

Public Hearing
April 27, 2020

Wastewater Rate Study

City of
Livermore



Report Date March 10, 2020

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Executive Summary

The City of Livermore (City) periodically reviews its utilities to determine if adjustments are required to continue meeting its operational costs, fund system improvements, and maintain adequate reserve funding based on their adopted reserve policies. The last cost of service study was conducted in 2017 and set rates for Fiscal Years (FY) 2017-18 through FY 2019-20. With the City in its last year of noticed rates, updating the wastewater utility's long-term financial plan and performing a comprehensive cost of service analysis is a prudent business practice to ensure the utility can fully fund its revenue needs over the next five fiscal years; FY 2021 through FY 2025 (Rate Setting Period).

As part of reviewing and updating utility rates, a thorough review of the financial health of the utility should be conducted. Based on a 10-year financial plan, revenues from current rates sufficiently covers operating expenses for the Rate Setting Period; however, the utility has significant capital projects during this time. The major projects coming online include building improvements, tank modifications, primary and secondary maintenance, and tertiary treatment improvements, which collectively total approximately \$40M. At current rates, revenues will not be sufficient to fund necessary system improvements and meet reserve requirements.

The City's rate structure includes a monthly fixed charge and commodity rates for non-residential customer classes. Residential customers commodity rates are converted to a monthly flat charge and the total annual charge against residential customers are collected on the property tax bill. The proposed rate structure is similar to the existing rate structure with a few slight adjustments reflecting the updated cost of service analysis.

The proposed rates derived within this report include five years of adjustments, commencing on July 1, 2020 for FY 2020-21 through July 1, 2024 for FY 2024-25. With the proposed rates, the utility will continue to generate positive net income above operating, fully fund its capital projects through a combination of cash on hand and additional revenue recovery through the phased-in annual adjustments and meet minimum reserve targets throughout the Rate Setting Period¹. The recommended rates have been incorporated into a notice and mailed to each customer as part of the Proposition 218 noticing requirements. A Public Hearing is scheduled for April 27, 2020 on the proposed rates identified in Table 1 and Table 2.

¹ The proposed financial plan assumes water usage and projected flows do not fall below FY 2018-19 demand and future expenses do not exceed the projected costs identified herein.

City of Livermore –Wastewater Rate Study

Table 1: Proposed Monthly Flat Charges

Monthly Flat Charges (\$)					
Customer Class	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Single-Family	\$58.93	\$61.88	\$64.98	\$68.23	\$71.65
Multi-Family / Condo	\$48.21	\$50.63	\$53.17	\$55.83	\$58.63
Bakeries	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Commercial Laundry	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Markets w/ Disposals	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Mortuaries	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Restaurants	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
All Other Commercial	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Schools / Institutional	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42

Table 2: Proposed Variable Charges

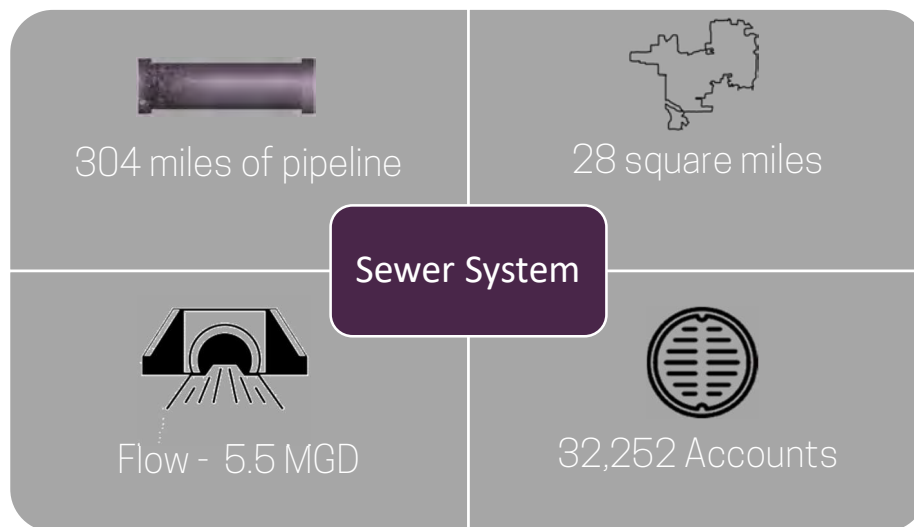
Commodity Rates (\$)					
Customer Class	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Bakeries	\$10.01	\$10.52	\$11.05	\$11.61	\$12.20
Commercial Laundry	\$6.23	\$6.55	\$6.88	\$7.23	\$7.60
Markets w/ Disposals	\$10.04	\$10.55	\$11.08	\$11.64	\$12.23
Mortuaries	\$10.04	\$10.55	\$11.08	\$11.64	\$12.23
Restaurants	\$10.01	\$10.52	\$11.05	\$11.61	\$12.20
All Other Commercial	\$4.44	\$4.67	\$4.91	\$5.16	\$5.42
Schools / Institutional	\$4.33	\$4.55	\$4.78	\$5.02	\$5.28

Overview

Wastewater System

The City’s wastewater collection system serves the entire City as well as areas outside the City limits, but within its urban growth boundary. The City also provides wastewater services to an area known as Ruby Hill within the City of Pleasanton and serves an industrial customer through contract – Lawrence Livermore National Laboratory (LLNL). Revenues from Ruby Hill and LLNL are offsets to the remaining ratepayers. The City’s wastewater service area spans approximately 28 square miles and serves a population slightly over 90,000. The collection system includes 304 miles of gravity mains, 3 miles of force mains, and 4 pump stations. The City treats all of its wastewater at the Livermore Water Reclamation Plant (Wastewater Plant) and treats approximately 5.5 Million Gallons per Day (MGD) of influent.

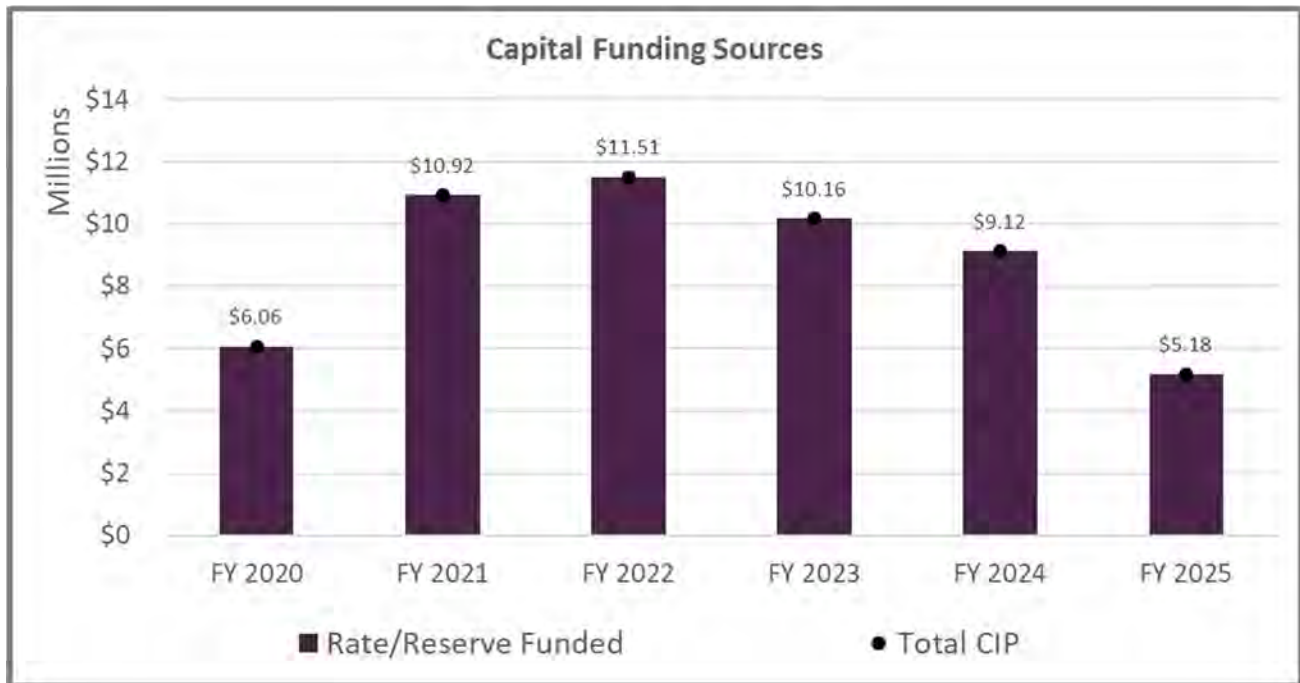
Figure 1: City Wastewater System



In 2017, the City completed a Wastewater Master Plan (Master Plan) that reviewed the utility system’s design and performance to determine a Capital Improvement Plan (CIP) addressing existing system needs and expansions related to growth. Based on the Master Plan, the City developed a detailed capital improvement plan through the Rate Setting Period and beyond. The CIP includes significant projects during the Rate Setting Period that include building improvements, tank modifications, and improvements at the Wastewater Plant. With these scheduled capital projects, capital spending spikes occur during the Rate Setting Period that exceed \$10M in FY 2021 through FY 2023. Funding these system improvements is a major priority addressed within the proposed financial plan. Figure 2 shows the City’s capital plan through FY 2025.

City of Livermore –Wastewater Rate Study

Figure 2: Utility Capital Improvement Plan



Customers

The City serves approximately 32,250 accounts/units, with over 95% of accounts classified as residential. Table 3 provides a summary of accounts/units by customer class.

Table 3: Accounts/Units by Customer Class

Customer Class	Number of Accounts / Units
Single-Family	23,084
Multi-Family / Condo	8,144
Bakeries	3
Commercial Laundry	2
Markets w/ Disposals	12
Mortuaries	1
Restaurants	79
All Other Commercial	822
Schools / Institutional	105
Total	32,252

City of Livermore –Wastewater Rate Study

As previously mentioned, the current rate structure consists of a monthly flat charge and commodity flow rates for non-residential customers per hundred cubic feet (hcf) of water usage. Current monthly flat charges are identified in

Table 4 followed by Table 5 identifying commodity flow rates by customer class.

Table 4: FY 2020 Flat Charges (\$/Month)

Customer Class	Accounts / Units	Monthly Flat Charge
Single-Family	23,084	\$56.35
Multi-Family / Condo	8,144	\$42.50
Bakeries	3	\$22.61
Commercial Laundry	2	\$22.61
Markets w/ Disposals	12	\$22.61
Mortuaries	1	\$22.61
Restaurants	79	\$22.61
All Other Commercial	822	\$22.61
Schools / Institutional	105	\$22.61

Table 5: FY 2020 Commodity Flow Rates (\$/hcf)

Customer Class	Water Usage	Flow Rates
Bakeries	1,429	\$8.28
Commercial Laundry	4,274	\$5.37
Markets w/ Disposals	18,015	\$8.30
Mortuaries	1,037	\$8.30
Restaurants	39,055	\$8.28
All Other Commercial	444,047	\$4.13
Schools / Institutional	67,353	\$3.91

Financial Plan Overview

Financial Planning

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

- 1) Historical water sales, treated flows, and expected flows by customer class to determine an appropriate amount of flow return to the Wastewater Plant.
- 2) Operational costs that may change over the planning period as a result of inflation as well any new expenditures incurred to meet strategic goals, State mandates, or changes in operations.
- 3) Multi-year system improvement needs and scheduling based on priority. This review also considers available funding sources to complete projects such as pay-as-you-go (PAYGO), grants, and debt financing.
- 4) Reserve funding to meet adopted reserve policies. The goal is to generate adequate cash on hand to mitigate financial risks related to operating cashflow needs, unexpected increases in expenses, shortages in system reinvestment, and mitigating potential system failures.

