



2020 WATER AND SEWER RATE STUDY UPDATE

FINAL REPORT

City of Arcadia

October 2020



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Section 1

INTRODUCTION

1.1 Background

1.1.1 About the City of Arcadia

The City of Arcadia (City) operates public water and sewer utilities that are responsible for providing water and sewer services to the City's 56,500 residents, as well as many public and commercial institutions. The water utility currently provides total water deliveries of approximately 5.5 million hundred cubic feet (HCF) per year, or roughly 12,600-acre feet, to the nearly 14,050 water customer accounts. The approximate customer distribution is as follows: 83 percent single-family residential homes, 8 percent apartments and condominiums, and 6 percent commercial and industrial, with the remaining 3 percent of accounts made up of irrigation, City, and government and institutional accounts. The City owns and operates wells in three groundwater basins to provide potable water to its customers. The City's primary water source is the Main San Gabriel Basin (MSGB), from which approximately 75 percent of water is produced. The remaining water is pumped from the East and West Raymond Basins. Additionally, the City typically budgets to purchase a small amount of imported water in each year. Since the last drought that occurred in 2014 through 2016, the operating safe yield of the MSGB has been set to a level lower than historic norms and as such, the City's acre-ft per year allotment has been decreased. As a result of this decrease in inexpensive groundwater supplies, the City has had to rely more heavily on replenishment water purchased from the Metropolitan Water District of Southern California to augment its supplies at a current cost of approximately \$958 per acre-ft for untreated water. Further, the MSGB implemented a resource development assessment charge per acre-ft for all water pumped from the basin that will reach its maximum charge level of \$175 per acre-ft in FY 2020/21. A key component of the previous rate study was the development of rates that reflect the City's water supply characteristics and the relationship between each customer's bill and the cost of producing, treating, and delivering water. This cost of service study update builds on the previous study to maintain the nexus between water supply costs and rates.

The sewer utility currently services approximately 13,800 sewer customer accounts. The approximate customer account distribution is as follows: 85 percent single-family residential homes, 8 percent apartments and condominiums, and 5 percent commercial and industrial, with the remaining 2 percent of accounts made up sewer only accounts. Sewer only accounts are outside the City's water service area, but are connected to the City's sanitary sewer system. The City's 1,081 multi-family sewer accounts provide sewer service for 7,853 individual dwelling units.

1.1.1 Study Purpose

The City retained Carollo Engineers to conduct a water and sewer cost of service study for Fiscal Years 2020/21 through 2024/25. The study builds on the 2015 Cost of Service and Rate Study and included the development of a five-year financial plan and comprehensive cost of service rate analysis, including water and sewer rate structures.

To develop updated user rates, an in-depth study of each utility's revenue needs, customer usage characteristics, capital improvement program (CIP), and additional future drivers of service costs and revenue was conducted. This report documents the methodology and assumptions used to develop the financial plan and cost of service analysis, outlines the policy decisions reached, and summarizes the proposed water and sewer rates and the resulting customer impacts.

1.1.2 Forward-Looking Statement

The projections and forecasts of this analysis are based on reasonable expectations of future events. Should the proposed revenue increases be delayed or postponed, or cost escalation, operating expenditures, or capital needs exceed forecasted levels prior to FY 2024/25, the City might be required to begin a new rate adoption process to increase rates above currently projected levels. The City may similarly be required to begin a new Proposition 218 process if revenues do not materialize as projected.

1.2 Overview of Water Rate-Setting Process

Carollo's rate-setting methodology is consistent with industry guidelines established by the M1 Manual, which is published by the American Water Works Association (AWWA), a national industry trade group that makes recommendations on generally accepted practices in the water industry. An overview of this approach is outlined in Figure 1.

1.2.1 Revenue Requirement Analysis

The revenue requirement analysis compares the forecasted revenues of the City (under existing rates and forecasted water demands) to its forecasted operating and capital costs. This step tests the adequacy of the existing rates to recover the City's forecasted costs. If there are shortfalls, increases to rate revenue are recommended until the tests are passed.

1.2.3 Water Demand Analysis

Forecasting water sales and purchases is a critical component in the rate setting process. As part of the budget process, the City forecasts the expected water usage based on historical demand, proposed changes to rates, regulatory impacts, weather, water resources and water availability, and other variables.

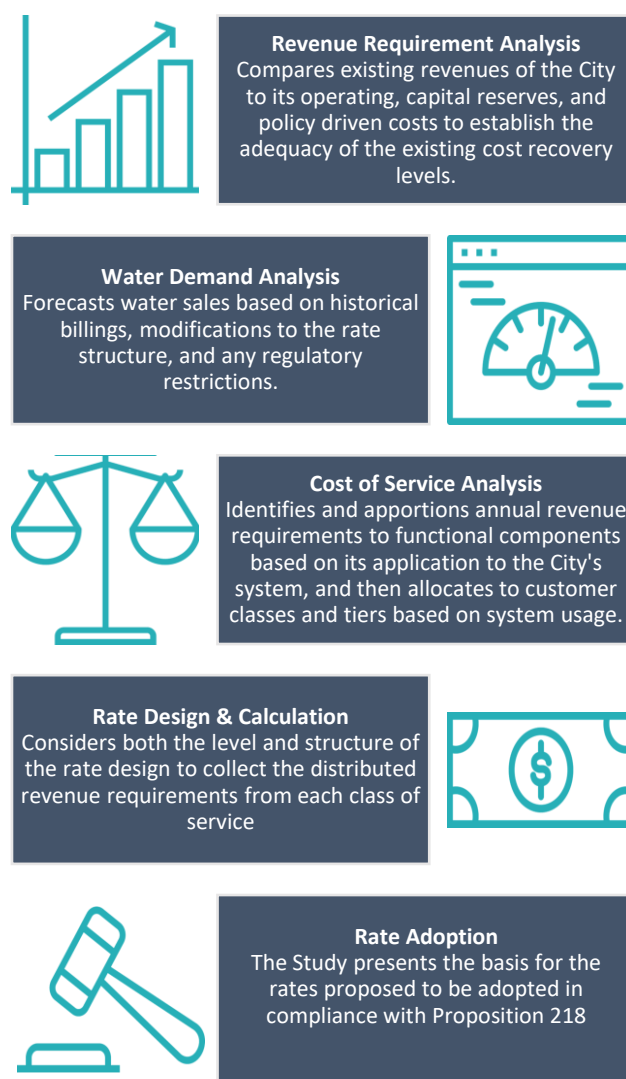


Figure 1 Conceptual Overview of the Rate-Setting Process

Future demands are based on historic sales and escalated for projected growth and per capita demand changes. These forecasted water demands are then compared against forecasted revenue requirements and rates are developed to recover costs.

1.1.4 Cost of Service Analysis

This step builds a link between the City's cost of water service and the proposed rates for each customer. After determining the revenue requirement, this step outlines the cost to deliver each unit of water and to serve each customer. This process takes each item in the water system's budget and allocates the items based on what function is served. For example, some cost items support the ability to deliver additional, more expensive water, while other costs are incurred to provide customer service or to fund capital replacement. Organizing the budget in terms of end function allows the creation of a nexus between the budget item and the rate. This organization bridges the costs incurred by the City and the unique and varied benefits delivered to each customer.

1.1.5 Rate Design & Calculation

The rate design involves developing a rate structure that equitably and proportionately recovers costs from customers. This rate equity is built upon each customer's relative use of the system. The rate structure must be tailored to customer account and demand profiles.

The rate design requires a fine balance of objectives. Rates should be resilient and flexible enough to handle changing cost and demand scenarios while maintaining affordability, equity, and ease of understanding. By collecting different cost drivers from different rate components, the agency can ideally balance these goals.

The rate calculation provides the final nexus between the revenue requirements, functional cost allocation, and final rates that customers are charged. This process connects planned expenditures to the designed rates by establishing rates to match the estimated revenue generation with expenditures.

1.2.2 Sewer Rate Setting

The process used to develop sewer rates mirrors that discussed above for water rates. A revenue requirement analysis is performed to determine the amount of sewer rate revenue needed to cover all of the sewer program's operational and capital costs. Next, an analysis of customer billing data is completed to estimate the sewer discharge and sewer capacity requirements of residential and commercial customers. Next, a cost of service analysis distributed the costs of the sewer system based on function and then to customer class. Lastly, rates are determined based on the costs allocated to each class of customer and each class' sewer discharge and capacity requirements.

1.1.6 Rate Adoption

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

1.3 Existing Water Rate Structure

The City's current water rate structure includes two charges for its retail customers.

- A **bimonthly fixed charge** assessed per meter equivalent.
- A **commodity charge** per HCF.

1.3.1 Fixed Charge

The bi-monthly fixed charge is a combination of a capacity and customer service component. The capacity component is assessed based on meter size, while the customer service component is the same for all accounts. The bi-monthly fixed charge is intended to capture costs associated with providing customer service for each account, as well as the costs of providing the system capacity to serve each account.

The customer service component of the fixed charge is intended to account for costs associated with service that do not vary based on meter size—services such as meter reading, billing costs, and access to customer service representatives. Every customer benefits from these services, regardless of meter size or usage, and the same fee is charged to all customers.

The capacity component of the bi-monthly fixed charge is assessed based on meter equivalent units (MEUs). MEUs are a measure of each connection's capacity requirement. Meter ratios are calculated based on the relative maximum flow of a given meter compared with the maximum flow of a typical SFR meter. The City uses MEU ratios based on the standard maximum flow values for each meter size provided in the AWWA M1 manual.

Table 1 summarizes the current bi-monthly fixed charge imposed by the City, regardless of customer class. The total bimonthly fixed charge is a combination of both the customer and capacity components and the charges for each meter size are the same for all customer classes.

Table 1 Current Bi-Monthly Fixed Charges

Meter Size (inches)	Meter Equivalent Units	Current Bi-Monthly Charge ⁽¹⁾
5/8	1.00	\$30.33
3/4	1.50	32.40
1	2.50	36.55
1.5	5.00	46.93
2	8.00	59.39
3	15.00	88.45
4	25.00	129.97
6	55.00	254.53
8	90.00	399.85
10	140.00	607.45

Notes:

(1) Rates effective January 1, 2020.

