\$161.51

Monthly bill impacts for a typical single family residential customer are shown in Table 6-3 and Table 6-4. Typical customers will see an overall increase of \$2.10 in combined water, wastewater, and solid waste monthly bills in FY 2022. Water and solid waste monthly bills do not simply increase in FY 2022 in proportion to proposed revenue adjustments due to the distributional impacts from the water and solid waste COS analyses. After the first year of proposed rates are implemented in FY 2022, a typical residential customer's combined monthly bill will increase by \$8.60 (4.7 percent) per year on average through FY 2026 due to subsequent year revenue adjustments.

Table 6-3: FY 2022 Monthly Bill Impacts for Typical Single Family Residential Customers

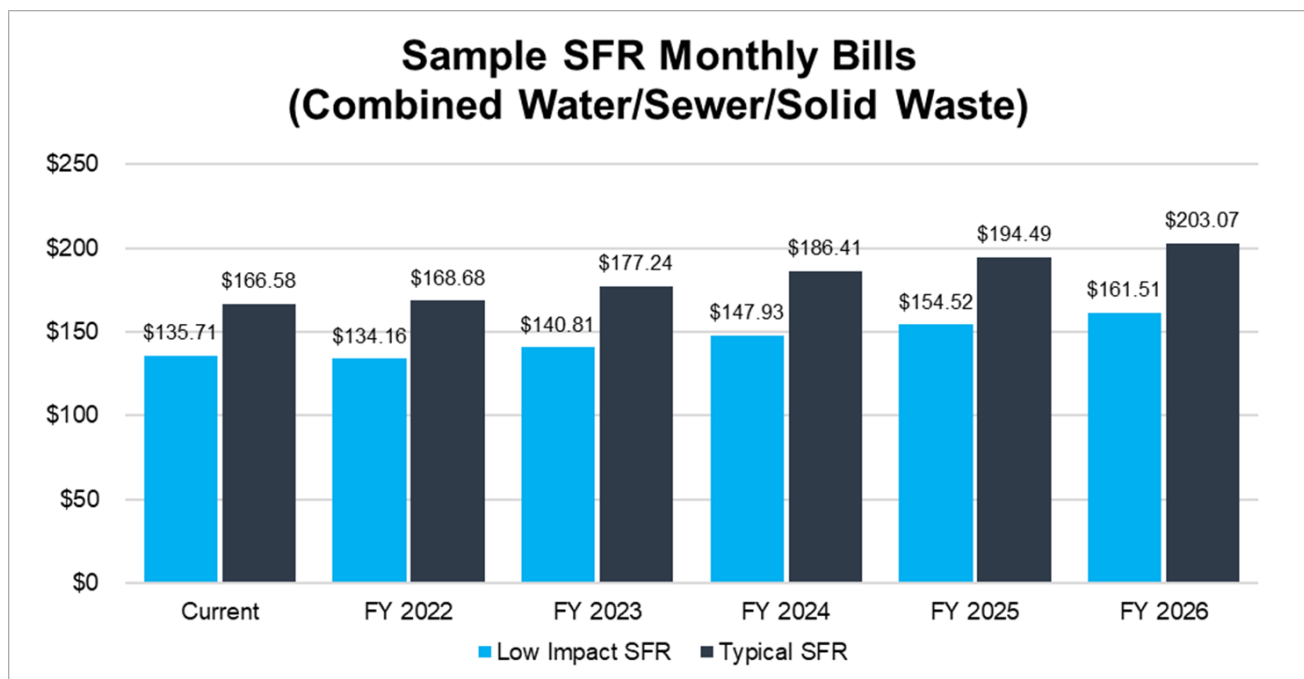
Utility Service	Current Monthly Bill (FY 2021)	Proposed Monthly Bill (FY 2022)	Difference (\$)	Difference (%)
Water	\$66.33	\$62.80	(\$3.53)	-5.3%
Wastewater	\$42.84	\$46.06	\$3.22	7.5%
Solid Waste	\$57.41	\$59.82	\$2.41	4.2%
Total	\$166.58	\$168.68	\$2.10	1.3%

Table 6-4: Monthly Bills through FY 2026 for Typical Single Family Residential Customers

Utility Service	Current Monthly Bill (FY 2021)	Proposed Monthly Bill (FY 2022)	Proposed Monthly Bill (FY 2023)	Proposed Monthly Bill (FY 2024)	Proposed Monthly Bill (FY 2025)	Proposed Monthly Bill (FY 2026)
Water	\$66.33	\$62.80	\$63.43	\$64.06	\$64.69	\$65.35
Wastewater	\$42.84	\$46.06	\$49.51	\$53.22	\$57.22	\$61.51
Solid Waste	\$57.41	\$59.82	\$64.30	\$69.13	\$72.58	\$76.21
Total	\$166.58	\$168.68	\$177.24	\$186.41	\$194.49	\$203.07

Figure 22 summarizes combined monthly bill impacts for low-impact and typical single family residential customers over the study period.