Figure 3 illustrates the key elements when developing a long-term financial plan

Figure 3: Financial Plan Key Elements



Financial Planning Assumptions

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

Table 6: Assumptions for Forecasting Revenues

Financial Inputs	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Account Growth	0.0%	0.0%	0.0%	0.0%	0.0%
Water / Flow Demand Increase	0.0%	0.0%	0.0%	0.0%	0.0%
Interest Earnings	1.0%	1.0%	1.0%	1.0%	1.0%
Non-Inflated	0.0%	0.0%	0.0%	0.0%	0.0%
Total Wastewater Flow	2,663,816	2,663,816	2,663,816	2,663,816	2,663,816
Non-Residential Water Usage	575,210	575,210	575,210	575,210	575,210

Table 7: Assumptions for Forecasting Expense Requirements

Expenditure Escalations	Notes	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
General	CPI - SF (10yr Avg)	2.5%	2.5%	2.5%	2.5%	2.5%
Salary		5.0%	3.0%	3.0%	3.0%	3.0%
Benefits		5.0%	5.0%	5.0%	5.0%	5.0%
Energy		5.0%	5.0%	5.0%	5.0%	5.0%
Chemicals		5.0%	5.0%	5.0%	5.0%	5.0%
Capital	ENR - 20-City (10yr Avg)	2.6%	2.6%	2.6%	2.6%	2.6%
Non-Inflated		0.0%	0.0%	0.0%	0.0%	0.0%
Inflow / Infiltration (I / I)		2.7%	2.7%	2.7%	2.7%	2.7%

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Current Financial Position

Revenues

Based on the forecasting assumptions, revenues were calculated using FY 2020 rates, current account data, and FY 2019 water sales subject to the commodity rates. Table 8 provides a summary of calculated rate revenues and other non-rate revenues available through the Rate Setting Period. The detailed rate revenue calculations can be found in Appendix A-1.

Table 8: Projected Revenues

Revenue	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue from Rates						
Fixed Revenues	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000
Variable Rate Revenue	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000
Total Rate Revenue	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000
Other Operating Revenues						
Contract Customer - LLNL	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000
Ruby Hill	\$457,000	\$457,000	\$457,000	\$457,000	\$457,000	\$457,000
Miscellaneous	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
Source Control Fees	\$167,000	\$167,000	\$167,000	\$167,000	\$167,000	\$167,000
Admin Cost Recovery	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000
Interest	\$91,000	\$118,000	\$70,000	\$71,000	\$72,000	\$74,000
Subtotal Other Operating Revenues	\$1,799,000	\$1,826,000	\$1,778,000	\$1,779,000	\$1,780,000	\$1,782,000
Total Revenues	\$24,454,000	\$24,481,000	\$24,433,000	\$24,434,000	\$24,435,000	\$24,437,000

Expenses

The FY 2020 budget was used as the baseline expenses of the utility and adjusted in subsequent years based on the escalation factors shown in Table 7. Table 9 summarizes projected Operational & Maintenance (O&M) costs through FY 2025. Each expense category includes detailed line item expenditures that were discussed with staff to determine the appropriate escalation factor to use for forecasting how costs will increase over time. Detailed expenses and the corresponding escalation categories are shown in Appendix A-2.

Table 9: Projected O&M Expenses

O&M Expenses	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Operating Expenses						
SFR Fixed Lateral Program	\$283,000	\$283,000	\$283,000	\$283,000	\$283,000	\$283,000
Other Financial Services (LAVWMA)	\$2,651,000	\$2,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Personnel Services	\$4,596,000	\$4,825,000	\$4,969,000	\$5,118,000	\$5,271,000	\$5,428,000
Services & Supplies	\$8,394,000	\$8,721,000	\$9,005,000	\$9,300,000	\$9,605,000	\$9,919,000
Supplemental Personnel Services	\$3,667,000	\$3,835,000	\$3,976,000	\$4,122,000	\$4,273,000	\$4,430,000
230 - Capital and Services	\$436,000	\$448,000	\$460,000	\$472,000	\$484,000	\$497,000
239 - Capital and Services	\$906,000	\$937,000	\$963,000	\$990,000	\$1,018,000	\$1,046,000
Subtotal Operating Expenses	\$20,933,000	\$21,549,000	\$21,656,000	\$22,285,000	\$22,934,000	\$23,603,000
Total Expenses	\$20,933,000	\$21,549,000	\$21,656,000	\$22,285,000	\$22,934,000	\$23,603,000

Reserves

Figure 4: Utility Reserves



Established reserves include an Operating Reserve and Replacement Reserve. These reserves help mitigate risks to the utility by ensuring sufficient cash is on hand for daily operations and to fund annual system improvements. In addition, these reserves help smooth rates and mitigate rate spikes due to emergencies or above-average system costs. The most recent adopted reserve policies identify the function of each reserve and Table 10 summarizes the minimum reserve requirements and the ideal funding targets of each.

Table 10: Reserve Requirements and Targets

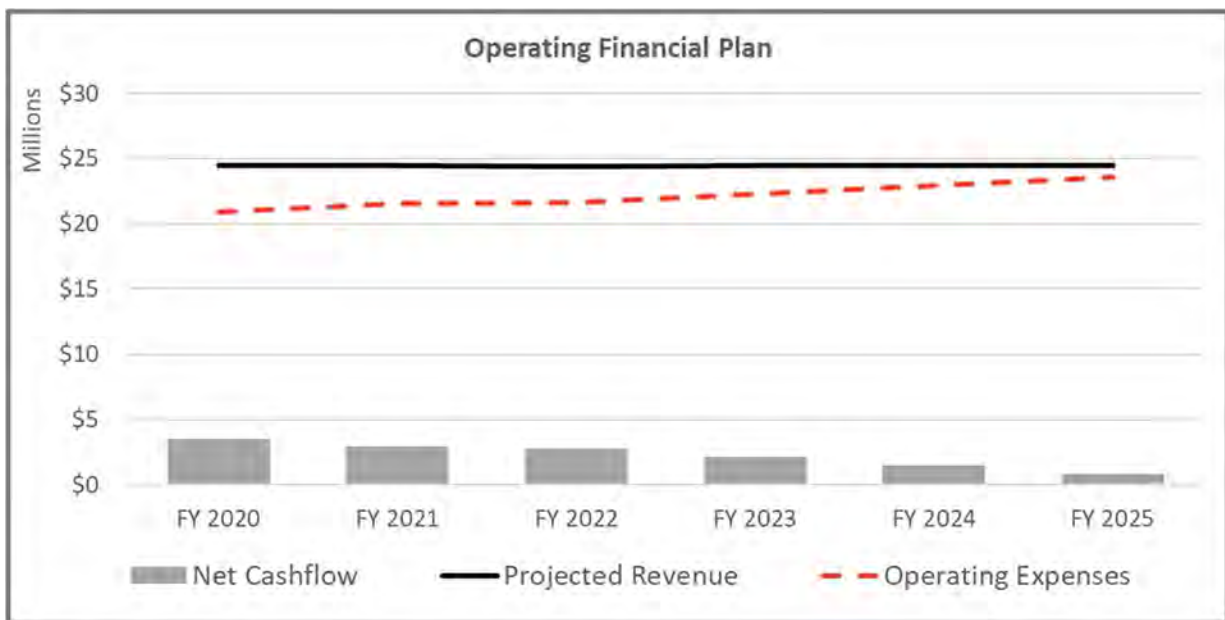
Reserve	Minimum Requirement	Reserve Target
Operating	120 Days of Operating Expenses	
Replacement	Annual depreciation	Annual avg. of 10-year CIP needs

The reserve balance as of July 1, 2019 equaled approximately \$45.2M.

Financial Outlook at Existing Rates

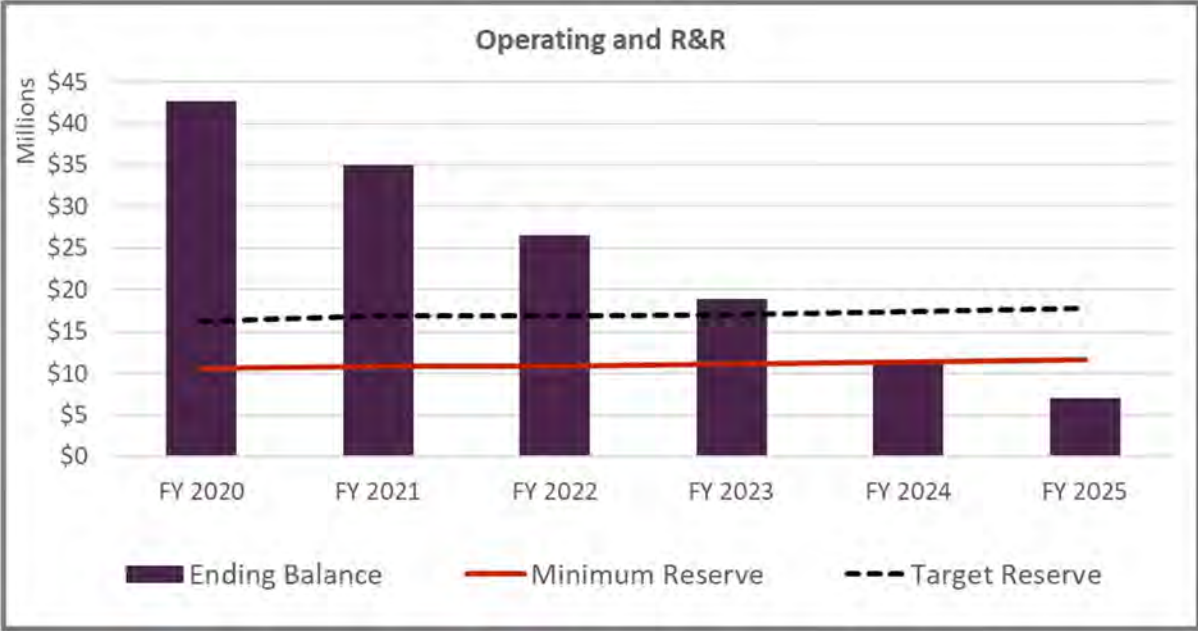
Calculating revenue using current rates and projecting expenses determines the financial health of the utility. Revenues from existing rates are sufficient to fund O&M through FY 2025; however, the increase in capital spending over the Rate Setting Period will generate pressure to increase rates. Only a portion of the system needs can be funded with projected net operating income resulting in the use of reserves to cover the remaining capital costs. Figure 5 illustrates the operating position of the utility, where O&M expenses are identified with the dashed red trendline and total revenues at current rates are shown by the horizontal black trendline. The bars represent the amount of net operating income available for capital spending and reserve funding.