1.3.2 Commodity Charges

Commodity charges are per unit rates charged for each individual unit of water used. As the customer uses more water, that customer is charged an increasing amount of commodity charges. The City maintains commodity charges based on four distinct rate classes:

1. Single Family Residential.
2. Multi-Family Residential.
3. Commercial.
4. Government, Institutional, and Irrigation.

1.3.2.1 Single Family Residential

Single Family Residential customers are charged based on a four-tiered inclining block rate structure, with tier allotments that are specific to each meter size and vary seasonally. The unit cost per HCF of water consumed in each tier will remain constant throughout the course of the year. Allotments in excess of Tier 1 are adjusted seasonally to reflect varying outdoor water usage needs during winter and summer. Table 2 shows the winter and summer tier break points under the existing rate structure.

Table 2 Seasonal Bi-Monthly Tier Break Points (Existing Rate Structure)

Meter Size	5/8"	3/4"	1"	1.5"	2"
Winter (November through April)					
Tier 1	22 HCF	22 HCF	22 HCF	22 HCF	22 HCF
Tier 2	28	36	42	46	60
Tier 3	34	46	58	62	86
Tier 4	>34	>46	>58	>62	>86
Summer (May through October)					
Tier 1	22 HCF	22 HCF	22 HCF	22 HCF	22 HCF
Tier 2	34	48	62	66	94
Tier 3	44	66	92	96	140
Tier 4	>44	>66	>92	>96	>140

Notes:

(1) One unit equals one HCF.

Seasonal Adjustments

Seasonal adjustments of the tier structure allow allotments to be tailored to consumption patterns and promote year-round efficient water usage recognizing that additional water for outdoor use is required in the summer months. Seasons were determined based on historical consumption patterns as well as long-term weather patterns and the rate structure is designed to account for winter and summer usage.

Table 3 Single Family 2-year Average Usage by Month

Month	Season	2-Year Average Use ^(1,2)	% Of Total Usage
January	Winter	201,818	6%
February	Winter	189,662	6%
March	Winter	203,530	6%
April	Winter	238,464	7%
May	Summer	276,553	8%
June	Summer	312,630	10%
July	Summer	362,766	11%
August	Summer	367,234	11%
September	Summer	341,662	10%
October	Summer	299,430	9%
November	Winter	254,505	8%
December	Winter	227,199	7%
TOTAL		3,275,450 HCF	100%

Notes:

- (1) A 2-year average of FYE 2018 and FYE 2019 usage data was used as the basis for the cost of service analysis as they represent both a dry and wet year, respectively.
 (2) All usage in HCF.

The summer months accounted for 67 percent of the total customer demand, while only 33 percent was used during winter months.

The single family commodity rates increase for each tier to account for the profile of usage within each tier (peaking) and based on the water supplies that are used to cover consumption within each tier. As a user's demand progresses through the tiers, a greater share of those demands are covered by the City's more expensive sources of water. Table 4 presents the current volumetric rates for single family users.

Single Family Commodity Rates

Table 4 Current SFR Volumetric Tiered Rates

Tier	Description	Current Volumetric Rate ^(1,2)
Tier 1	Indoor Use	\$1.82
Tier 2	Efficient Outdoor Use	2.23
Tier 3	High Outdoor Use	2.53
Tier 4	Inefficient Outdoor Use	2.72

Notes:

- (1) Rates effective January 1, 2020.
 (2) \$/HCF.

1.3.2.2 Multi-Family Residential

Multi-Family Residential customers are charged based on a two-tier inclining block rate structure. Each customer's Tier 1 allotment is set based on the number of dwelling units served by the account and a bi-monthly allotment per dwelling unit of 12 HCF.

1.3.2.3 Commercial, Governmental, Institutional, and Irrigation Rates

All commercial, governmental, institutional and irrigation customers are uniform commodity rates per HCF of water used.

1.4 Existing Sewer Rate Structure

The City's current sewer rate structure consists of rates for residential and commercial customers.

- **Residential Customers** pay a flat bi-monthly charge per residence. Multi-family customers are charged the flat rate per each dwelling unit. The current bi-monthly charge per residence or dwelling unit is \$16.97.
- **Commercial Customers** pay a bi-monthly flat charge per account plus a commodity rate per HCF of water usage. The current bimonthly flat charge is \$50.69 and the commodity rate is \$0.28 per HCF of water usage.

Section 2

WATER DEMAND AND GROWTH

Water sales are the City's primary source of water revenues as well as a primary driver of water expenditures; thus, it is critical to examine and analyze potential shifts in short and long-term water demands. Carollo evaluated the previous four years of billing data to examine historical water demand patterns and potential developing trends.

Figure 2 on the next page shows a summary of the City's water sales over the past four years. Following the recent drought and high level of conservation that ended in 2016, water sales rebounded by 8.6 percent and 9.2 percent in FY 2016/17 and FY 2017/18, respectively. However, sales have not rebounded to pre-drought levels and such a rebound is unlikely due to demand hardening. In FY 2018/19, sales dropped 9.3 percent as compared to FY 2017/18 due to a very wet winter.

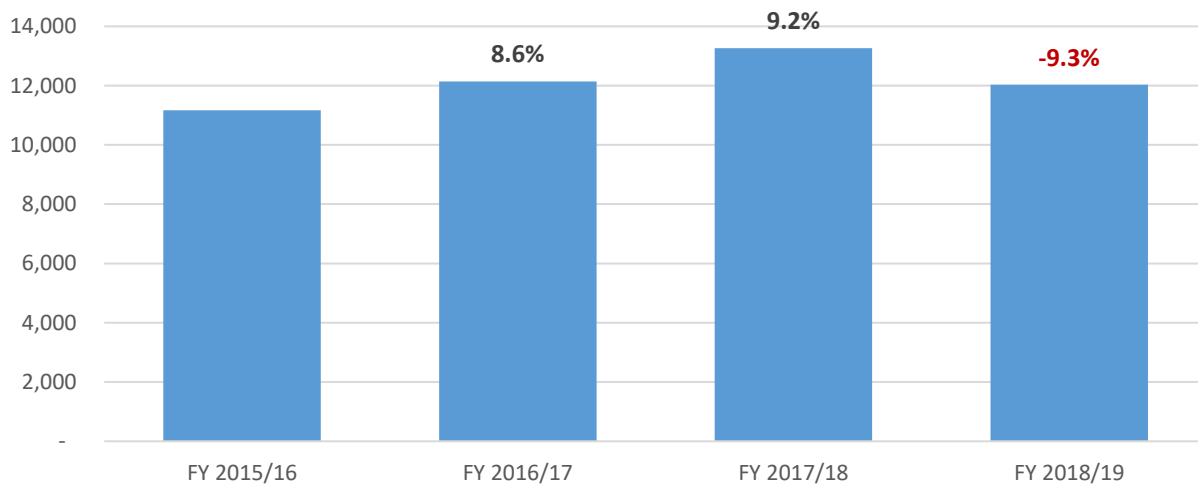


Figure 2 Total Annual Water Sales (AF)

2.1.1 Water Customer Classes

The City's water customers are each assigned to one of eight customer classes. Each class was analyzed independently to determine, and account for, distinct consumption patterns. Monthly and seasonal demand patterns were analyzed to establish overall consumption characteristics and each class's use of the system.

Table 5 Summary of Customer Classes

Customer Class		Consumption Characteristics
Single-Family	SF	Meters typically serve only one residence; consumption peaks in summer months due to increased outdoor usage.
Multi-Family	MF	Each meter serves multiple units; consumption pattern is relatively flat throughout the year due to minimal outdoor use.
Commercial	CA	Meters might serve one or more businesses; consumption is relatively flat throughout the year due to minimal outdoor use.
Irrigation	IM	Used only for outdoor irrigation; consumption peaks heavily in summer. Consumption pattern closely matches GV and AR accounts.
Government and Institutional	GV	Meters serve primarily outdoor usage; consumption peaks heavily in summer due to increased outdoor usage. Consumption pattern closely matches IM and AR accounts.
City of Arcadia	AR	Meters serve primarily outdoor usage; consumption peaks heavily in summer due to increased outdoor usage. Consumption pattern closely matches GV and IM accounts.

Figure 3 shows the percent of annual consumption from each customer class based on a two-year average of billing records for FY 2017/18 and FY 2018/19. Residential accounts (consisting of single and multi-family) are the primary user of water making up roughly 75 percent of annual water sales. The remaining 25 percent is split between commercial, irrigation, government, and institutional, and City of Arcadia accounts.

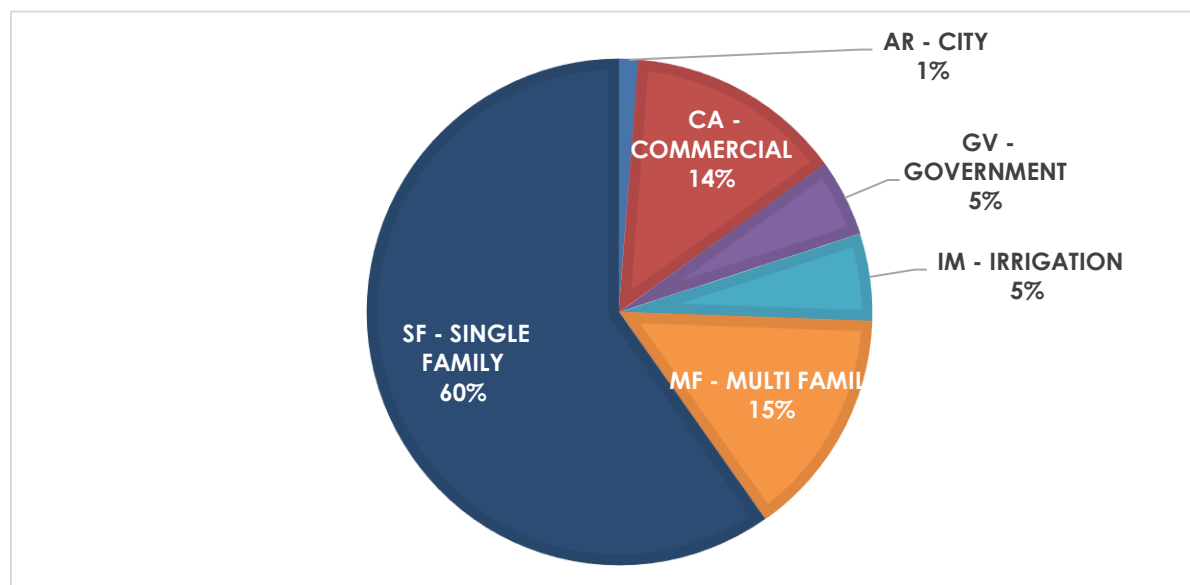


Figure 3 Percent of Annual Consumption per Customer Class

2.1.2 Population and Account Growth

According to the California Department of Finance, the population of the City was 58,891 as of January 1, 2019. City records indicate that the water utility serves 96 percent of the City's total population, or approximately 56,500 residents. This analysis assumes that population growth will not increase water demand as new developments include high efficiency water fixtures and it is expected that continued conservation efforts will offset any new demands. Additionally, it is assumed that there will be no material account growth through the projection period as the City is almost entirely built-out.