Figure 22: Single Family Residential Monthly Bill Impacts

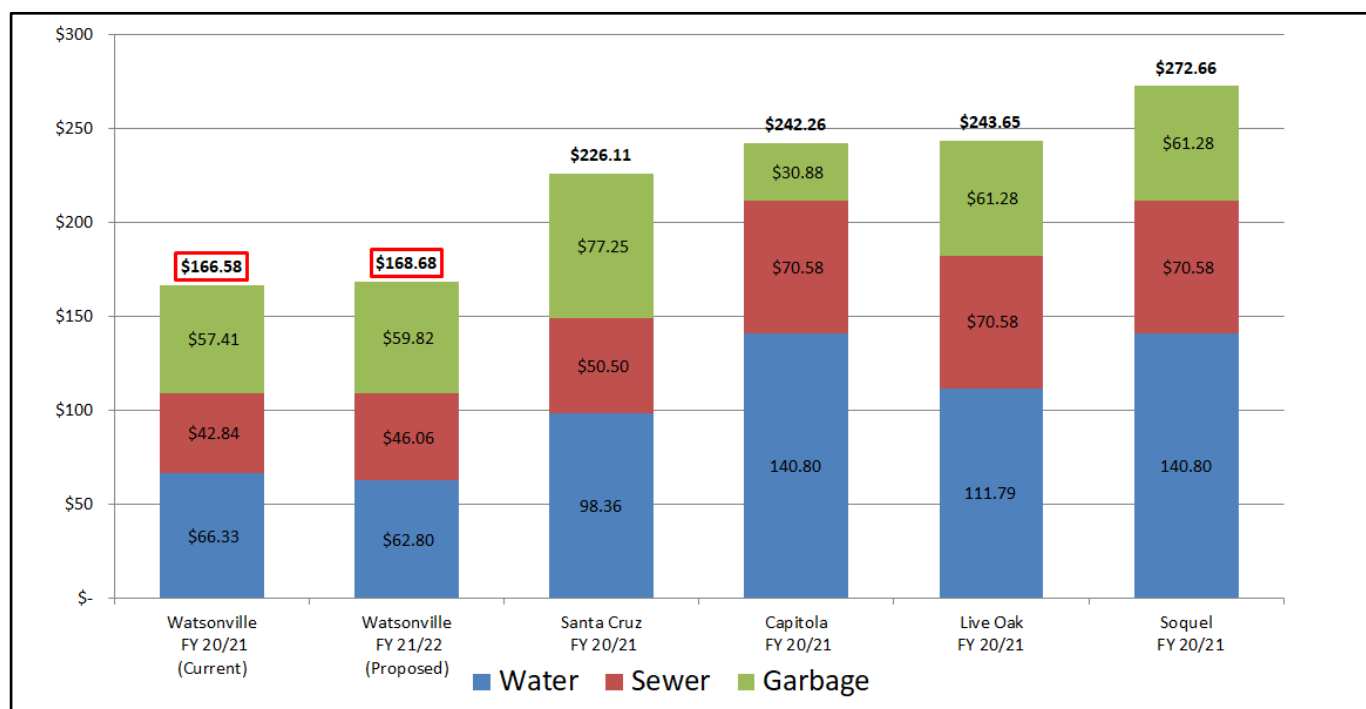


6.2.Monthly Bill Comparison with Neighboring Communities

Figure 23 shows a comparison of typical single family residential combined monthly water, wastewater, and solid waste bills in the City of Watsonville with four neighboring communities. All bills are calculated based on the smallest meter size available, monthly water use of 8 CCF, and solid waste service comparable to the City's 68-gallon weekly cart service. Monthly bills for other neighboring communities are based on rates currently in effect as of FY 2021. Estimated monthly bills based on the City's current and proposed FY 2022 rates are significantly lower than current monthly bills in all four neighboring communities.

By FY 2026, a typical single family residential customer in the City will still stay pay considerably less compared to current monthly bills in all four neighboring communities shown. While customers in the City will experience significant monthly bill increases over the next five years under the proposed rate schedule, utility service will still remain affordable compared to other nearby communities

Figure 23: Single Family Residential Monthly Bill Comparison with Neighboring Communities



Note: Figure reflects current rates for neighboring communities.