Figure 5: Current Operating Financial Position



With the CIP reflecting almost \$53M in spending from FY 2020 through the Rate Setting Period, as shown in Figure 2, reserves will be utilized to cover the remaining capital expenses to ensure necessary projects continue to move forward as scheduled. Figure 6 reflects the projected ending balance of reserves after operating and capital projects are funded. As shown in Figure 6, the City builds up cash in reserves to cover periodic spikes in capital spending to mitigate rate spikes. However, at current rates, reserves would drop below the minimum reserve requirement by FY 2025 and funding for ongoing system improvements in future years would not be available.

Figure 6: Projected Ending Reserves at Current Rates



Proposed Financial Plan

From the financial outlook at existing rates, a proposed financial plan can be developed to adequately fund the multi-year revenue requirements, while satisfying debt covenants. Based on funding the capital plan over the Rate Setting Period and ensuring reserves meet minimum targets, Table 11 forecasts revenue of the proposed financial plan, including single-digit revenue adjustments to generate additional rate revenue through FY 2025. A detailed cashflow proforma through the Rate Setting Period is included as Appendix A-3.

Table 11: Proposed Financial Plan - Forecasted Revenues

Revenue	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue from Rates						
Fixed Revenues	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000
Variable Rate Revenue	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000
Total Rate Revenue	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000
Additional Revenue (from revenue adjustments):						
Fiscal Year	Revenue Adjustment	Effective Month				
FY 2020	0.0%	July	\$0	\$0	\$0	\$0
FY 2021	7.0%	July	\$1,586,000	\$1,586,000	\$1,586,000	\$1,586,000
FY 2022	5.0%	July	\$1,212,000	\$1,212,000	\$1,212,000	\$1,212,000
FY 2023	5.0%	July		\$1,273,000	\$1,273,000	\$1,273,000
FY 2024	5.0%	July			\$1,336,000	\$1,336,000
FY 2025	5.0%	July				\$1,403,000
Total Additional Revenue			\$0	\$1,586,000	\$2,798,000	\$4,071,000
Projected Rate Revenues	\$22,655,000	\$24,241,000	\$25,453,000	\$26,726,000	\$28,062,000	\$29,465,000
Other Operating Revenues						
Contract Customer - LLNL	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000
Ruby Hill	\$457,000	\$457,000	\$457,000	\$457,000	\$457,000	\$457,000
Miscellaneous	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
Source Control Fees	\$167,000	\$167,000	\$167,000	\$167,000	\$167,000	\$167,000
Admin Cost Recovery	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000
Interest	\$91,000	\$118,000	\$70,000	\$71,000	\$72,000	\$74,000
Subtotal Other Operating Revenues	\$1,799,000	\$1,826,000	\$1,778,000	\$1,779,000	\$1,780,000	\$1,782,000
Total Revenues	\$24,454,000	\$26,067,000	\$27,231,000	\$28,505,000	\$29,842,000	\$31,247,000

Figure 7 identifies the operating position based on the proposed financial plan, and Figure 8 and Figure 9 show the CIP with funding sources and projected ending reserve balances, respectively.

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Figure 7: Proposed Operating Position

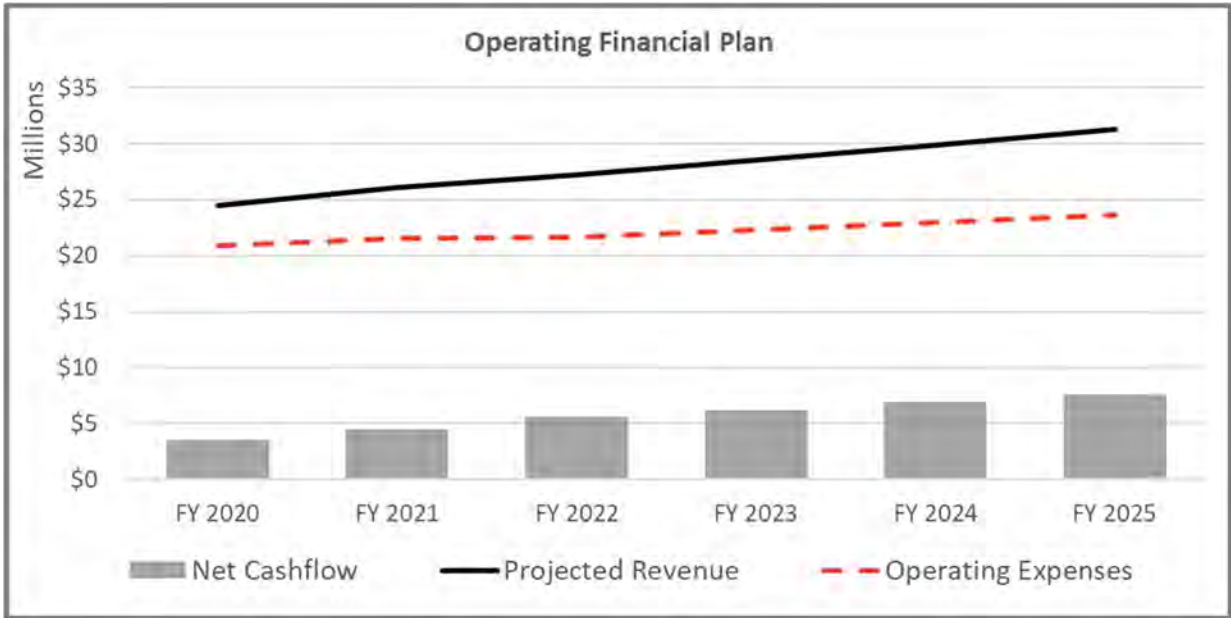
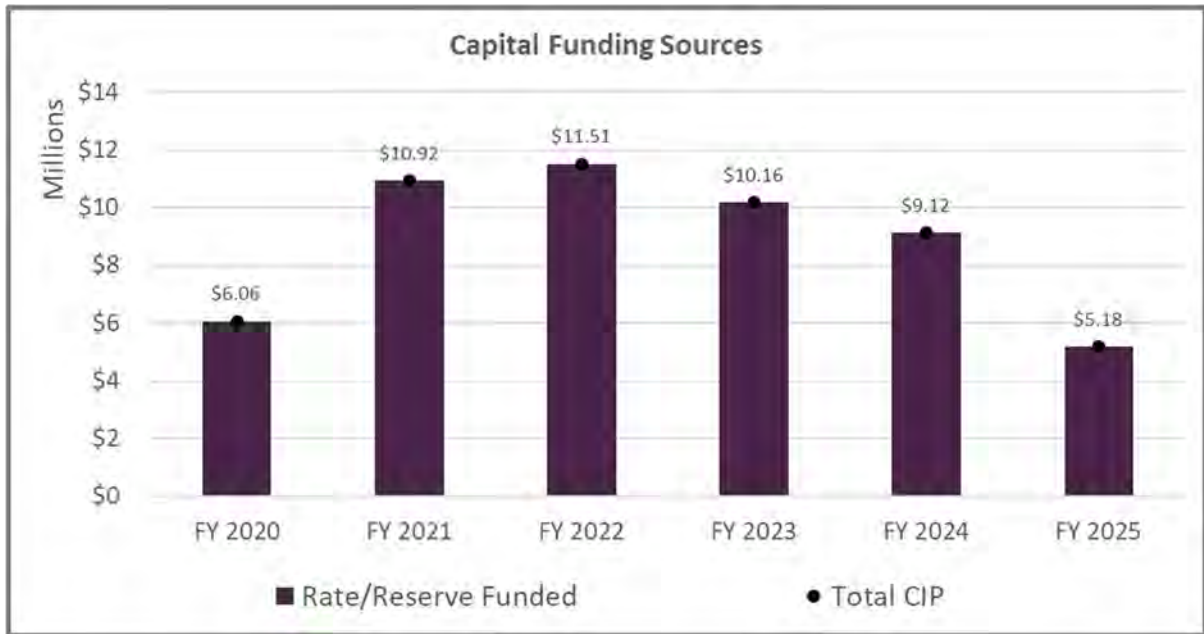
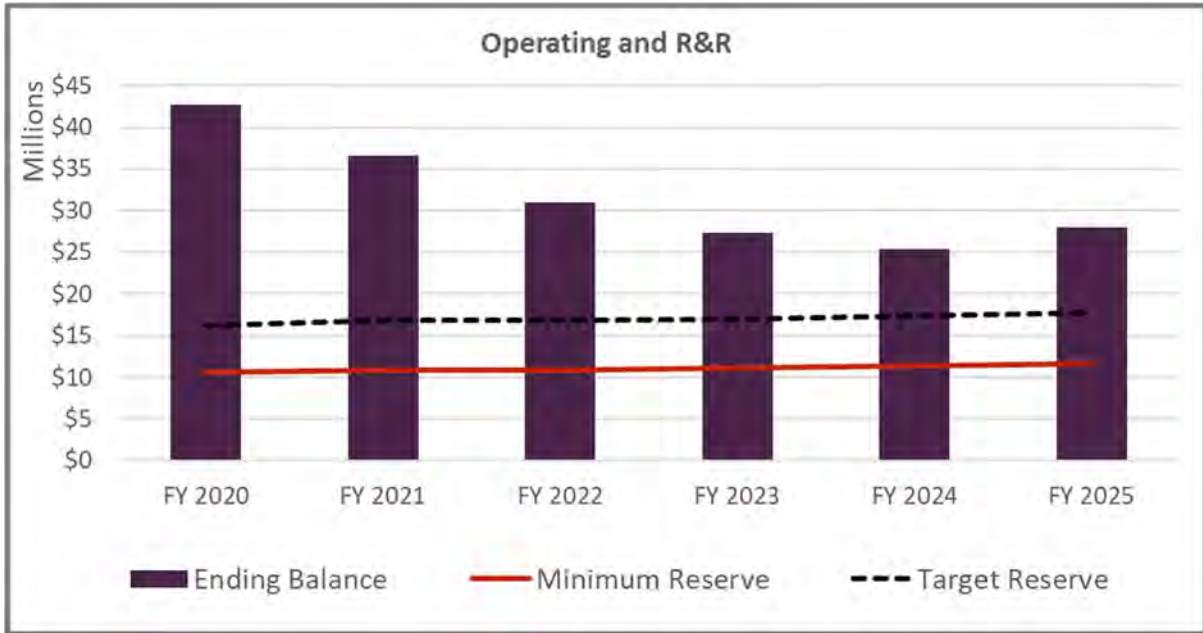