2.1.3 Water Supply

In recent years, all of the water provided by the City has been pumped from three ground water basins that underlie or are adjacent to the City. These include the Main San Gabriel Basin and the East and West Raymond Basins. Additionally, the City maintains a 20 cubic feet per second potable water connection to the Metropolitan Water City of Southern California (MWD) to provide service if needed.

2.1.3.1 Main San Gabriel Basin

The MSGB is a groundwater basin surrounded by the San Gabriel Mountains on the north, the San Jose Hills on the southeast, Puente Hills on the southwest, and the Raymond Fault on the northwest. Approximately 80 municipalities, water districts, and private companies pump groundwater from the MSGB. The Main San Gabriel Basin Watermaster (Watermaster) manages pumping activities from the basin, which includes setting the basin's annual operating safe yield, setting annual allotments for each pumper, managing water replenishment operations, and managing the administration of the basin.

The MSGB is the City's primary source of ground water; historically, approximately 65 percent of the water produced by the City has been sourced from the MSGB. More recently, supply driven reductions in pumping from the East and West Raymond Basins have increased the share of water pumped from the MSGB to over 75 percent of total water production.

The MSGB's operating safe yield (OSY) is the maximum amount of water that can be pumped from the basin without requiring groundwater replenishment from outside sources (primarily untreated water from MWD). The OSY is set by the Watermaster each year based on certain criteria, including groundwater elevations, rainfall, local water in surface reservoirs, local water conserved, and the availability of supplemental water. The OSY has been reduced in recent years, and is currently set at 150,000 AF per year (AFY).

The City's annual pumping allotment is set at 4.23099 percent of the MSGB OSY and the City must purchase replenishment water for any pumping above that amount. Water supply costs have become a primary driver of the City's revenue requirements due to lower OSY's that have resulted in increased replenishment water obligations for the City as well as the MSGB resource development assessment (RDA) charge that is currently set at \$175 per all acre-ft pumped. Based on discussion with City staff, this analysis has been completed under the conservative assumption that the OSY will remain at 150,000 AFY, resulting in annual pumping allotments of 6,346 AFY for the City.

2.1.3.2 The Raymond Basins

The northern half of the City overlies the East and West Raymond Basins. Historically, the City held pumping rights of 3,528 AFY in the East Raymond Basin and 2,118 AFY in the West Raymond Basin and approximately 35 percent of the City's annual water production has been pumped from the Raymond Basins. More recently, the managing body of the Raymond basins has decreased annual pumping rights due to water levels and other conditions in the basins. The City's current pumping rights are 2,321 AFY in the East Basin and 1,483 in the West Basin. In practice, the City has pumped below its total pumping rights due to operational constraints. The City is initiating capital projects to increase production from the West Raymond Basin, in turn decreasing the need for Main Basin pumping and replenishment water purchases. This study assumed total Raymond Basin (East and West) production of 3,200 AFY, approximately 23 percent of total water production. In addition, the City will purchase a minimum amount of imported MWD treated water as necessary.

Figure 4 shows historical and projected water production from each source.

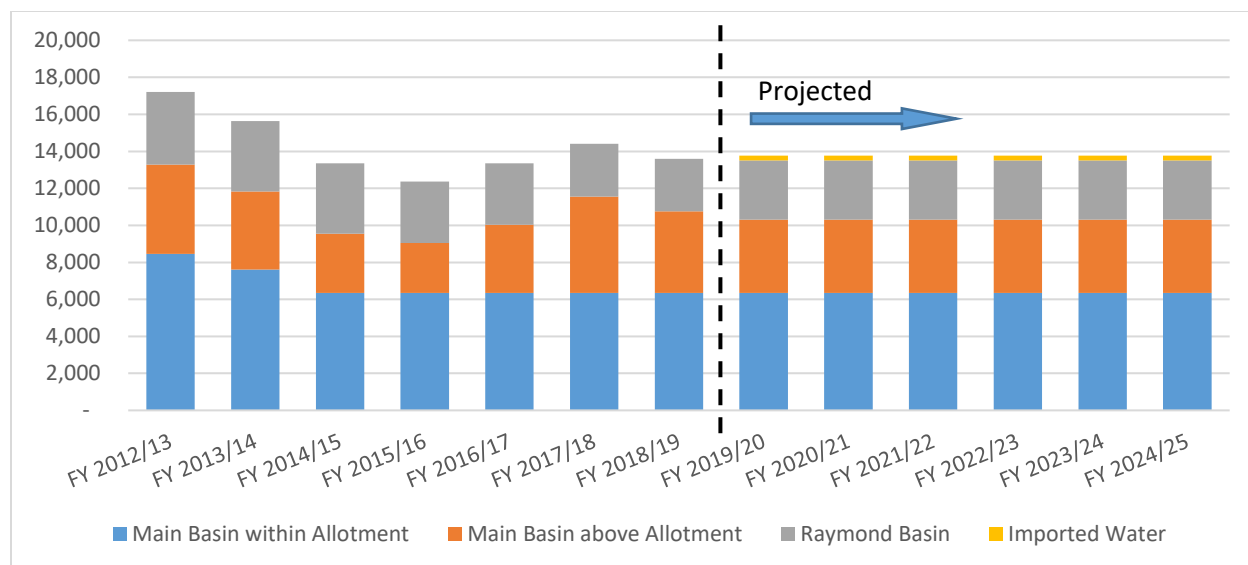


Figure 4 Historical Water Production (acre-ft), by Source

2.1.4 Projected Water Production Costs

Water production and costs have been forecasted based on the demand projection and supply constraints discussed above. These projections assume that production from the East and West Raymond Basins will remain at 3,200 AFY the current annual pumping rights, that the City will purchase a minimal amount of imported treated water (250 AF) each year, and that all additional water needs will be pumped from the MSGB. Additionally, the study assumes that the MSGB OSY will remain at 150,000 AFY. If more pumping is needed than is allotted from these supplies, then City will need to purchase additional untreated replenishment water from MWD to meet its total supply needs.

The City's water supply constraints create an environment in which water conservation can substantially lower annual water supply costs. The primary mechanism by which costs can be lowered is by decreasing customer demand. Any supply needs greater than the allotment from the East and West Raymond Basins and MSGB requires the need for replenishment water to be purchased from MWD, which is much more expensive than water produced within the City's allotment. The recent decreases in the City's MSGB allotment, and the Watermaster's expectation that the OSY will remain below the long-term average, have increased the importance of conservation efforts to promote basin sustainability and to control costs. Less demand for water will result in less replenishment water purchased from MWD, leading to lower supply costs. Table 6 summarizes projected water production and associated costs through FY 2024/25.

Projected water demands for each customer class are included for reference in Appendix D.

Table 6 Projected Water Production and Costs

Item	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Projected Water Sales (AF)	12,645	12,645	12,645	12,645	12,645
System Losses/ Unaccounted for Water ⁽¹⁾	8.1%	8.1%	8.1%	8.1%	8.1%
Projected Water Production (AF)	13,766	13,766	13,766	13,766	13,766
Change from Previous Year	0.0%	0.0%	0.0%	0.0%	0.0%
Main Basin Production (within allotment) (AF)	6,346	6,346	6,346	6,346	6,346
Main Basin Production (above allotment - Replenishment need) (AF)	3,969	3,969	3,969	3,969	3,969
Raymond Basin Production (AF)	3,200	3,200	3,200	3,200	3,200
Imported Treated Water, MWD (AF)	250	250	250	250	250
Replenishment Water Cost	\$3.92	\$4.03	\$4.16	\$4.28	\$4.41
All Other Main Basin Costs	2.06	2.06	2.06	2.06	2.06
Raymond Basin Costs	0.24	0.24	0.24	0.24	0.24
MWD Standby Cost	0.002	0.002	0.002	0.002	0.002
Treated Water Cost	0.28	0.29	0.30	0.30	0.31
CDPH Permit Administration	0.06	0.06	0.06	0.06	0.06
Total Water Supply Costs	\$6.56	\$6.69	\$6.82	\$6.95	\$7.09
Cost per AF (no replenishment)	\$248	\$248	\$248	\$248	\$249
Replenishment Water (\$/AF)	\$1,030	\$1,060	\$1,090	\$1,122	\$1,155
Blended Cost per AF	\$477	\$486	\$495	\$505	\$515

Notes:

- (1) Based on a comparison of the past 5-years of the City's water production records and customer billings, the system's annual losses and unaccounted for water has ranged between 8.1% percent and 11.5-percent. Staff indicated that the lower end of that range, 8.1 percent was most appropriate for future projections.
- (2) All monetary values are in millions of dollars.
- (3) Totals may not tie due to rounding.

Section 3

WATER REVENUE REQUIREMENT ANALYSIS

The revenue requirement analysis is a test of a utility's fiscal health, scrutinizing the adequacy of current revenues against funding needs. This test sets the basis for rate planning and reviews the viability of the utility's revenues against expenses, debts, and reserve policies. Where cash flows and balances are insufficient, the revenue requirement analysis recommends the needed additional cash flows to meet all funding goals.

Carollo compiled the City's projected fiscal year (FY) 2020/21 budget expenses as the base year for O&M costs.¹ Carollo collected actual and budgeted revenues and expenditures, water production costs, reserve fund balances and policies, budgeted capital improvement plan expenditures, current and future annual debt service, and other relevant financial data to forecast funding needs. Once this forecast is established, three tests define the annual revenues necessary.

1. The **Cash Flow Sufficiency Test** looks for a net positive cash flow at the end of each fiscal year. This test looks at whether revenues exceed expenses. When they do not, this test recommends additional revenue.
2. The **Debt Service Coverage Test** assesses the ability of the utility to cover debt service payments. As the City currently has no debts associated with its water or sewer funds, this test was not necessary for this study.
3. The **Reserves Target Test** considers the City's reserve balances and looks at operating, capital, and other funds' performance against City policy minimums. When the reserves targets are not met, this test recommends additional revenue.

Each of the tests is evaluated in each year of the projection to assess the need for revenue increases. As noted, because the City does not currently have any debt, the Debt Service Coverage test does not impact the results of this analysis. If the City elects to issue debt to fund capital projects in the future, the debt coverage obligation should be evaluated and may become a driver of future rate revenue needs.

3.1 Projected Revenues

The City collects most of its water revenues through bimonthly fixed Service Charge per meter and potable commodity rates per HCF consumed. These items made up 93 percent of operating revenues in FYE 2019. As detailed in Section 1, there is a fixed and a variable component to the current rate structure. Currently, the fixed rate component approximately 22.5 percent of total rate revenue, or about \$3.3 million in FY 2019/20. The variable rate component generated \$11.4 million in revenues in FY 2019/20.

The City's other revenues include charges for other services, interest earnings, and other miscellaneous revenues. Table 7 shows revenues from FY 2020/21 budgeted to FY 2024/25 projections. Each revenue item was projected based on an assumed growth factor as outlined in Appendix A.

For sound financial operations of the City's water system, the revenues generated must be sufficient to meet the expenditures or cash obligations of the utility. The revenue needs are defined as the amount of revenues that must be recovered through water rates in order to cover annual expenditures, less any offsetting revenues. Offsetting revenues include interest earnings and other non-operating revenues as outlined in Table 7.

¹ The City's fiscal year begins on July 1 and ends on June 30 of the following year.

Table 7 Projected Water Revenues

Revenue Item	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
User Rate Revenues (Without Further Increases)	\$14.69	\$14.69	\$14.69	\$14.69	\$14.69
Other Charges for Services ⁽¹⁾	0.14	0.14	0.14	0.14	0.14
Interest Earnings	0.16	0.11	0.09	0.08	0.08
Other Revenues ⁽²⁾	0.43	0.42	0.42	0.42	0.42
Total Revenues	\$15.43	\$15.36	\$15.34	\$15.33	\$15.33

Notes:

(1) Other Charges for services include backflow charges, meter inspection fees, miscellaneous fines, and charges for maps and publications.

(2) Other Revenues include rents and royalties, sale of property, and miscellaneous revenues.

(3) All monetary values are in millions of dollars.

(4) Totals may not tie due to rounding.

3.2 Projected Expenditures

The City's FY 2020/21 operating budget served as the basis for forecasting future operating expenses. The budget was compared to prior year actual financial information to identify any anomalies or one-time expenditures not appropriate for forecasting in future years. City staff also reviewed the budget for costs that may need to be adjusted due to future operational changes. Unless manually calculated, future years were forecasted using escalation factors appropriate for the type of expense. The escalation factors used as the basis for the study forecast are shown in Appendix A.

Operating expenses are grouped by division, including Water Administration, Water Main and Replacement, Water Meter Customer Service, and Water Production/Quality. The City typically tracks the water supply costs presented previously in Table 6 within the Water Production/Quality division, however they are presented separately throughout this report as they are a major component of revenue requirements. Table 8 shows expenditures from FY 2020/21 to FY 2024/25 projections. Line-item O&M budget detail is provided in Appendix A.

Table 8 Projected Water Operating Expenditures

Expense Division	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Water Administration	\$3.36	\$3.44	\$3.52	\$3.59	\$3.67
Water Main and Replacement	1.52	1.55	1.58	1.61	1.64
Water Meter Customer Service	0.86	0.88	0.89	0.91	0.93
Water Production/Quality	2.65	2.78	2.83	2.87	2.93
Dues and Assessments (Supply Cost)	6.56	6.69	6.82	6.95	7.09
Total Operating Expenses	\$15.03	\$15.41	\$15.72	\$16.01	\$16.33

Notes:

(1) Based on projected end of year figures.

(2) All monetary values are in millions of dollars.

(3) Totals may not tie due to rounding.

Operating expenses are projected to increase to \$16.33 million by FY 2024/25, representing an 8.7 percent overall increase from the FY 2020/21 level of \$15.03 million. This total expenditure change represents an average annual increase of 2.1 percent. The projected annual operating expenditures are significantly influenced by the amount of replenishment water purchased in each year. The projected operating expenditures have been developed with the water demand assumptions discussed previously in this report.

If usage increases significantly, operating expenditures could be higher than expected. For example, if water consumption increased by 1 percent per year beginning in FY 2020/21, operating expenditures could reach over \$17.5 million by FY 2024/25. Conversely, if the MSGB OSY is raised above 150,000 AFY, operating expenditures could fall, as the need for replenishment water would be diminished.

3.2.1 Capital Projects

The City's CIP includes a variety of capital projects that involve repairing or replacing existing water system assets, as well as purchasing or replacing other small equipment. The City's planned CIP expenditures average about \$2.37 million per year. Table 9 identifies the five-year CIP used in the revenue requirement analysis, the projects and costs were developed by the City for the most recent capital improvement budget. Project costs shown in the table have been escalated to the midpoint of construction.

Table 9 Water CIP

Water CIP Project	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Annual Meter Replacement Program	\$0.25	\$0.25	\$0.25	\$0.25	\$0.25
Public Works Facility Improvements	-	0.04	0.02	0.01	0.01
SCADA System Upgrades and Computerized Utilities System	0.03	0.03	0.03	0.03	0.03
Valve Replacement Program	-	0.15	0.15	0.15	0.15
Well Inspection and Rehabilitation Program	-	0.25	0.25	0.25	0.25
New Well Design (20/21) Construction (21/22)	1.80	-	-	-	-
City Parking Lot Rehabilitation Program	-	-	-	0.07	0.07
Live Oak Well Emergency Generator	-	0.65	-	-	-
Destroy Existing Out of Service Wells	-	-	0.14	-	-
Longden Facility Improvements	-	-	0.75	-	-
St. Joseph Treatment Facility - Design	-	-	-	-	0.40
St. Joseph Perimeter Wall Extension	-	0.04	-	-	-
Water Main Replacement	0.80	0.40	0.40	0.40	0.40
Urban Water Management Plan	0.04	-	-	-	-
Chapman Blending Project	1.41	-	-	-	-
Equipment Acquisition Total	0.03	0.15	0.24	0.36	0.24
Total Water CIP	\$4.35	\$1.96	\$2.23	\$1.52	\$1.80

Notes:

- (1) All monetary values are in millions of dollars.
- (2) Totals may not tie due to rounding.

3.2.2 Capital Funding

The CIP will be funded using existing funds held in the City's water Facilities Reserve as well as revenues directly from water Service Fees. Throughout the next five years, the City expects to fund almost all capital expenditures by first spending down the Facilities Reserve and then utilizing pay as you go (PAYGO) financing. All capital projects for FY 2020/21 will be funded using existing reserves. By FY 2021/22, capital projects are forecasted as PAYGO and funded directly through revenues from water rates.

At that time, PAYGO funding is expected to become a significant driver of annual revenue needs. The City's water utility does not have any outstanding debt obligations and no future debt is expected as the City intends to cash fund all future capital projects.

3.3 Reserve Needs

In addition to the operating and capital expenses, discussed above, there are also revenue requirements related to maintaining the City's water reserve funds. It is good practice to maintain funds to meet unexpected emergency capital outlays or other expenses, or to hedge against revenue shortfalls due to decreases in demands. As a component of this study, Carollo worked with City staff to refine the targeted reserve balance based on system characteristics and revenue needs. The recommended target reserve is the sum of an operating reserve component and a facilities reserve component.

Operating Reserve

Water agencies maintain operating reserves to ensure availability of funds during fluctuations in operating costs or revenues. These could include month-to-month or seasonal shifts in revenue collection or more pronounced operational changes such as decreased revenues due to a drought or increased water purchase costs in the event that one of the City's local supplies becomes unavailable. Operating reserve targets are typically set based on a number of days' worth of operating expenses. While all agencies face unique circumstances that dictate their specific policies, operating reserves typically target between 45 and 180 days of operating expenses. Ideally, a greater percentage of a water utility's revenues being derived from variable rates (commodity revenues) would correspond to higher operating reserve.

Based on the City's characteristics, the recommended operating reserve is 90 days of operating expenses. Thus, the revenue requirement analysis targets a total minimum operating fund balance equivalent to 90 days of operating expenses. The minimum reserve amount is adjusted annually as dictated by changes to the City's operating expenditures. The 90 day operating reserve equates to approximately \$3.7 million for FY 2020/21 and would increase to approximately \$4.0 million by FY 2024/25 as operating expenses increase due to inflation.

The City should continue to monitor revenues and reserve levels on an annual basis. The reserve target may also be adjusted further as policy dictates to minimize rates or to smooth future rate increases. Should the water utility reach and maintain desired reserve levels, it is recommended that the City implement a reserve policy to formally define desired funding levels, needs, and uses.

Facilities Reserve

Water agencies maintain capital or facilities reserves to provide funds for continuity of construction in the event that revenues decrease and to provide an immediate source of funds for capital projects in the event of an emergency. While it would be impractical to reserve against major system-wide failures such as those resulting from a catastrophic earthquake, it is reasonable and prudent to identify and quantify possible failures of individual system components. Facilities reserve targets are often set based on a percentage of the physical system's overall value, typically between 1 and 3 percent.

Due to the volatility of water revenues and the expense to rectify the types of failures that could occur in the water system (reservoir, well, or booster station failures) the recommended Facilities Reserve is 3 percent of the water system's replacement value. An analysis of the water system's capital assets determined the replacement value of the water system to be approximately \$236 million. The recommended 3-percent reserve equates to approximately \$7.1 million. This amount would give the City sufficient funds to undertake emergency repairs in the event of a failure of one of the water system's key components, or to provide continuity of construction in the event of revenue shortfalls.

Equipment Reserve

The City also maintains an Equipment reserve to fund purchases of capital equipment such as vehicles and mobile equipment or capital replacement items such as pumps, valves, computer systems, etc. The Equipment reserve will be drawn down to pay for equipment purchases throughout the study period (FY 2020/21 through FY 2024/25). After that time, the City will set aside cash from rate revenues to fund equipment purchases in each year.

3.4 Recommended Rate Revenue Requirements

Based on the study projections, the City must increase water revenues annually in order to meet projected revenue needs due to annual increases in expenditures and to fund the CIP. Both the bimonthly fixed charges and the volumetric rates will be increased.

Operating Costs

Operating costs are expected to increase in each year driven by the inflationary increases discussed previously. The City has worked to increase operational efficiency in an effort to control operating cost increases. Over the study period, operating costs (including water supply costs) are expected to increase at an average of 2.1 percent per year.

Capital Funding

As noted above, the majority of capital expenditures through FY 2021/22 will be funded with existing reserves. However, the onset of rate funded capital improvements in FY 2022/23 contributes to the need for revenue increases within the next five years. The proposed revenue increases allow the City to build the necessary revenue generation capacity to fund capital projects in the long term.