Figure 8: Capital Improvement Plan with Funding Sources



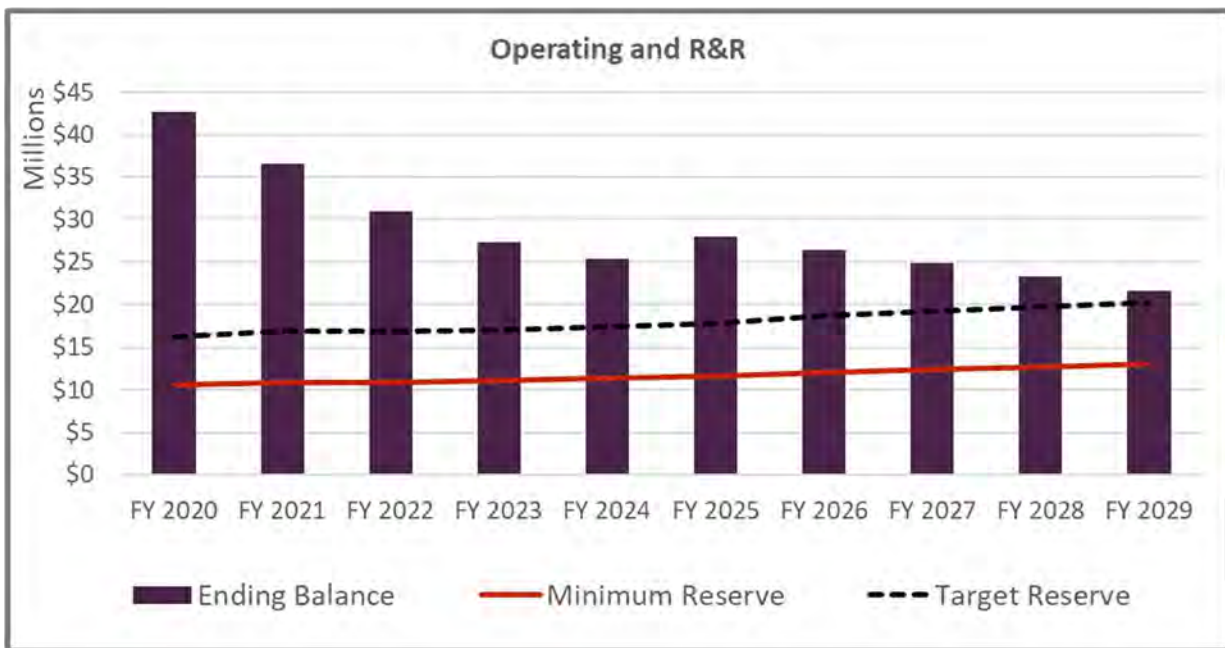
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Figure 9: Proposed Ending Reserves



As part of the proposed financial plan, capital projects outside the planning period were also reviewed and considered when determining the appropriate amount of revenue recovery within the Rate Setting Period. Over a 10-year period, capital spending is forecasted to increase up to \$10M annually between FY 2026 through FY 2029. As such, the FY 2025 ending balance in Figure 9 will be drawn down outside the Rate Setting Period as shown in Figure 10.

Figure 10: Proposed Ending Reserves Over 10-Years

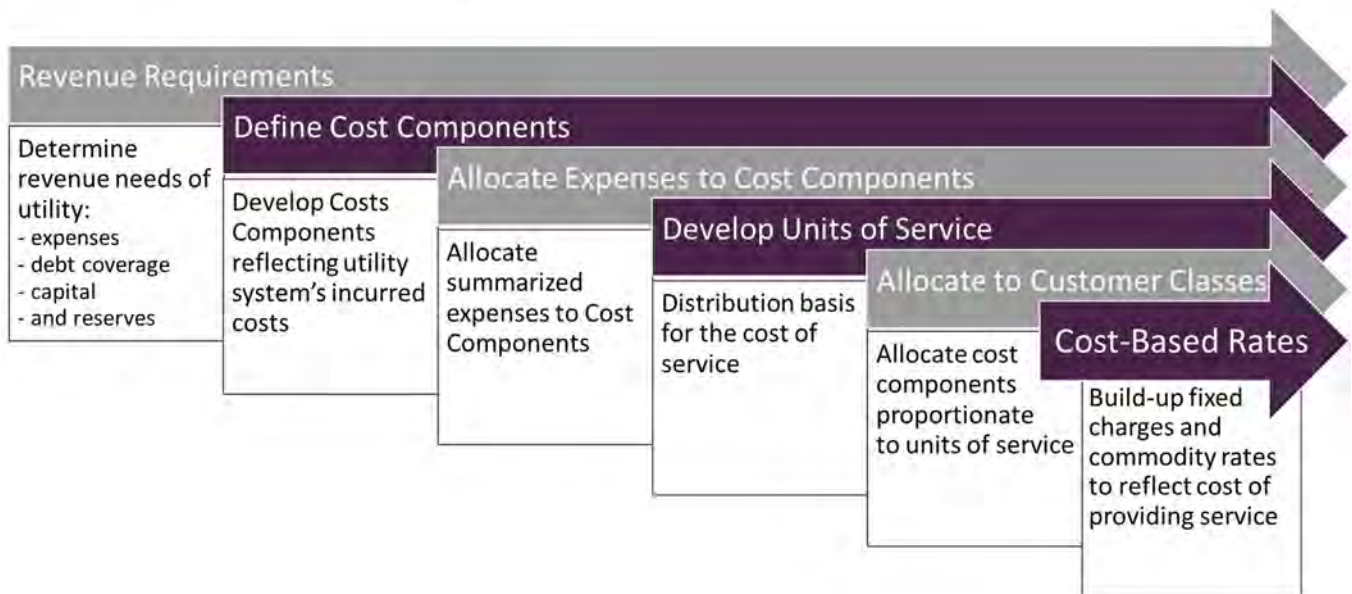


Cost of Service Analysis

Cost of Service Process

The next step in developing rates is to perform a cost of service analysis. It is important to understand **how** costs are incurred in order to determine the most appropriate way to recover these costs. The following graphic summarizes the cost of service process. Through this process, costs incurred are allocated to customer classes based on their proportional share. As a result, proposed rates are cost-based and reflect the costs incurred to provide service to customers.

Figure 11: Cost of Service Process



Revenue Requirements

FY 2021 revenue requirements were used for the cost of service analysis. Revenue requirements include O&M expenses, debt service, available offsets from contract customers, non-rate revenues, annual net income, and any mid-year adjustments if rates are implemented after the start of the fiscal year. The proposed revenue adjustments and corresponding rates accumulate the necessary funding over the Rate Setting Period to fund the scheduled capital projects and comply with minimum reserve requirements. The results of the financial plan analysis are summarized in Table 12 and represent the revenue required from rates for FY 2021. A detailed proposed financial plan is included in Appendix A-3 attached to this report.

City of Livermore –Wastewater Rate Study

Table 12: FY 2021 Revenue Requirements

Revenue Requirements	Specific	Operating	Capital	Total
Specific Costs				
SFR Fixed Lateral Program	\$283,000			\$283,000
Other Financial Services (LAVW)	\$2,500,000			\$2,500,000
Total Specific Costs	\$2,783,000	\$0	\$0	\$2,783,000
Operating Costs				
Other Financial Services (LAVWMA)		\$0		\$0
Personnel Services		\$4,825,000		\$4,825,000
Services & Supplies		\$8,721,000		\$8,721,000
Supplemental Personnel Services		\$3,835,000		\$3,835,000
230 - Capital and Services		\$448,000		\$448,000
239 - Capital and Services		\$937,000		\$937,000
Total Operating Costs	\$0	\$18,766,000	\$0	\$18,766,000
Total Operating Expenses	\$2,783,000	\$18,766,000	\$0	\$21,549,000
Revenue Offsets				
Contract Customer - LLNL		(\$1,047,000)		(\$1,047,000)
Ruby Hill		(\$457,000)		(\$457,000)
Miscellaneous		(\$3,000)		(\$3,000)
Source Control Fees		(\$167,000)		(\$167,000)
Admin Cost Recovery		(\$34,000)		(\$34,000)
Sales of Surplus Vehicles		\$0		\$0
Interest		(\$118,000)		(\$118,000)
Total Revenue Offsets	\$0	(\$1,826,000)	\$0	(\$1,826,000)
Adjustments				
Adjustment for Net Income			\$4,518,000	\$4,518,000
Total Adjustments	\$0	\$0	\$4,518,000	\$4,518,000
Revenue Requirements (\$)	\$2,783,000	\$16,940,000	\$4,518,000	\$24,241,000

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The revenue requirements were separated into three categories as shown in Table 12. The specific column represents costs or revenues that should not be impacted by general revenue offsets or net income. The two remaining columns, operating and capital, are intended to capture costs related to operating and system improvements. Revenue offsets and adjustments can be applied to any column depending on their nature. Operating Revenue Requirements include all O&M expenses, less revenue offsets. Capital Revenue Requirements include adjustments for net income which provide funding for capital and reserves.

Define Cost Components

The utility incurs costs to accommodate total flow demand and various strength concentrations of influent generated by different customer classes. Therefore, to determine the most appropriate way to recover the utility's expenses, cost components are identified to allocate expenses based on how they're incurred. Through our review of the revenue requirements and our understanding of the utility system, the cost of service allocation documented in this report is based on total flow (volume influent in hcf) and the strength characteristics of the City's customer classes. Strength loading factors for Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) are identified by customer class and based on the State Water Resource Control Board (SWRCB) Revenue Program Guidelines, Appendix G. Using this approach, revenue requirements are allocated to the different customer classes proportionate to their use of the wastewater system.

The cost of service analysis accounts for system costs as a function of meeting both total volume of influent and the strength of influent from customers that is treated at the Wastewater Plant. The cost components shown in Figure 12 are used within the cost of service to allocate costs to customer classes in relation to the demand each place on the system.

Figure 12: Cost Components



Account Services – Fixed expenses that do not necessarily fluctuate based on flow or strength concentrations. Customer call center, billing, and other expenses that are incurred based on having an account.

Flow – Operating and capital expenses of the wastewater system associated with serving customers total annual flow. These costs tend to vary with the total water usage / flow return.

BOD – Expenses incurred to treat BOD at the Wastewater Plant.

TSS – Expenses incurred to treat TSS at the Wastewater Plant.

SFR Lateral Program – Expenses associated with the City's lateral maintenance program for single-family homes only. These costs are isolated from all other operating expenses.

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Allocate Expenses to Cost Components

When allocating expenses to the defined costs components, it's important to have a sound basis as to why an expense was allocated to a certain fixed cost component versus a variable cost component or split between both fixed and variable. The distribution of expenses to the cost components should be straight-forward to ensure the method of apportionment is **understandable** and easily **correlates to how expenses are incurred**. A description of each expense category is identified below.

Expense Categories:

SFR Fixed Lateral Program – The City has a service lateral program for single-family customers and the program is only charged to these customers.

Other Financial Services (LAVWMA) – Are debt service payments and maintenance costs of the City of Livermore associated with the joint power agency, known as Livermore-Amador Water Management Agency, created to provide cost effective operation and maintenance of wastewater flows to the San Francisco Bay. These costs are annual fixed charges to the City and, therefore, are recovered evenly over all accounts/units.

Personnel Services – Salaries of personnel, including overtime and holidays.

Service & Supplies – Expenses of the wastewater department including, but not limited to, all supplies, utilities, chemicals, operations contract services, fleet maintenance and replacement, professional development, insurance, and regulatory fees.

Supplemental Personnel Services – Overhead associated with personnel including benefits, insurance, workman’s comp, payroll taxes, stipends and retiree contributions.

230 Capital and Services – Expenses associated with vehicles and lab equipment.

239 Capital and Services – Expenses associated with asset replacement.

Table 13 summarizes the percent allocation of Specific Revenue Requirements to the cost components and Table 14 uses the percent allocations in Table 13 to allocate expenses in dollars to each cost component.