Water Supply Costs

The extent of the proposed revenue adjustments is largely contingent upon the amount of replenishment water that the City is required to purchase, which is driven by the OSY and by water demands. If weather and basin conditions lead to the Watermaster increasing the OSY in subsequent years, the City might be able to implement lower rate increases. However, if the OSY is decreased further, the City might need to implement higher rate increases, defer capital projects, or further draw down reserves in order to support the cost of replenishment water.

Revenue Increases

Increases in water supply costs, capital funding, and operating cost increases, have driven a need for water rate revenue increases. Currently, reserves are being utilized to fund existing shortfalls. Based on the study projections, the City will need to increase revenues by 5 percent in FY 2020/21 (January 1, 2021) and in FY 2021/22 (January 1, 2022). In FY 2022/23 through FY 2024/25, annual 6 percent increases are forecasted to fund expected operation and capital expenditures. Table 10 provides a summary of the recommended water rate revenue increases for the rate study period.

As shown in Table 10 the City will need to rely on reserves to fund capital projects and to make up for cash flow shortfalls due to cash funding of CIP projects. Total reserves would fall below the \$12 million target in FY 2020/21 and reach a minimum of \$7.63 million in FY 2022/23. The use of reserve balances offsets the need to further increase rates. Long-term projections show that reserves could rebound to the \$12 million target in FY 2026/27 if increases in O&M costs, customer usage, and annual capital costs remain at the status quo following the end of this rate cycle in FY 2024/25 and the City is able to implement inflationary rate increases.

The last section of the tables shows the determination of the “Required Rate Revenues through Rate Design”. This number represents the amount of revenue that would be generated by the rates if they were in place for each full fiscal year. However, as of the completion of this analysis, the City anticipates implementation of rate increases on January 1, 2021, and in January of each following year. Because the rate increases will be implemented in the middle of each fiscal year, the rate revenue requirements for each year include an “Adjustment for Mid-year Increase.” This line item adjusts the required rate revenue to reflect a full year increase to match the full year of projected usage that is used to calculate the rates for each year.

Table 10 Recommended Water Rate Revenue Requirement

	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Pre-Rate Increase Revenues					
Rate Revenues (prior to rate increases) ⁽¹⁾	\$14.69	\$14.69	\$14.69	\$14.69	\$14.69
Other Revenues ⁽¹⁾	0.74	0.67	0.65	0.64	0.64
Total Revenues	\$15.43	\$15.36	\$15.34	\$15.33	\$15.33
Expenditures					
Operating Costs ⁽²⁾	\$8.47	\$8.73	\$8.90	\$9.06	\$9.24
Water Supply Costs ⁽³⁾	6.56	6.69	6.82	6.95	7.09
Rate Funded Capital ⁽⁴⁾	-	-	1.51	1.16	1.56
Total Expenditures	\$15.03	\$15.41	\$17.23	\$17.17	\$17.89
Cash Flows (prior to rate increases)	\$0.40	(\$0.05)	(\$1.89)	(\$1.84)	(\$2.56)
Rate Revenue Increase	5.0%	5.0%	6.0%	6.0%	6.0%
<i>Month of Adoption</i>	<i>January</i>	<i>January</i>	<i>January</i>	<i>January</i>	<i>January</i>
Revenues from Rate Increases	\$0.37	\$1.12	\$1.99	\$2.99	\$4.05
Resulting Cash Flows	\$0.76	\$1.07	\$0.10	\$1.15	\$1.50
Consolidated Reserves Balance					
Beginning Balance	\$12.68	\$9.09	\$8.24	\$7.63	\$8.42
Operating Cash Flow	0.76	1.07	0.10	1.15	1.50
Equipment Acquisition	(0.03)	(0.15)	(0.24)	(0.36)	(0.24)
Use of Reserve for Capital	(4.33)	(1.77)	(0.47)	-	-
Total Reserves Ending Balance	\$9.09	\$8.24	\$7.63	\$8.42	\$9.68
Reserve Components					
<i>Operating Reserve</i>	\$1.67	\$2.74	\$2.63	\$3.42	\$4.03
<i>Facilities Reserve</i>	7.10	5.47	5.00	5.00	5.65
<i>Equipment Reserve</i>	0.19	0.04	-	-	-
<i>Available For Other Projects</i>	\$0.14	\$0.00	\$0.00	\$0.00	\$0.00
Expected Fiscal Year Rate Revenues	\$15.06	\$15.81	\$16.68	\$17.68	\$18.74
Adjustment for Mid-Year Increase	0.37	0.39	0.49	0.52	0.55
Required Rate Revenues for Rate Design	\$15.43	\$16.20	\$17.17	\$18.20	\$19.29

Notes:

(1) From Table 7.

(2) From Table 8

(3) From Table 6

(4) Total from Table 9 adjusted to reflect "Use of Reserve for Capital" and "Equipment Acquisition" shown below in this table (Table 10)

(5) All monetary values are in millions of dollars.

(6) Totals may not tie due to rounding.

Section 4

WATER COST OF SERVICE ANALYSIS

The purpose of a cost-of-service analysis is to provide a rational basis for distributing the full costs of the City of Arcadia's Public Water Utility service to each customer class in proportion to the benefits received from and burdens or demands they place on the system. Carollo developed a detailed cost allocation that serves as the basis for the proposed rate adjustments. This analysis yields an appropriate method for allocating costs, which could be sustained unless substantial changes in cost drivers or customer consumption patterns occur.

The cost of service allocation completed in this study is established on the base-extra capacity method as defined by the AWWA. Under the base-extra capacity method, revenue requirements are allocated based on the demand placed on the water system.

The first step in the cost of service analysis is the functional allocation which assigns annual revenue requirements by major function. The City groups its operating costs in functional divisions based on the activities that it undertakes to operate and maintain the water system. The functional divisions include:

Water Administration: Includes the costs of administration, management, and technical support for the operation of the water Utility.

Water Main and Replacement: Includes the costs of operating and maintaining the City's water distribution infrastructure.

Water Meter Customer Service: Includes the costs of reading, installing and maintaining water meters as well as customer service and billing activities.

Water Production and Quality: Includes the costs to operate and maintain the City's water production and treatment infrastructure as well as the costs that are paid to outside entities for water supply.

4.1 Functional Cost Components

The Utility's primary functions are related to base demand, peak demand, customer costs (customer and capacity), and water supply costs. These functional cost pools include the rate paid for water supplied by outside agencies, the system's existing operations and maintenance (O&M) expenditures, and rate-funded capital costs. The cost of service analysis has been completed using FY 2020/21 revenue requirements as the test year.

The City's budget was analyzed line-item by line-item and expenditures were distributed between the available functions:

Customer: Customer costs are fixed expenditures that relate to the City's support activities, which include utility billing, customer service, and administrative support. These expenditures are common to all customers and uniformly recovered from each customer through the monthly delivery charge.

Capacity: Capacity costs are annual expenditures that the City will incur each year regardless of the quantity of water sold. Capacity costs are fixed expenditures that include meter- and capacity-related costs, such as meter maintenance, that are included based on the meter's hydraulic capacity.

Base: Base costs are operating and capital costs incurred by the water system to provide a basic level of service to each customer. It is assumed that allocated costs benefit all customers uniformly and do not vary based on peak or overall volume of water used. This category also includes the costs for the planned minimal purchase of imported water. Because that purchase is driven by City policy, the costs are spread evenly over each unit of water purchased by customers.

Max Day: Max day costs are operating and capital costs incurred by the water system to provide a maximum day level of service to each customer. These costs are tied to the amount of maximum day demand, as calculated in the cost of service analysis.

Max Hour: Max hour costs are operating and capital costs incurred by the water system to provide a maximum hour level of service to each customer. These costs are tied to the amount of system-wide maximum hour demand, as calculated in the cost of service analysis.

Supply 1: Supply 1 costs include water costs for Raymond Basin and Main Basin – within allotment. These costs are further allocated to each customer class through the supply allocation.

Supply 2: Supply 2 costs include water cost for Main Basin – outside of allotment. These costs represent the City's highest cost source of water. They are further allocated to each customer class through the supply allocation.

Table 11 details the overall allocation by expense category and division to each functional component. The allocations presented are the result of a detailed allocation that assigned each individual expense account, within each division, to each functional cost component. A table showing the line item detail of the functional allocation is included in Appendix B.

Table 11 Water Functional Allocation

Division / Line-Item	Customer	Capacity	Base	Max Day	Max Hour	Supply 1	Supply 2
Water Admin							
Salaries & Wages	100%	-	-	-	-	-	-
Supplies	100%	-	-	-	-	-	-
Operating Expenses	48%	43%	-	10%	-	-	-
Water Main & Replacement							
Salaries & Wages	-	-	52%	28%	20%	-	-
Supplies	-	-	52%	28%	20%	-	-
Operating Expenses	-	-	52%	28%	20%	-	-
Special Programs	-	64%	19%	10%	7%	-	-
Water Meter Customer Service							
Salaries & Wages	25%	75%	-	-	-	-	-
Supplies	25%	75%	-	-	-	-	-
Operating Expenses	25%	75%	-	-	-	-	-
Special Programs	63%	37%	-	-	-	-	-

Table 11 Water Functional Allocation (continued)

Division / Line-Item	Customer	Capacity	Base	Max Day	Max Hour	Supply 1	Supply 2
Water Production / Quality							
Salaries & Wages	-	-	65%	35%	-	-	-
Supplies	-	-	65%	35%	-	-	-
Operating Expenses	-	-	8%	2%	-	21%	69%
Special Programs	-	-	53%	27%	20%	-	-

Notes:

(1) Totals may not tie due to rounding.

4.2 Customer Class Peak Factor Analysis

Water agencies must maintain a fair and equitable methodology for recovering costs both across and within customer classes. To accomplish this, peak factors are a standard industry practice for identifying relative demands on the utility system. The following peak factor calculations exhibit how Arcadia's customers place demands on the system and provide a basis for recovering costs. This methodology is outlined in AWWA M1 Manual and is industry standard practice for allocation costs.

For the remainder of this report, all City (AR), Government (GV), and Irrigation (IM) customers have been grouped together into the Government, Institutional, and Irrigation rate class, whom are all charged the same commodity rate.

4.2.1 Functional Allocation Peak Factors

With the City's costs outlined from its budget, water production and distribution costs, as well as other costs to be recovered through commodity rates, must be assigned to either the Base, Max Day, Max Hour, or Supply categories, as defined in Appendix B. The first step to allocating variable costs among these categories is the development of system demand factors. Table 12 illustrates total system demand factors for the City in HCF based on FY 2018/19 usage data. Average day demand is calculated based on total usage divided by 365 days. Max day production, max hour production, and average day of max month production were obtained from water production data provided by City staff.