Table 13: Specific Expense Allocation to Cost Components (%)

	Expense Categories	Cost Components				
		Accounts	Flow	BOD	TSS	SFR Lateral
Direct	SFR Fixed Lateral Program					100.0%
Direct	Other Financial Services (LAVWMA)	100.0%				

Table 14: Specific Expense Allocation to Cost Components (\$)

Expense Categories	Accounts	Flow	BOD	TSS	SFR Lateral	Total
SFR Fixed Lateral Program					\$283,000	\$283,000
Other Financial Services (LAVWMA)	\$2,500,000					\$2,500,000
Total Allocation (\$)	\$2,500,000	\$0	\$0	\$0	\$283,000	\$2,783,000

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Table 15 summarizes the percent allocation of O&M Revenue Requirements to the cost components and Table 16 uses the percent allocations in Table 15 to allocate expenses in dollars to each cost component. For expenses related to Treatment, costs were allocated based on the City's Wastewater Plant configuration, with 50% related to flow processes, 25% to BOD processes and 25% to TSS processes.

Table 15: O&M Expense Allocation to Cost Components (%)

Expense Categories		Cost Components				
		Accounts	Flow	BOD	TSS	SFR Lateral
Direct	Personnel Services	100.0%				
Treatment	Services & Supplies		50.0%	25.0%	25.0%	
Direct	Supplemental Personnel Services	100.0%				
Treatment	230 - Capital and Services		50.0%	25.0%	25.0%	
Treatment	239 - Capital and Services		50.0%	25.0%	25.0%	

Table 16: O&M Expense Allocation to Cost Components (\$)

Expense Categories	Accounts	Flow	BOD	TSS	Total
Personnel Services	\$4,825,000				\$4,825,000
Services & Supplies		\$4,360,500	\$2,180,250	\$2,180,250	\$8,721,000
Supplemental Personnel Services	\$3,835,000				\$3,835,000
230 - Capital and Services		\$224,000	\$112,000	\$112,000	\$448,000
239 - Capital and Services		\$468,500	\$234,250	\$234,250	\$937,000
Total Allocation (\$)	\$8,660,000	\$5,053,000	\$2,526,500	\$2,526,500	\$18,766,000
O&M Allocation (%)	46.1%	26.9%	13.5%	13.5%	100.0%

For the Capital Revenue Requirement, the systems asset value by function is used as a proxy to allocate the adjustments related to net income to the cost components (Appendix A-4). These revenues will fund capital projects and a portion of reserves. The current configuration of the system provides a long-term perspective for capital funding since the total system will be repaired and replaced over time. Using this approach mitigates rate spikes from occurring due to how capital is scheduled. Table 17 identifies the system asset allocations to cost components and corresponding percentage of the total value.

Table 17: System Functional Asset Values to Cost Components

Functional Asset		Accounts	Flow	BOD	TSS	SFR Lateral	Total
Direct	Collection		100.0%				100.0%
Treatment	Treatment		50.0%	25.0%	25.0%		100.0%
	Collection	\$0	\$1,501,169,563	\$0	\$0	\$0	\$1,501,169,563
	Treatment	\$0	\$1,000,266	\$500,133	\$500,133	\$0	\$2,000,532
	Total Allocation (\$)	\$0	\$1,502,169,829	\$500,133	\$500,133	\$0	\$1,503,170,095
	Capital Allocation (%)	0.0%	99.9%	0.03%	0.03%	0.0%	100.0%

The Specific and Operating expenses were allocated in Table 14 and Table 16 and are summarized below in Table 18. The capital requirements were allocated using the percentages developed in Table 17. Finally, the revenue offsets were applied based on O&M allocation percentages shown in Table 16.

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Table 18: FY 2021 Cost of Service Requirements

Revenue Requirement	Accounts	Flow	BOD	TSS	SFR Lateral	Total
Specific	\$2,500,000				\$283,000	\$2,783,000
Operating	\$8,660,000	\$5,053,000	\$2,526,500	\$2,526,500		\$18,766,000
Capital		\$4,514,994	\$1,503	\$1,503		\$4,518,000
Revenue Offsets	(\$842,649)	(\$491,675)	(\$245,838)	(\$245,838)		(\$1,826,000)
COS Requirement	\$10,317,351	\$9,076,318	\$2,282,166	\$2,282,166	\$283,000	\$26,067,000

Rate Design

Develop Units of Service

Residential customer flows were projected using expected indoor use for Single-Family and Multi-Family/Condo based on a gallons per capita per day (gpcd) basis. Single-Family persons per household (pph) was based on the Department of Finance E-5 report for 2019, reflecting 2.9 pph and Multi-Family/Condo was set to 2 pph to account for the smaller size dwellings and households. Residential projected flows were based on Residential FY 2019 winter average of 51 gpcd with a 95% return factor (51 gpcd x 0.95 = 48 gpcd, rounded to integer). The 5% reduction accounts for any outdoor use that may have occurred and indoor water use that doesn't return to the collection system. Taking the product of the average household size, 48 gpcd, and number of residential units, results in total projected flows of 1.5M hcf and 0.37M hcf for Single-Family and Multi-Family/Condo, respectively, as shown in Table 19.

Table 19: Residential Projected Flows

Line #	Residential Flow Projections	Assumptions [A]	Gallons / Yr [B]	Flow (hcf) [C]	Formula
1	Gallons per capita per day	48.0 gpcd	17,280	23.10	(A1 x B1) / 748.05
2	People per SFR household	2.9 pph			
3	Number of SFR accounts	23,084			
4	Single-Family Flows			1,546,397	C1 x A2 x A3
5	Gallons per capita per day	48.0 gpcd	17,280	23.10	(A5 x B5) / 748.05
6	People per MFR household	2.0 pph			
7	Number of MFR Units	8,144			
8	Multi-Family Flows			376,253	C5 x A6 x A7
9	Projected Residential Flows			1,922,650	C4 + C8

Non-Residential customer flows were determined by estimating flow return factors for each type of non-residential customer class. To determine the appropriate flow return factors, we used the amount of total influent treated at the Wastewater Plant for FY 2019 and reduced the total treated flow by the projected amount from residential, less contract customers and infiltration/inflow (known as I/I, which is a measure of the amount of water that enters the collection system that is not sewage, such as stormwater or groundwater that infiltrates into the collection system). The remainder is the estimated amount generated by non-residential customers. Table 20 provides the calculations used to derive the amount of projected flow expected to be generated by non-residential customers.

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Table 20: Non-Residential Projected Flows

Flow Assumptions		FY 2021
Total Flow to Treatment Plant		2,736,949
Less: Inflow and Infiltration (I&I)	2.7%	(73,898)
Less: LLNL Contract Services		(183,277)
Less: Ruby Hill		(56,875)
Flow from Customers		2,422,900
Less Projected Residential Flow		(1,922,650)
Projected Non-Residential Flows		500,250

Total volume and flow patterns of customers are analyzed to proportionately allocate expenses based on total treated flow at the Wastewater Plant and to forecast project flows generated by each customer class. Residential customers' projected flow is based on gallons per capita per day (gpcd) of indoor use by residential type (i.e. Single-Family and Multi-Family / Condo) and flow return factors are used to project flows from non-residential customers based on their water usage. With expected flows generated by non-residential customers from Table 20, a connection between non-residential water use and generated flows is determined by identifying a return factor for each non-residential customer class. For the customer class identified as "All Other Commercial," the City allows customers to be billed based on their average winter water use if their water meter serves both indoor and outdoor water needs. Using the average winter water use limits capturing outdoor water use that doesn't return as influent. Comparing All Other Commercial customers average winter use to total water use resulted in an expected return of 86.2%. Therefore, 86.2% was used as the return factor. The remaining non-residential customer classes were assigned a return factor of 90% of water usage, to account for 10% of water usage that does not return as influent. Applying these return factors to the non-residential water usage, identified in Table 21, generates a total projected flow of 501,015 hcf. The variance between projected flows using the return factors and the expected flow from Table 20 is less than 1% ($501,015 / 500,250 - 1 = 0.15\%$). Wastewater flows are not metered and the comparison between flow treated at the plant versus estimated non-residential influent using return factors provides assurance that the projected non-residential flows by customer class are reasonable.

Table 21: Non-Residential Flow Return Factors

Customer Class	Number of Accounts / Units	Non-Residential Water Usage [A]	Return Factor [B]	Projected Flow Return [C] = A x B
Bakeries	3	1,429	90.0%	1,286
Commercial Laundry	2	4,274	90.0%	3,847
Markets w/ Disposals	12	18,015	90.0%	16,214
Mortuaries	1	1,037	90.0%	933
Restaurants	79	39,055	90.0%	35,150
All Other Commercial	822	444,047	86.2%	382,968
Schools / Institutional	105	67,353	90.0%	60,618
Total	32,252	575,210		501,015

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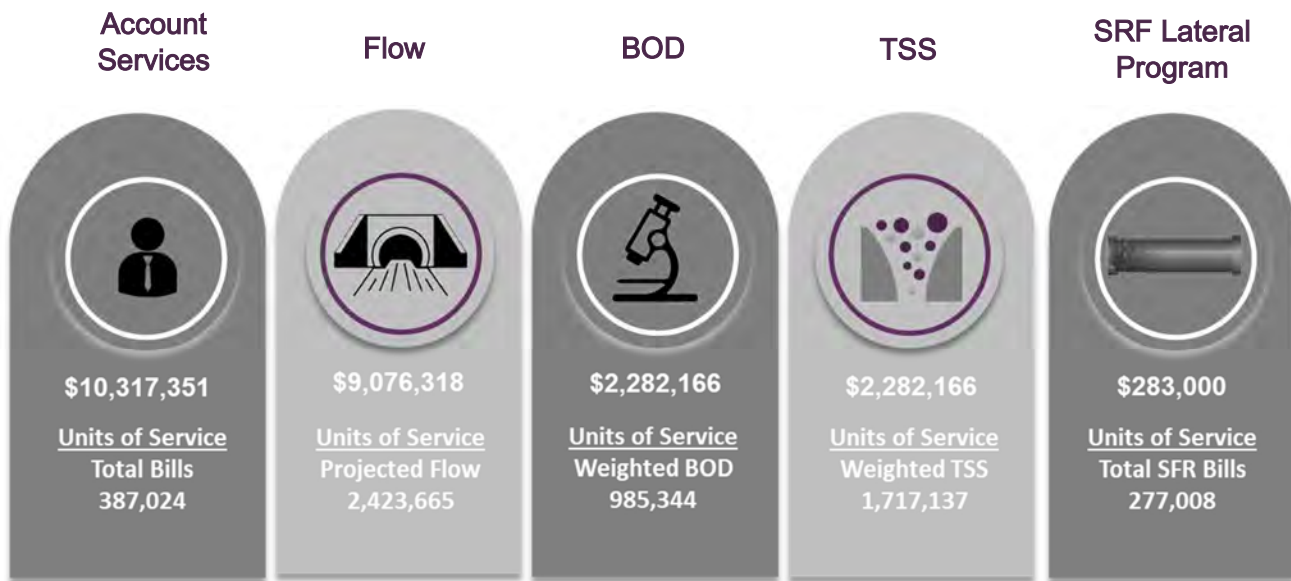
Unit rates for the cost components are derived by identifying the units of service for each cost component (distribution basis). The distribution basis varies by cost component and include total bills, projected flow, weighted BOD, weighted TSS, and residential total bills for the SFR Lateral cost component. Table 22 summarizes the units of service for each cost component. For BOD and TSS (collectively, Treatment), average strength concentrations of each customer class are incorporated from the SWRCB and weighted by total flow in Million Gallons (MG) to develop BOD units of service (Weighted BOD) and TSS units of service (Weighted TSS).

Table 22: Units of Service for Cost Components

Line #	Customer Class	Number of Accounts / Units	Projected Flow (hcf) [A]	BOD (ppm) [B]	TSS (ppm) [C]	Conversion Factor (hcf to MG) [D]	Weighted BOD (MG) [E] = AxBxD	Weighted TSS (MG) [F] = AxCxD
1	Single-Family	23,084	1,546,397	200	200	0.075%	231,356	231,356
2	Multi-Family / Condo	8,144	376,253	200	200	0.075%	56,291	56,291
3	Bakeries	3	1,286	1,000	600	0.075%	962	577
4	Commercial Laundry	2	3,847	450	240	0.075%	1,295	691
5	Markets w/ Disposals	12	16,214	800	800	0.075%	9,703	9,703
6	Mortuaries	1	933	800	800	0.075%	559	559
7	Restaurants	79	35,150	1,000	600	0.075%	26,294	15,776
8	All Other Commercial	822	382,968	150	150	0.075%	42,972	42,972
9	Schools / Institutional	105	60,618	130	100	0.075%	5,895	4,535
10	Total	32,252	2,423,665	N/A	N/A		375,326	362,459
11	Annual Units	387,024	2,423,665				375,326	362,459
12	Single-Family Only	277,008	1,546,397	200	200		231,356	231,356

With the units of service shown in Table 22, the distribution basis can be identified for each cost component. Figure 13 identifies the total revenue requirements by cost component from Table 18 and the corresponding units of service.

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



Allocate to Customer Class

Using the FY 2021 revenue requirements, the cost of service allocates expenses to customer classes based on the service demands that each place on the system (cost causation). Using this approach provides a clear connection between costs incurred and the proportionate share attributable to each customer class. When designing rates, the most critical component is to connect costs to the proposed rates, resulting in a rate structure that is cost-based and in compliance with Proposition 218. In the previous section, costs were summarized by expense category and allocated to cost components based on how each cost is incurred. The next step in designing rates is to allocate each cost component to customers in relation to their use of the system and facilities. This ensures that each customer proportionately shares in the financial obligation of the utility. For the following unit rate computations for each cost component, unit rates were rounded up to the nearest penny.

Fixed Cost Recovery

Account Services

Account Services costs are incurred by each customer regardless of the type of land use, total flow, or strength loading factors of discharge. These costs should be spread equally across all accounts / units. This is achieved by using the distribution basis of Total Bills. Total Bills are determined by multiplying the number of accounts / units by 12 billing periods (Table 22, Line 11). Therefore, the revenue requirement for Account Services is apportioned based on the Total Bills to determine the monthly unit cost of service shown in Table 23.

Table 23: FY 2021 Account Services Cost of Service Monthly Unit Rate

Account Services	Unit Rate
Revenue Requirement	\$10,317,351
÷ Number of Accounts / Units	387,024
Monthly Unit Rate	\$26.66

SFR Lateral Program

The City's SFR Lateral Program provides services to single-family accounts for lateral maintenance. This program only serves single-family homes, therefore, these costs were segregated and apportioned only to single-family accounts based on SFR Total Bills. SFR Total Bills are determined by multiplying the number of SFR accounts by 12 billing periods (Table 22, Line 12). The revenue requirement for SFR Lateral Program is apportioned based on SFR Total Bills to determine the monthly unit cost of service shown in Table 24.

Table 24: FY 2021 SFR Lateral Program Monthly Unit Rate

SFR Lateral	Unit Rate
Revenue Requirement	\$283,000
÷ SFR Total Bills	277,008
Unit Rate	\$1.03

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Variable Cost Recovery

The remaining cost components are recovered based on total flow and strength characteristics of the utility's customer base.

Flow

The cost associated with Flow is a function of total volume of influent treated and does not vary based on the type or strength concentration of influent. Therefore, the revenue requirement for Flow is apportioned to each customer class based on their percentage of total projected flow as summarized within Table 25.

Table 25: Flow Cost of Service by Customer Class

Customer Class	Projected Flow	% Allocation	Revenue Requirement
Single-Family	1,546,397	63.8%	\$5,791,062
Multi-Family / Condo	376,253	15.5%	\$1,409,019
Bakeries	1,286	0.1%	\$4,816
Commercial Laundry	3,847	0.2%	\$14,405
Markets w/ Disposals	16,214	0.7%	\$60,718
Mortuaries	933	0.0%	\$3,495
Restaurants	35,150	1.5%	\$131,630
All Other Commercial	382,968	15.8%	\$1,434,167
Schools / Institutional	60,618	2.5%	\$227,006
Total	2,423,665	100%	\$9,076,318

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BOD

BOD costs relate to the treatment process of breaking down organic material in wastewater. Higher BOD strengths require increased costs and longer periods of treatment time to dilute the high levels of BOD prior to discharging effluent into waterways. Therefore, the revenue requirement for BOD is apportioned based on Weighted BOD for each customer class as shown in Table 26.

Table 26: BOD Cost of Service by Customer Class

Customer Class	Weighted BOD	% Allocation	Revenue Requirement
Single-Family	231,356	61.6%	\$1,406,760
Multi-Family / Condo	56,291	15.0%	\$342,278
Bakeries	962	0.3%	\$5,850
Commercial Laundry	1,295	0.3%	\$7,873
Markets w/ Disposals	9,703	2.6%	\$58,998
Mortuaries	559	0.1%	\$3,396
Restaurants	26,294	7.0%	\$159,878
All Other Commercial	42,972	11.5%	\$262,449
Schools / Institutional	5,895	1.6%	\$35,844
Total	375,326	100%	\$2,283,325

TSS

TSS costs relate to the treatment process of removing solids from wastewater through settling, screening, and filtering. Higher TSS strengths require increased costs and additional filtration to treat and remove the high levels of TSS prior to discharging effluent into waterways. Therefore, the revenue requirement for TSS is apportioned based on Weighted TSS for each customer class as shown in Table 27.

Table 27: TSS Cost of Service by Customer Class

Customer Class	Weighted TSS	% Allocation	Revenue Requirement
Single-Family	231,356	63.8%	\$1,456,698
Multi-Family / Condo	56,291	15.5%	\$354,428
Bakeries	577	0.2%	\$3,634
Commercial Laundry	691	0.2%	\$4,348
Markets w/ Disposals	9,703	2.7%	\$61,092
Mortuaries	559	0.2%	\$3,517
Restaurants	15,776	4.4%	\$99,332
All Other Commercial	42,972	11.9%	\$271,578
Schools / Institutional	4,535	1.3%	\$28,551
Total	362,459	100%	\$2,283,178

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Collectively, the total allocation of costs associated with Flow, BOD, and TSS (Variable Revenue Requirement) to each customer class generates the commodity rates by customer class. However, given that residential customers exhibit a fairly constant amount of wastewater flows per month, the total residential Variable Revenue Requirement are recovered as flat monthly charges. For non-residential customer classes, commodity rates are derived for the Variable Revenue Requirement by dividing the total allocated cost by total water usage as wastewater flows are not metered. Table 28 summarizes the combined Variable Revenue Requirement by customer class. Table 29 and Table 30 derives the monthly flat rates for residential customer classes and the commodity rates for non-residential customers, respectively.

Table 28: Variable Revenue Requirement by Customer Class

Customer Class	Variable Revenue Requirement			
	Flow Revenue Requirement	BOD Revenue Requirement	TSS Revenue Requirement	Variable Revenue Requirement
Single-Family	\$5,791,062	\$1,406,760	\$1,456,698	\$8,654,520
Multi-Family / Condo	\$1,409,019	\$342,278	\$354,428	\$2,105,725
Bakeries	\$4,816	\$5,850	\$3,634	\$14,301
Commercial Laundry	\$14,405	\$7,873	\$4,348	\$26,627
Markets w/ Disposals	\$60,718	\$58,998	\$61,092	\$180,807
Mortuaries	\$3,495	\$3,396	\$3,517	\$10,408
Restaurants	\$131,630	\$159,878	\$99,332	\$390,840
All Other Commercial	\$1,434,167	\$262,449	\$271,578	\$1,968,194
Schools / Institutional	\$227,006	\$35,844	\$28,551	\$291,400
Total	\$9,076,318	\$2,283,325	\$2,283,178	\$13,642,821

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Table 29: Residential Flat Monthly Variable Component

Customer Class	Variable Revenue Requirement [A]	Total Bills [B]	Flat Monthly Variable Component [C] = A ÷ B
Single-Family	\$8,654,520	277,008	\$31.24
Multi-Family / Condo	\$2,105,725	97,728	\$21.55

Table 30: Commodity Rates by Customer Class

Customer Class	Variable Revenue Requirement [A]	Water Usage (hcf) [B]	Revenue Requirement (\$ / hcf) [C] = A ÷ B
Bakeries	\$14,301	1,429	\$10.01
Commercial Laundry	\$26,627	4,274	\$6.23
Markets w/ Disposals	\$180,807	18,015	\$10.04
Mortuaries	\$10,408	1,037	\$10.04
Restaurants	\$390,840	39,055	\$10.01
All Other Commercial	\$1,968,194	444,047	\$4.44
Schools / Institutional	\$291,400	67,353	\$4.33

Cost-Based Rates

Proposed Monthly Fixed Charges

The proposed monthly fixed charges for FY 2021 are shown in Table 31, reflecting the combined charges of Account Services, SFR Lateral Program, and residential flat variable components. Table 32 provides the five-year fixed charge schedule through FY 2025. For FY 2022 through FY 2025, the revenue adjustments are applied across-the-board to the cost of service rates derived for FY 2021 as account growth and usage characteristics are projected to remain constant for financial planning.

Table 31: FY 2021 Monthly Fixed Charges

Customer Class	Monthly Account Services	Monthly SFR Lateral Program	Flat Monthly Variable Component	FY 2021 Monthly Flat Charges
Single-Family	\$26.66	\$1.03	\$31.24	\$58.93
Multi-Family / Condo	\$26.66	-	\$21.55	\$48.21
Bakeries	\$26.66	-	-	\$26.66
Commercial Laundry	\$26.66	-	-	\$26.66
Markets w/ Disposals	\$26.66	-	-	\$26.66
Mortuaries	\$26.66	-	-	\$26.66
Restaurants	\$26.66	-	-	\$26.66
All Other Commercial	\$26.66	-	-	\$26.66
Schools / Institutional	\$26.66	-	-	\$26.66

Table 32: Proposed Monthly Fixed Charges

Monthly Flat Charges (\$)					
Customer Class	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue Adjustment		5%	5%	5%	5%
Single-Family	\$58.93	\$61.88	\$64.98	\$68.23	\$71.65
Multi-Family / Condo	\$48.21	\$50.63	\$53.17	\$55.83	\$58.63
Bakeries	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Commercial Laundry	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Markets w/ Disposals	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Mortuaries	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Restaurants	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
All Other Commercial	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42
Schools / Institutional	\$26.66	\$28.00	\$29.40	\$30.87	\$32.42

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Proposed Commodity Rates by Non-Residential Customer Class

The proposed commodity rates for FY 2021 through FY 2025 are shown in Table 33 for each non-residential customer class. FY 2021 commodity rates are from Table 30 and commodity rates for FY 2022 through FY 2025 are increased by each year’s proposed revenue adjustments. Account growth and usage characteristics are projected to remain constant for financial planning.