Table 12 System Demand Factors (FY 2018/19)

System Demand Factor	HCF or Peak Factor ⁽¹⁾	Note/Source
Average Day Demand (ADD) ⁽¹⁾	15,091	Annual demand / 365 Days
Max Day Demand (MDD) ⁽²⁾	29,977	From SCADA data, max day production occurred in September 2019
MHD / MDD ("Max Hour/Max Day Factor")	1.25	Standard Max Hour / Max Day Factor
Max Hour Demand (MHD)	37,471	MDD times 1.25
Average Day Demand of Max Month	19,491	Max month demand of 592,921 divided by 30.42 average days per month
MDD / MM ("Max Day/Max Month Factor")	1.54	
MDD / ADD ("Max Day/Average Day Factor")	0.50	
MHD / ADD ("Max Hour/Average Day Factor")	2.48	

Notes:

(1) Average day demand calculated as projected sales of 5,508,266 HCF divided by 365.

(2) City staff provided daily water production data for 2015 through 2019, based on that information the maximum daily production occurred in September 2019.

The resulting Max Day/Average Day and Max Hour/Average Day Factors that are calculated from the system demand factors are used to determine the extra capacity allocations, which allocate base, max day, and max hour costs within the functional allocation analysis, as presented in Table 13. To develop the "Base / Max Day" functional allocation factor presented in Table 13. The Max Day/Average Day Factor is divided between base and max day, where base represents 1.00 of the ratio, and max day represents the remainder. The resulting "Base / Max Day" allocation factor is 65 percent to base and 35 percent to max day. The same methodology is applied to the "Base / Max Day / Max Hour" functional allocation factor using the Max Hour/Average Day Factor, which results in 52 percent to base, 28 percent to max day, and 20 percent to max hour.

Table 13 Extra Capacity Allocations

Factor	Ratio	Extra Capacity Allocation (%)
MDD / ADD	1.54	100%
Base	1.00	65%
Max Day	0.54	35%
MHD / ADD	1.92	100%
Base	1.00	52%
Max Day	0.54	28%
Max Hour	0.38	20%

4.2.2 Customer Class Allocation Peak Factors

With the budget costs allocated to either Base, Max Day, and/or Max Hour, as well as the other functional cost categories outlined in Table 11, the next step of the cost of service analysis is to allocate each of these revenue requirement categories to a customer class. This forms the basis for recovering each function cost category from each customer class in a fair and equitable manner based on system usage.

For both the Max Day and Max Hour allocations, the max day and max hour demand for each class is be calculated as follows:

1. Develop Max Day and Max Hour peaking factors.
2. Calculate max day and max hour demand.
3. Calculate extra capacity needed above average day demand.

4.2.2.1 Max Day Demand Peak Analysis

The Max day peaking factor is calculated for each customer class as shown in Equation 1 below.

Equation 1 [Max Day Peaking Factor Calculation](#)

$$\begin{aligned} \text{Max Day Peaking Factor} \\ = \frac{\text{Avg. Day Demand of Max Billing Period}}{\text{Avg. Day Demand of FYE 2019}} \times \frac{\text{System Max Day Demand}}{\text{System Max Month Demand}} \\ \times \text{Weekly Usage Adjustment Factor} \end{aligned}$$

The max day peaking factor is then multiplied by the average day demand for each class to determine the max day demand for each customer class as shown in Table 14. ADD minus max day demand equals the extra capacity that each customer class places on the system. The percent of max day extra capacity that each customer places on the system is used to allocate the total max day revenue requirement to be recovered between each class.

Table 14 Max Day Demand Calculation

Customer Class	ADD ⁽²⁾	% of ADD	Weekly Usage Adjustment Factor ⁽³⁾	MDD Peaking ⁽⁶⁾	MDD Capacity ⁽⁷⁾	Extra Capacity ⁽⁸⁾	% Max Day Extra Capacity
Single Family Residential - Tier 1	3,628	24.0%	1.00	1.64	5,963	2,335	6.8%
Single Family Residential - Tiers 2, 3, & 4	5,394	35.7%	2.33 ⁽⁴⁾	5.50	29,643	24,249	70.9%
Multi-Family Residential - Tier 1	1,386	9.2%	1.00	1.58	2,195	808	2.4%
Multi-Family Residential - Tier 2	824	5.5%	1.20 ⁽⁵⁾	2.34	1,932	1,108	3.2%
Commercial	2,092	13.9%	1.00	1.88	3,934	1,842	5.4%
Government, Institution, Irrigation	1,767	11.7%	1.40 ⁽⁵⁾	3.19	5,641	3,874	11.3%
Total	15,091	100.0%			49,308	34,216	100.0%

Notes:

- (1) All figures are in HCF unless noted otherwise.
- (2) ADD calculated as the total annual demands for each customer (Table 19) class divided by 365 days.
- (3) Weekly usage adjustments applied only to classes, tiers, or consumption portions that are designated as outdoor usage.
- (4) For residential customers, irrigation is allowed for a maximum of 3 days per week in the summer months.
- (5) For commercial, governmental, institutional, and irrigation customers, irrigation on properties can occur any day with approval if necessary and efficient. This assumes irrigation during business days when personnel are present (5 days per week).
- (6) Equals the product of (ADD of max billing period / ADD of FYE 2021) x (System MDD / System Max Month Demand) X Weekly Usage Adjustment Factor.
- (7) MDD Capacity is equal to the product of the MDD Peaking Factor and ADD.
- (8) Extra Capacity is equal to the MDD Capacity minus ADD.
- (9) Totals may not tie due to rounding.

4.2.2.2 Max Hour Demand Peak Analysis

Similarly, a Max Hour Peaking Factor is calculated for each customer class on Equation 2.

Equation 2 Max Hour Peaking Factor Calculation

$$\text{Max Hour Peaking Factor} = \text{Max Day Peaking Factor} \times \frac{\text{System Max Hour Demand}}{\text{System Max Day Demand}}$$

The max hour peaking factor is then multiplied by the average day demand for each class to determine the max hour demand for each customer class as shown in Table 15. Average day demand minus max hour demand equals the extra capacity that each customer class places on the system. The percent of max hour extra capacity that each customer places on the system is used to allocate the total max hour revenue requirement to be recovered between each class.

Table 15 Max Hour Demand Calculation

Customer Class	ADD ⁽²⁾	MHD Peaking Factor ⁽³⁾	Total MHD Capacity ⁽⁴⁾	Extra Capacity ⁽⁵⁾	% Max Hour Extra Capacity
Single Family Residential - Tier 1	3,628	2.05	7,454	5,119	18.7%
Single Family Residential - Tiers 2, 3, & 4	5,394	6.87	37,054	12,805	46.7%
Multi-Family Residential - Tier 1	1,386	1.98	2,743	1,935	7.1%
Multi-Family Residential - Tier 2	824	2.93	2,415	1,307	4.8%
Commercial	2,092	2.35	4,917	3,075	11.2%
Government, Institution, Irrigation	1,767	3.99	7,051	3,177	11.6%
Total	15,091		61,634	27,418	100.0%

Notes:

- (1) All figures are in HCF unless noted otherwise.
 (2) ADD calculated as the total annual demands for each customer (Table 19) class divided by 365 days.
 (3) Equals the product of (MDD Peaking Factor (Table 14) x (System MHD / System MDD)).
 (4) MHD Capacity is equal to the product of the MHD Peaking Factor and ADD.
 (5) Extra Capacity is equal to the MHD Capacity minus ADD.
 (6) Totals may not tie due to rounding.

4.3 Functional Allocation Results

Table 16 summarizes the results of the functional cost allocation analysis based on the forecasted expenses for FY 2020/21. The results presented are the result of the line-item allocation of the City's revenue requirements including operating expenditures, capital expenditures, and offsetting revenues. The full detail of the functional allocation is included for reference in Appendix B.

Table 16 Allocation Results

Category	Cost of Service Allocation Results	Rate Component
Customer	15.1%	Fixed Service Charge – recovered on a per account basis.
Capacity	7.5%	Fixed Service Charge – recovered on a MEU basis.
Base	20.1%	Commodity Charge – recovered on all units of water.
Max Day	9.7%	Commodity Charge – recovered from all units of water, corresponding to tier usage level.
Max Hour	4.7%	Commodity Charge – recovered from all units of water, corresponding to tier usage level.
Supply 1	10.1%	Commodity Charge – recovered from all units of water, corresponding to tier usage level.
Supply 2	32.9%	Commodity Charge – recovered from all units of water, corresponding to tier usage level.
Total	100%	

Notes:

- (1) Totals may not tie due to rounding.

Using the percentage results outlined in Table 16, the total projected revenue requirement calculated (Table 10) is divided between each of the functional categories. The results of this allocation are summarized in Table 17.

Table 17 Functional Allocation Results

Category	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Customer	\$2.32	\$2.44	\$2.59	\$2.74	\$2.91
Capacity	1.16	1.22	1.29	1.37	1.45
Base	3.11	3.26	3.46	3.66	3.88
Max Day	1.49	1.56	1.66	1.76	1.86
Max Hour	0.72	0.76	0.80	0.85	0.90
Supply 1	1.56	1.63	1.73	1.84	1.95
Supply 2	5.07	5.32	5.64	5.98	6.34
Total	\$15.43	\$16.20	\$17.17	\$18.20	\$19.29

Notes:

(1) All monetary values are in millions of dollars.

(2) Totals may not tie due to rounding.

4.4 Supply Allocation

The available water supplies are allocated based on unit costs. Raymond Basin and Main Basin – within allotment (i.e., Supply 1), the lower cost sources, is used to fulfill all base demand requirements. Main Basin – outside of allotment (i.e., Supply 2), the more expensive source, is used to fulfill peak demand requirements. The available supply from each priority is the basis to allocate costs to each customer class and then usage to each tier (where applicable).

In practice, this means that the costs of outside of allotment water are recovered from each class based on each class's incremental peak demands. Further, this approach recovers costs associated with the higher cost source of supply through the upper tiers.

Allocation proportions are based on the projected consumption from each customer class for FYE 2021. The allocation of available supply to each customer class was performed using the four step process described below.

Step 1: Allocate MWD purchased water to all classes based on their proportional amount of total usage. Each year the City budgets to purchase a small amount (250 AF) of treated MWD water to cover any intermittent shutdowns of City production facilities or interruptions of City supplies due to system maintenance. These purchases are minimal, and driven by system maintenance needs rather than water demands. As such, these costs will be allocated straight to the Base functional category, and are not included in the Supply 1 or Supply 2 costs.