Table 33: Proposed Commodity Rates by Customer Class (\$/hcf)

Commodity Rates (\$)					
Customer Class	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue Adjustment		5%	5%	5%	5%
Bakeries	\$10.01	\$10.52	\$11.05	\$11.61	\$12.20
Commercial Laundry	\$6.23	\$6.55	\$6.88	\$7.23	\$7.60
Markets w/ Disposals	\$10.04	\$10.55	\$11.08	\$11.64	\$12.23
Mortuaries	\$10.04	\$10.55	\$11.08	\$11.64	\$12.23
Restaurants	\$10.01	\$10.52	\$11.05	\$11.61	\$12.20
All Other Commercial	\$4.44	\$4.67	\$4.91	\$5.16	\$5.42
Schools / Institutional	\$4.33	\$4.55	\$4.78	\$5.02	\$5.28

Appendices: A – 1 Calculated Revenue: Current Rates

Fixed revenue is calculated by taking the product of flat rates by customer class and the number of accounts/units over 12 months.

Fixed Charges	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Customer Class						
Single-Family	\$56.35	\$56.35	\$56.35	\$56.35	\$56.35	\$56.35
Multi-Family / Condo	\$42.50	\$42.50	\$42.50	\$42.50	\$42.50	\$42.50
Bakeries	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61
Commercial Laundry	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61
Markets w/ Disposals	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61
Mortuaries	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61
Restaurants	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61
All Other Commercial	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61
Schools / Institutional	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61	\$22.61
Customer Accounts						
Customer Class	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Single-Family	23,084	23,084	23,084	23,084	23,084	23,084
Multi-Family / Condo	8,144	8,144	8,144	8,144	8,144	8,144
Bakeries	3	3	3	3	3	3
Commercial Laundry	2	2	2	2	2	2
Markets w/ Disposals	12	12	12	12	12	12
Mortuaries	1	1	1	1	1	1
Restaurants	79	79	79	79	79	79
All Other Commercial	822	822	822	822	822	822
Schools / Institutional	105	105	105	105	105	105
Fixed Revenues						
Fixed Charges	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Single-Family	\$15,609,401	\$15,609,401	\$15,609,401	\$15,609,401	\$15,609,401	\$15,609,401
Multi-Family / Condo	\$4,153,440	\$4,153,440	\$4,153,440	\$4,153,440	\$4,153,440	\$4,153,440
Bakeries	\$814	\$814	\$814	\$814	\$814	\$814
Commercial Laundry	\$543	\$543	\$543	\$543	\$543	\$543
Markets w/ Disposals	\$3,256	\$3,256	\$3,256	\$3,256	\$3,256	\$3,256
Mortuaries	\$271	\$271	\$271	\$271	\$271	\$271
Restaurants	\$21,434	\$21,434	\$21,434	\$21,434	\$21,434	\$21,434
All Other Commercial	\$223,025	\$223,025	\$223,025	\$223,025	\$223,025	\$223,025
Schools / Institutional	\$28,489	\$28,489	\$28,489	\$28,489	\$28,489	\$28,489
Total Fixed Charges Revenue	\$20,040,672	\$20,040,672	\$20,040,672	\$20,040,672	\$20,040,672	\$20,040,672

Appendices: A – 1 Calculated Revenue: Current Rates (cont.)

Variable revenue is calculated by taking the product of the flow charges by customer class and the corresponding water usage.

Flow Charges	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Customer Class						
Bakeries	\$8.28	\$8.28	\$8.28	\$8.28	\$8.28	\$8.28
Commercial Laundry	\$5.37	\$5.37	\$5.37	\$5.37	\$5.37	\$5.37
Markets w/ Disposals	\$8.30	\$8.30	\$8.30	\$8.30	\$8.30	\$8.30
Mortuaries	\$8.30	\$8.30	\$8.30	\$8.30	\$8.30	\$8.30
Restaurants	\$8.28	\$8.28	\$8.28	\$8.28	\$8.28	\$8.28
All Other Commercial	\$4.13	\$4.13	\$4.13	\$4.13	\$4.13	\$4.13
Schools / Institutional	\$3.91	\$3.91	\$3.91	\$3.91	\$3.91	\$3.91

Water Consumption by Customer Class	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Customer Class						
Bakeries	1,429	1,429	1,429	1,429	1,429	1,429
Commercial Laundry	4,274	4,274	4,274	4,274	4,274	4,274
Markets w/ Disposals	18,015	18,015	18,015	18,015	18,015	18,015
Mortuaries	1,037	1,037	1,037	1,037	1,037	1,037
Restaurants	39,055	39,055	39,055	39,055	39,055	39,055
All Other Commercial	444,047	444,047	444,047	444,047	444,047	444,047
Schools / Institutional	67,353	67,353	67,353	67,353	67,353	67,353

Variable Revenues	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Variable Rate Revenue						
Bakeries	\$11,832	\$11,832	\$11,832	\$11,832	\$11,832	\$11,832
Commercial Laundry	\$22,951	\$22,951	\$22,951	\$22,951	\$22,951	\$22,951
Markets w/ Disposals	\$149,525	\$149,525	\$149,525	\$149,525	\$149,525	\$149,525
Mortuaries	\$8,607	\$8,607	\$8,607	\$8,607	\$8,607	\$8,607
Restaurants	\$323,375	\$323,375	\$323,375	\$323,375	\$323,375	\$323,375
All Other Commercial	\$1,833,914	\$1,833,914	\$1,833,914	\$1,833,914	\$1,833,914	\$1,833,914
Schools / Institutional	\$263,350	\$263,350	\$263,350	\$263,350	\$263,350	\$263,350
Total Variable Rate Revenue	\$2,613,555	\$2,613,555	\$2,613,555	\$2,613,555	\$2,613,555	\$2,613,555

Appendices: A – 2 Expense Projections

Operating Expenses	Inflate by	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Other Financial Services (LAVWMA)							
Operating Transfer Out - LAVWMA	Non-Inflated	\$2,500,000	\$2,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Subtotal Other Financial Services (LAVWMA)		\$2,651,000	\$2,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Personnel Services							
Permanent Employee	Salaries	\$4,255,000	\$4,468,000	\$4,602,000	\$4,740,000	\$4,882,000	\$5,028,000
Temporary Employee	Salaries	\$61,000	\$64,000	\$66,000	\$68,000	\$70,000	\$72,000
Holiday Pay In Lieu	Salaries	\$69,000	\$72,000	\$74,000	\$76,000	\$78,000	\$80,000
Overtime	Salaries	\$172,000	\$181,000	\$186,000	\$192,000	\$198,000	\$204,000
Shift Premium	Salaries	\$18,000	\$19,000	\$20,000	\$21,000	\$22,000	\$23,000
Uniform/Shoe Allowance	General	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000
Bilingual Pay	Salaries	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Ale - Cmmrcl Driver Lncls	General	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
SFR Fixed Lateral Program	Non-Inflated	\$283,000	\$283,000	\$283,000	\$283,000	\$283,000	\$283,000
Subtotal Personnel Services		\$4,879,000	\$5,108,000	\$5,252,000	\$5,401,000	\$5,554,000	\$5,711,000
Services & Supplies							
Utilities Water	Energy	\$22,000	\$23,000	\$24,000	\$25,000	\$26,000	\$27,000
Utilities Gas Lights	Energy	\$932,000	\$979,000	\$1,028,000	\$1,079,000	\$1,133,000	\$1,190,000
Telephone-City Land Lines	Energy	\$25,000	\$26,000	\$27,000	\$28,000	\$29,000	\$30,000
Telephone-City Cell Phone	Energy	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Backflow Ins & Repair	General	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000	\$8,000
Printing & Binding	General	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
Postage & Freight	General	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Travel Expense	General	\$39,000	\$40,000	\$41,000	\$42,000	\$43,000	\$44,000
Repairs & Maint Of Equip	Capital	\$326,000	\$334,000	\$343,000	\$352,000	\$361,000	\$370,000
WRP - Instrumentation R&M	Capital	\$93,000	\$95,000	\$97,000	\$99,000	\$102,000	\$105,000
WRP - Electrical R & M	Capital	\$80,000	\$82,000	\$84,000	\$86,000	\$88,000	\$90,000
Repairs & Maint Of Bldg	Capital	\$137,000	\$141,000	\$145,000	\$149,000	\$153,000	\$157,000
Rental Of Land/Bldg/Equip	General	\$32,000	\$33,000	\$34,000	\$35,000	\$36,000	\$37,000
Contract Svc-Private	Salaries	\$829,000	\$870,000	\$896,000	\$923,000	\$951,000	\$980,000
GIS Service Charge	General	\$121,000	\$124,000	\$127,000	\$130,000	\$133,000	\$136,000
Biosolids Disposal	Energy	\$400,000	\$420,000	\$441,000	\$463,000	\$486,000	\$510,000
Hazardous Mat Disposal	Energy	\$10,000	\$11,000	\$12,000	\$13,000	\$14,000	\$15,000
Office Supplies	General	\$28,000	\$29,000	\$30,000	\$31,000	\$32,000	\$33,000
Supplies - Other	General	\$173,000	\$177,000	\$181,000	\$186,000	\$191,000	\$196,000
Personal Protective Supply	General	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
WRP - Chemical Supplies	Chemicals	\$35,000	\$37,000	\$39,000	\$41,000	\$43,000	\$45,000
WRP Disinfection Hypo	Chemicals	\$129,000	\$135,000	\$142,000	\$149,000	\$156,000	\$164,000
WRP - Machine/Hand Tools	General	\$21,000	\$22,000	\$23,000	\$24,000	\$25,000	\$26,000
WRP Dewatering Coagulants	Energy	\$230,000	\$242,000	\$254,000	\$267,000	\$280,000	\$294,000
WRP Tertiary Coagulant	Energy	\$50,000	\$53,000	\$56,000	\$59,000	\$62,000	\$65,000
WRP Ferric Chloride	Energy	\$91,000	\$96,000	\$101,000	\$106,000	\$111,000	\$117,000
Construction Materials	Capital	\$31,000	\$32,000	\$33,000	\$34,000	\$35,000	\$36,000
Dry Gds&Wearing Appl-Misc	General	\$45,000	\$46,000	\$47,000	\$48,000	\$49,000	\$50,000
Gasoline And Oil	Energy	\$44,000	\$46,000	\$48,000	\$50,000	\$53,000	\$56,000
Grounds Maintenance	General	\$65,000	\$67,000	\$69,000	\$71,000	\$73,000	\$75,000
Training & Education	General	\$82,000	\$84,000	\$86,000	\$88,000	\$90,000	\$92,000
IT Services & Equip	General	\$21,000	\$22,000	\$23,000	\$24,000	\$25,000	\$26,000
Software Licenses	General	\$79,000	\$81,000	\$83,000	\$85,000	\$87,000	\$89,000
Public Outreach	General	\$33,000	\$34,000	\$35,000	\$36,000	\$37,000	\$38,000
Fleet & Equip O&M	General	\$256,000	\$262,000	\$269,000	\$276,000	\$283,000	\$290,000
Administrative Surcharge	Salaries	\$1,434,000	\$1,506,000	\$1,551,000	\$1,598,000	\$1,646,000	\$1,695,000
Safety Prog(Svc & Supp)	General	\$100,000	\$103,000	\$106,000	\$109,000	\$112,000	\$115,000
Physical Exams	General	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Contract Svc-Govt Agency	Salaries	\$327,000	\$343,000	\$353,000	\$364,000	\$375,000	\$386,000
Fleet - Rplcmnt Vehicle	Capital	\$311,000	\$319,000	\$327,000	\$335,000	\$344,000	\$353,000
Bad Debt Expense	General	\$50,000	\$51,000	\$52,000	\$53,000	\$54,000	\$55,000
Info Tech Is Charge	General	\$117,000	\$120,000	\$123,000	\$126,000	\$129,000	\$132,000
Engineering & Inspection	Salaries	\$39,000	\$41,000	\$42,000	\$43,000	\$44,000	\$45,000
Monthly Bank Expenses	General	\$37,000	\$38,000	\$39,000	\$40,000	\$41,000	\$42,000
Comprehensive Liability	General	\$404,000	\$414,000	\$424,000	\$435,000	\$446,000	\$457,000
Membership & Subs.	General	\$52,000	\$53,000	\$54,000	\$55,000	\$56,000	\$57,000
Use Of City Property	General	\$947,000	\$971,000	\$995,000	\$1,020,000	\$1,046,000	\$1,072,000
Regulatory Fees	General	\$78,000	\$80,000	\$82,000	\$84,000	\$86,000	\$88,000
Subtotal Services & Supplies		\$8,394,000	\$8,721,000	\$9,005,000	\$9,300,000	\$9,605,000	\$9,919,000