Step 2: Allocate Supply 2 water to all classes based on incremental max month usage. The incremental max month demand is assumed to represent the maximum peak monthly usage for each class. The remaining Supply 2 water is available to be allocated to all customers in step three of the supply allocation.

Step 3: Allocate remaining Supply 2 demand to all classes based on incremental maximum 3-month demand. This represents each class's incremental needs during the months when outdoor usage is most prevalent.

Step 4: Allocate the remaining Supply 2 and all of Supply 1 to all classes based on total annual demand. This represents each class's total usage need and allocate the remaining supplies proportionally.

Table 18 shows the results of the supply allocation. As shown, customer classes that place a greater burden on the system during times of peak usage (Government, Institution, Irrigation and Single Family Residential) are responsible for a greater share of the more expensive Supply 2 water. Those that place a lower peak burden on the system (Multi-Family and Commercial) have a greater share of their consumption covered by the lower cost source of supply, Supply 1, as compared to the higher peaking classes. A detailed table of the supply allocation is included for reference in Appendix C.

Table 18 Water Supply Allocation Results

Total Supply Allocation By Class	Base MWD Imported Purchase	Supply 2 Main Basin Out	Supply 1 Raymond Basin + Main Basin In	Class Total
Government, Institution, & Irrigation <i>Percent of Class Allocation</i>	11,711 1.8%	209,990 32.6%	423,145 65.6%	644,846 100%
Commercial <i>Percent of Class Allocation</i>	13,867 1.8%	203,706 26.7%	545,974 71.5%	763,546 100%
Multi-Family Residential <i>Percent of Class Allocation</i>	14,650 1.8%	205,566 25.5%	586,471 72.7%	806,687 100%
Single Family Residential <i>Percent of Class Allocation</i>	59,808 1.8%	969,018 29.4%	2,264,362 68.8%	3,293,187 100%
Total Supply Allocation (HCF)	100,036 1.8%	1,588,279 28.8%	3,819,951 69.4%	5,508,266 100%

Notes:

(1) All values are in HCF.

(2) Totals may not tie due to rounding.

4.5 Customer Class Allocation

The functional allocation results presented in Table 17 are next allocated to each customer class based on their projected usage, accounts, meter equivalents, max day use, max hour use, and supply allocations. Functionalized costs are allocated to each customer class based on their respective use of the overall system.

Table 19 Customer Class Characteristics

Category	Accounts ⁽¹⁾	MEUs ⁽¹⁾	Annual Usage ^(2,3)	MDD Extra Capacity ^(2,4)	MHD Extra Capacity ^(2,5)	Supply 1 Usage ^(2,6)	Supply 2 Usage ^(2,6)
Single Family Residential	11,721	32,479	3,293,187	26,584	17,924	2,264,362	969,018
Multi-Family Residential	1,081	4,921	806,687	1,916	3,242	586,471	205,566
Commercial	814	3,596	763,546	1,842	3,075	545,974	203,706
Government, Institution, & Irrigation	432	3,034	644,846	3,874	3,177	423,145	209,990
Total	14,048	44,029	5,508,266	34,216	27,418	3,819,951	1,588,279

Notes:

(1) Number of accounts and MEUs based on FY 2018/19 customer billing data.

(2) All values are in HCF.

(3) Annual usage projections are set based on an analysis of the past four years of customer billing data. Projected usage for each customer class was set at the average of FY 2018/18 and FY 2018/19 actual usage, to recognize that FY 2017/18 represented a relatively dry year with increased water usage, and that FY 2018/19 represented a relatively wet year with decreased demands.

(4) Developed in Table 14.

(5) Developed in Table 15.

(6) Developed in Table 18 and Appendix C.

(7) Totals may not tie due to rounding.

4.5.1 Fixed Cost Allocation

The revenue requirements for Customer and Capacity functional categories presented in Table 17 are allocated directly to all accounts and MEUs. The customer revenue requirement is divided by the total projected bills to produce the monthly charge per account. Similarly, the capacity revenue requirement is divided by the total projected MEUs to produce the monthly MEU charge. These two components are combined into the total monthly service charge assessed by account for each customer. This calculation follows in Table 26.

4.5.2 Variable Cost Allocation

The revenue requirements for Base, Max Day, Max Hour, Supply 1, and Supply 2 functional categories presented previously are recovered through commodity rates and must be distributed among each customer class as follows.

4.5.2.1 Base Allocation

The Base functional category supports the City's baseline water service. As a result, the Base category is allocated directly to each customer class based on their percent of total annual usage. Table 20 summarizes the allocation of Base to each customer class. The allocated Base costs (Table 17) are distributed to each customer class based on their share of annual usage.

Table 20 Base Customer Allocation

Category	Annual Usage (HCF) ⁽¹⁾	% Annual Usage	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Single Family Residential	3,293,187	59.8%	\$1.86	\$1.95	\$2.07	\$2.19	\$2.32
Multi-Family Residential	806,687	14.6%	0.45	0.48	0.51	0.54	0.57
Commercial	763,546	13.9%	0.43	0.45	0.48	0.51	0.54
Government, Institution, & Irrigation	644,846	11.7%	0.36	0.38	0.40	0.43	0.45
Total	5,508,266	100%	\$3.11	\$3.26	\$3.46	\$3.66	\$3.88

Notes:

(1) From Table 19.

(2) All monetary values are in millions of dollars.

(3) Totals may not tie due to rounding.

4.5.2.2 Max Day Allocation

The Max Day functional category supports the peak, maximum day water demand of all customers. To determine the amount of max day demand that each customer class places on the system, a max day peaking factor is calculated for each class (see Equation 1). The max day peaking factor is then multiplied by the average day demand for each class to determine the max day demand for each customer class (see Table 14). Average day demand minus max day demand equals the extra capacity that each customer class places on the system. The percent of max day demand that each customer class places on the system is presented in Table 21. The total revenue to be recovered through max day shown in Table 17 is allocated to each class by applying the percent max day usage derived in Table 14.

Table 21 Max Day Customer Allocation

Category	% Max Day Usage	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Single Family Residential	77.7%	\$1.16	\$1.21	\$1.29	\$1.36	\$1.45
Multi-Family Residential	5.6%	0.08	0.09	0.09	0.10	0.10
Commercial	5.4%	0.08	0.08	0.09	0.09	0.10
Government, Institution, & Irrigation	11.3%	0.17	0.18	0.19	0.20	0.21
Total	100%	\$1.49	\$1.56	\$1.66	\$1.76	\$1.86

Notes:

(1) All monetary values are in millions of dollars.

(2) Totals may not tie due to rounding.

4.5.2.3 Max Hour Allocation

The Max Hour functional category supports the max water demand of all customers. Like max day demand, a max hour demand peaking factor is calculated for each class to determine the max hour demand that each customer class places on the system. The max hour peaking factor is then multiplied by the average day demand for each class to determine the max hour demand for each customer class.

Average day demand minus max day demand represents the extra capacity that each customer class places on the system. The percent of max day demand that each customer class places on the system is presented in Table 22. The total revenue to be recovered through max hour shown in Table 17 is allocated to each class by applying the percent max hour usage derived in Table 15.

Table 22 Max Hour Customer Allocation

Category	% Max Hour Usage	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Single Family Residential	65.4%	\$0.47	\$0.50	\$0.53	\$0.56	\$0.59
Multi-Family Residential	11.8%	0.09	0.09	0.10	0.10	0.11
Commercial	11.2%	0.08	0.09	0.09	0.10	0.10
Government, Institution, & Irrigation	11.6%	0.08	0.09	0.09	0.10	0.10
Total	100%	\$0.72	\$0.76	\$0.80	\$0.85	\$0.90

Notes:

(1) All values are in millions of dollars.

(2) Totals may not tie due to rounding.

4.5.2.4 Supply 1 Allocation

The Supply 1 functional category supports the supply costs associated with Raymond Basin and Main Basin – within allotment water supplies. Using the results of the Supply Allocation, the percent of Supply 1 demand for each customer class developed in Table 18 is used to proportionally allocate Supply 1 costs (Table 17) to each customer class, as shown in Table 23.

Table 23 Supply 1 Customer Allocation

Category	% Supply 1 Usage	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Single Family Residential	59.3%	\$0.92	\$0.97	\$1.03	\$1.09	\$1.15
Multi-Family Residential	15.4%	0.24	0.25	0.27	0.28	0.30
Commercial	14.3%	0.22	0.23	0.25	0.26	0.28
Government, Institution, & Irrigation	11.1%	0.17	0.18	0.19	0.20	0.22
Total	100%	\$1.56	\$1.63	\$1.73	\$1.84	\$1.95

Notes:

(1) All values are in millions of dollars.

(2) Totals may not tie due to rounding.

4.5.2.5 Supply 2 Allocation

The Supply 2 functional category supports the supply costs associated with Main Basin – outside of allotment water supplies. Similar to Supply 1, using the results of the Supply Allocation (Table 18), the percent of Supply 2 demand for each customer class is used to proportionally allocate Supply 2 costs (Table 17) to each customer class, as shown in Table 24.

Table 24 Supply 2 Customer Allocation

Category	% Supply 2 Usage	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Single Family Residential	61.0%	\$3.09	\$3.25	\$3.44	\$3.65	\$3.87
Multi-Family Residential	12.9%	0.66	0.69	0.73	0.77	0.82
Commercial	12.8%	0.65	0.68	0.72	0.77	0.81
Government, Institution, & Irrigation	13.2%	0.67	0.70	0.75	0.79	0.84
Total	100%	\$5.07	\$5.32	\$5.64	\$5.98	\$6.34

Notes:

(1) All values are in millions of dollars.

(2) Totals may not tie due to rounding.

Section 5

WATER RATE DESIGN

The rate design analysis links the customer class costs with the water rates necessary to achieve cost recovery. The focus of this process is to achieve full cost recovery and substantiate that each customer class and individual user is paying their fair and proportionate share of system costs.

With costs equitably allocated to each customer class as outlined in Section 4, the City has some flexibility in designing a rate structure that meets its policy and fiscal objectives. In determining the appropriate rates and rate structure, Carollo analyzed various rate design alternatives, considering the impacts to both the City and its customers. Carollo used the following criteria in selecting an appropriate rate structure:

- Clear and understandable.
- Easily administered.
- Follows cost of service principles.
- Provides revenue stability.
- Provides affordability.
- Complies with legal and regulatory requirements.