Appendices: A – 2 Expense Projections (cont.)

Operating Expenses	Inflate by	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Supplemental Personnel Services							
Work Comp Claim Contrib	Salaries	\$65,000	\$68,000	\$70,000	\$72,000	\$74,000	\$76,000
Misc Plan Tier 1	Salaries	\$962,000	\$1,010,000	\$1,040,000	\$1,071,000	\$1,103,000	\$1,136,000
Misc Plan Tier 2	Salaries	\$283,000	\$297,000	\$306,000	\$315,000	\$324,000	\$334,000
Misc Plan Pepra	Salaries	\$305,000	\$320,000	\$330,000	\$340,000	\$350,000	\$361,000
Medical & Health Insur	Benefits	\$517,000	\$543,000	\$570,000	\$599,000	\$629,000	\$660,000
Life, Disability, & Other Ins	Benefits	\$20,000	\$21,000	\$22,000	\$23,000	\$24,000	\$25,000
RHS & Deferred Comp	Benefits	\$119,000	\$125,000	\$131,000	\$138,000	\$145,000	\$152,000
Cafeteria	General	\$571,000	\$585,000	\$600,000	\$615,000	\$630,000	\$646,000
Payroll Wc Contribution	Benefits	\$170,000	\$179,000	\$188,000	\$197,000	\$207,000	\$217,000
Employer Payroll Taxes	Salaries	\$65,000	\$68,000	\$70,000	\$72,000	\$74,000	\$76,000
Medicare On Sup Pays	Benefits	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000
Leave(S) Cash Out	Salaries	\$36,000	\$38,000	\$39,000	\$40,000	\$41,000	\$42,000
Employee Awards/Recognit	General	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
Other Paid Benefits	Benefits	\$11,000	\$12,000	\$13,000	\$14,000	\$15,000	\$16,000
PARS - Er Only	Benefits	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000
Telephone-Cell Stipend	Non-Inflated	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000	\$7,000
Retiree Hlth Col Contrib	Benefits	\$528,000	\$554,000	\$582,000	\$611,000	\$642,000	\$674,000
Subtotal Supplemental Personnel Services		\$3,667,000	\$3,835,000	\$3,976,000	\$4,122,000	\$4,273,000	\$4,430,000
230 - Capital and Services							
Motor Vehicles	Capital	\$415,000	\$426,000	\$437,000	\$448,000	\$459,000	\$471,000
Lab Equipment	General	\$21,000	\$22,000	\$23,000	\$24,000	\$25,000	\$26,000
Subtotal 230 - Capital and Services		\$436,000	\$448,000	\$460,000	\$472,000	\$484,000	\$497,000
239 - Capital and Services							
Field Equipment	Capital	\$440,000	\$451,000	\$463,000	\$475,000	\$487,000	\$499,000
Repairs & Maint Of Equip	Capital	\$21,000	\$22,000	\$23,000	\$24,000	\$25,000	\$26,000
Contract Svc-Private	Salaries	\$349,000	\$366,000	\$377,000	\$388,000	\$400,000	\$412,000
Grounds Maintenance	General	\$96,000	\$98,000	\$100,000	\$103,000	\$106,000	\$109,000
Subtotal 239 - Capital and Services		\$906,000	\$937,000	\$963,000	\$990,000	\$1,018,000	\$1,046,000
Total Operating Expenses		\$20,933,000	\$21,549,000	\$21,656,000	\$22,285,000	\$22,934,000	\$23,603,000

Appendices: A – 3 Cashflow Pro Forma

Revenue	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Revenue from Rates						
Fixed Revenues	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000	\$20,041,000
Variable Rate Revenue	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000	\$2,614,000
Total Rate Revenue	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000	\$22,655,000
Additional Revenue (from revenue adjustments):						
Fiscal Year	Revenue Adjustment	Effective Month				
FY 2020	0.0%	July	\$0	\$0	\$0	\$0
FY 2021	7.0%	July		\$1,586,000	\$1,586,000	\$1,586,000
FY 2022	5.0%	July		\$1,212,000	\$1,212,000	\$1,212,000
FY 2023	5.0%	July			\$1,273,000	\$1,273,000
FY 2024	5.0%	July			\$1,336,000	\$1,336,000
FY 2025	5.0%	July				\$1,403,000
Total Additional Revenue			\$0	\$1,586,000	\$2,798,000	\$4,071,000
Projected Rate Revenues	\$22,655,000	\$24,241,000	\$25,453,000	\$26,726,000	\$28,062,000	\$29,465,000
Other Operating Revenues						
Contract Customer - LLNL	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000	\$1,047,000
Ruby Hill	\$457,000	\$457,000	\$457,000	\$457,000	\$457,000	\$457,000
Miscellaneous	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000
Source Control Fees	\$167,000	\$167,000	\$167,000	\$167,000	\$167,000	\$167,000
Admin Cost Recovery	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000	\$34,000
Interest	\$91,000	\$118,000	\$70,000	\$71,000	\$72,000	\$74,000
Subtotal Other Operating Revenues	\$1,799,000	\$1,826,000	\$1,778,000	\$1,779,000	\$1,780,000	\$1,782,000
Total Revenues	\$24,454,000	\$26,067,000	\$27,231,000	\$28,505,000	\$29,842,000	\$31,247,000
O&M Expenses	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Operating Expenses						
SFR Fixed Lateral Program	\$283,000	\$283,000	\$283,000	\$283,000	\$283,000	\$283,000
Other Financial Services (LAVWMA)	\$2,651,000	\$2,500,000	\$2,000,000	\$2,000,000	\$2,000,000	\$2,000,000
Personnel Services	\$4,596,000	\$4,825,000	\$4,969,000	\$5,118,000	\$5,271,000	\$5,428,000
Services & Supplies	\$8,394,000	\$8,721,000	\$9,005,000	\$9,300,000	\$9,605,000	\$9,919,000
Supplemental Personnel Services	\$3,667,000	\$3,835,000	\$3,976,000	\$4,122,000	\$4,273,000	\$4,430,000
230 - Capital and Services	\$436,000	\$448,000	\$460,000	\$472,000	\$484,000	\$497,000
239 - Capital and Services	\$906,000	\$937,000	\$963,000	\$990,000	\$1,018,000	\$1,046,000
Subtotal Operating Expenses	\$20,933,000	\$21,549,000	\$21,656,000	\$22,285,000	\$22,934,000	\$23,603,000
Total Expenses	\$20,933,000	\$21,549,000	\$21,656,000	\$22,285,000	\$22,934,000	\$23,603,000
Net Cashflow	\$3,521,000	\$4,518,000	\$5,575,000	\$6,220,000	\$6,908,000	\$7,644,000

Appendices: A – 3 Cashflow Pro Forma (cont.)

Operating Fund	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Beginning Balance	\$16,665,419	\$6,882,082	\$7,084,603	\$7,119,781	\$7,326,575	\$7,539,945
Transfers to/(from) Reserves	\$3,521,000	\$4,518,000	\$5,575,000	\$6,220,000	\$6,908,000	\$7,644,000
Transfers in/(out) Capital Replacement Fund	(\$13,304,337)	(\$4,315,479)	(\$5,539,822)	(\$6,013,205)	(\$6,694,630)	(\$7,424,055)
Ending Balance	\$6,882,082	\$7,084,603	\$7,119,781	\$7,326,575	\$7,539,945	\$7,759,890
Capital Replacement Fund	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
Beginning Balance	\$28,537,944	\$36,108,404	\$29,829,935	\$24,132,728	\$20,204,014	\$17,965,671
<u>Plus:</u>						
Transfers from Operating	\$13,304,337	\$4,315,479	\$5,539,822	\$6,013,205	\$6,694,630	\$7,424,055
New Debt Proceeds	\$0	\$0	\$0	\$0	\$0	\$0
<u>Less:</u>						
Capital Projects	(\$6,055,500)	(\$10,922,000)	(\$11,505,500)	(\$10,162,500)	(\$9,122,872)	(\$5,180,569)
Subtotal	\$35,786,781	\$29,501,884	\$23,864,257	\$19,983,433	\$17,775,772	\$20,209,157
	\$321,624	\$328,051	\$268,471	\$220,581	\$189,899	\$190,874
Ending Balance	\$36,108,404	\$29,829,935	\$24,132,728	\$20,204,014	\$17,965,671	\$20,400,031

Appendices: A – 4 System Assets

Asset Categories	OC	OCLD	RC	RCLD	Selected Valuation
Collection	\$534,449,241	\$312,460,844	\$3,894,835,410	\$1,501,169,563	\$1,501,169,563
Treatment	\$2,097,590	\$1,706,671	\$2,487,235	\$2,000,532	\$2,000,532
Total Assets	\$536,546,831	\$314,167,515	3897322645	\$1,503,170,095	\$1,503,170,095