Given the numerous and competing elements of rate design, selection of an appropriate rate structure is complex. There is no single structure that meets all objectives equally. Furthermore, priority objectives vary across agencies. Each objective has merit and plays an important role when implementing changes and evaluating the overall effectiveness of proposed changes. These elements and competing objectives were discussed and evaluated at length throughout the financial and rate study process.

Based on discussion with City staff and detailed review of the cost of service analysis and customer usage data, Carollo recommends the following rate design updates:

- Maintain fixed service charge to best reflect how actual system costs are incurred.
- Maintain a four-tier rate structure for Single Family residential customers with seasonally adjusted, meter size specific tier allotments.

- Update Single Family tier limits to better reflect system usage.
- Maintain a two tier rate structure for Multi-Family customers with water allocations based on the number of dwelling units in each multi-family complex.
- Maintain customer class specific uniform rates for other customer classes.

5.1 Proposed Fixed Charge

The City's current bimonthly fixed charge is a cost recovery mechanism that facilitates recovery of fixed expenditures, including meter and customer related costs. This charge includes a portion of the capacity related costs to provide a stable source of revenue independent of monthly water demand.

The fixed charge is a combination of the Customer and Capacity functional components. The Customer component covers costs that apply to all accounts in the system, regardless of usage or the size of the connection to the system. The Capacity component is applied to each customer based on their water meter size and its associated number of MEUs. Unit costs for each fixed component are calculated by dividing the allocated Customer and Capacity costs by the number of accounts and number of MEUs, respectively, as shown in Table 25.

Table 25 Water Fixed Unit Costs

Functional Component	FY 2020/21 Cost (millions) ⁽¹⁾	Units ⁽²⁾		FY 2019/20 Bi-Monthly Unit Cost
Customer	\$2.32	14,048	Accounts	\$27.57
Capacity	\$1.16	44,029	MEUs	\$4.38

Notes:

(1) From Table 17.

(2) From Table 19.

(3) Totals may not tie due to rounding.

The bi-monthly fixed charges are determined by adding the bi-monthly customer component to the bi-monthly capacity component as shown in Table 26. To determine the capacity component for each meter size, the meter unit cost is multiplied by the meter capacity ratios previously developed by the City to calculate the meter capacity cost. These ratios are based on the typical maximum flow for each meter size identified in the AWWA M1 Manual.

Table 26 Bi-Monthly Fixed Charge Components (FY 2020/21)

Meter Size	Capacity Ratio	Capacity Component	Customer Component	Total Bi-Monthly Charge ⁽¹⁾
5/8"	1.00	\$4.38	\$27.57	\$31.96
3/4"	1.50	6.57	27.57	34.15
1"	2.50	10.95	27.57	38.53
1.5"	5.00	21.90	27.57	49.48
2"	8.00	35.04	27.57	62.62
3"	15.00	65.71	27.57	93.28
4"	25.00	109.51	27.57	137.09
6"	55.00	240.93	27.57	268.50
8"	90.00	394.25	27.57	421.82
10"	140.00	613.27	27.57	640.85

Notes:

(1) Totals may not tie due to rounding.

Table 27 summarizes the proposed bi-monthly fixed charge for the five-year rate setting period.

Table 27 Proposed Bi-Monthly Fixed Charge

Meter Size	Current Rate	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Increase	N/A	5.0% overall with COS ⁽¹⁾	5.0%	6.0%	6.0%	6.0%
5/8"	\$30.33	\$31.96	\$33.56	\$35.57	\$37.71	\$39.97
3/4"	32.40	34.15	35.86	38.01	40.29	42.71
1"	36.55	38.53	40.46	42.88	45.46	48.18
1.5"	46.93	49.48	51.96	55.07	58.38	61.88
2"	59.39	62.62	65.75	69.70	73.88	78.31
3"	88.45	93.29	97.95	103.83	110.06	116.66
4"	129.97	137.09	143.95	152.58	161.74	171.44
6"	254.53	268.51	281.93	298.85	316.78	335.79
8"	399.85	421.83	442.92	469.49	497.66	527.52
10"	607.45	640.85	672.89	713.27	756.06	801.43

Notes:

- (1) Proposed rates for FY 2020/21 include a cost of service (COS) adjustment based on the updated analysis. Proposed rates for FY 2021/22 are calculated by applying the revenue requirement increase of 5.0 percent, and FY 2022/23 through FY 2024/25 are calculated by applying the revenue requirement increases of 6.0 percent per year to the COS adjusted rates.
- (2) Bi-monthly charges are rounded to the nearest \$0.01.

5.2 Commodity Rates

The commodity rates are developed for each customer class group and are designed to recover the costs proportionate to water demands. Cost of service based rates were developed for each customer class based on the principle of maintaining vertical and horizontal customer-class equity. Customer classes, such as single-family residential or commercial, only pay for their assigned share of costs of service, and within each customer class, each account will pay a fair share of the costs assigned to that customer class. Customer related commodity costs are calculated based on the class group's average annual water usage and its annualized summer consumption. The water commodity rate for each customer class group is calculated based on the customer class' cost (required revenues) and the forecasted annual water demands. The proposed bimonthly commodity based rates are shown in Table 28.

Table 28 Proposed Water Rates

Customer Class	Current Rate	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Increase	N/A	5.0% overall with COS⁽¹⁾	5.0%	6.0%	6.0%	6.0%
Single Family Residential						
Tier 1	\$1.82	\$1.91	\$2.00	\$2.12	\$2.25	\$2.38
Tier 2	2.23	2.32	2.44	2.59	2.74	2.91
Tier 3	2.53	2.39	2.51	2.66	2.82	2.99
Tier 4	2.72	3.00	3.15	3.34	3.54	3.75
Multi-Family Residential						
Tier 1	\$1.69	\$1.82	\$1.91	\$2.02	\$2.14	\$2.27
Tier 2	1.97	2.01	2.11	2.23	2.37	2.51
Commercial	\$1.81	\$1.92	\$2.02	\$2.14	\$2.27	\$2.40
Government, Institutional, and Irrigation	\$2.13	\$2.27	\$2.38	\$2.52	\$2.67	\$2.83

Notes:

- (1) Proposed rates for FY 2020/21 include a cost of service (COS) adjustment based on the updated analysis. Proposed rates for FY 2021/22 are calculated by applying the revenue requirement increase of 5.0 percent, and FY 2022/23 through FY 2024/25 are calculated by applying the revenue requirement increases of 6.0 percent per year to the COS adjusted rates.
- (2) Rates are rounded to the nearest \$0.01.

5.2.1 Single Family Residential Rates

It is important that the proposed water rate structure passes the true cost of providing water service on to the customers who utilize that service and in doing so promotes efficient water usage. Continuing the use of a tiered rate structure for single-family customers is critical in order to achieve these objectives. The study reviewed Single Family tiered usage to determine what adjustments should be made to continue accurately allocating costs to each tier.

The proposed Single Family rate structure is designed to proportionately allocate a greater share of the costs of service to those whose higher water usage generates additional costs to the water utility and incidentally promotes efficient water usage and conservation, while avoiding and minimizing administrative impacts associated with a more complex rate structure such as individual water budgets. The proposed rate structure is an inclining block rate structure designed to reflect the City's various sources of supply coupled with a single-family home's specific consumption patterns.

5.2.1.1 Tier Allotments

The Single Family residential customer class has been split to recognize each of the available meter sizes. As was adopted in the 2015 Cost of Service Study, the tier allocations were determined by analyzing the relationship between meter size, MEUs, and consumption patterns. The proposed rates retain this structure.

Historically and in the proposed rate structure, the City's fixed service charges have been based on the size of each customer's water meter. Charges are higher for larger meters based on the MEUs associated with each size of meter. By paying these higher fixed charges, customers with larger meters have reserved additional system capacity as compared to those with smaller meters. As such, the tier breaks for each meter size can reflect the incremental capacity maintained by each meter size. Setting the tier allotments in

this manner allows for demands from users with each meter size to be satisfied with a similar blend of water from the City's water sources. Additionally, this analysis provides that each meter size is being apportioned an equivalent allocation of peak costs based on system characteristics, rather than demand alone. Rather than adjusting allotments based only on MEUs, an analysis of the customers' seasonal usage used to determine the incremental water needs for each meter size.

Seasonal adjustments of the tier structure allow rates to be tailored to consumption patterns and effectively recover the costs of providing water for each tier throughout the year. They also allow for the capacity reserved by each meter size to be reflective of the varied capacity need during the winter and summer months. Allotments are decreased in the winter months to reflect that if used efficiently, less water is needed for outdoor uses in the winter months. During the winter months, users move more quickly through Tier 2 and Tier 3, paying for a greater share of more expensive water supplies. During the summer, Tier 2 and Tier 3 are expanded to reflect the additional capacity that is required for and reserved by each meter size during the hotter and dryer part of the year. As a secondary benefit, the seasonal adjustments help to promote year-round efficient water usage.

As was adopted in the 2015 Cost of Service Study, seasons were determined based on historical consumption patterns as well as long-term weather patterns. The rate structure accounts for winter and summer usage. Bills for water usage in the months of November through April will be calculated using winter allotments. Bills for water usage in the months of May through October will be calculated using the higher summer allotments.

An analysis of Single Family Residential water demand for FY 2017/18 and FY 2018/19 was performed to assess the current tier break points. Based on the analysis adjustments to some of the tier breakpoints are necessary to realign tier usage with each meter size to current demand patterns. The following tier break adjustments are proposed in Table 29. These updated tier break points reflect the actual usage of the Single Family Residential customer class in FY 2017/18 and FY 2018/19.

Tier 1, Indoor Usage: Tier 1 is intended to provide a basic allotment of water for indoor usage. The Tier 1 break point will remain set at 11 HCF per month (22 HCF bi-monthly). The allotment is not seasonally adjusted as indoor usage is not impacted by seasonal weather patterns. This allotment would provide a household of 5 people with approximately 55 gallons per person per day, consistent with State guidance.

Tiers 2, 3, and 4, Outdoor Usage: Tiers 2, 3, and 4 are intended to cover outdoor water usage. The breakpoints were initially developed for the 2015 through an analysis of usage by meter size, assumed irrigable area, and typical water needs for native landscaping and turf. The pricing for each tier is increased by allocating progressively more expensive water to the upper tiers.

Tier 2, Efficient Outdoor Usage: Tier 2 is intended to provide an allotment of water to each customer for efficient landscape use such as minimal turf or native plants. The break points are seasonally adjusted to recognize that more water is required in the summer months due to the weather. Tier 2 break points were adjusted for specific meter sizes based on the consumption characteristics observed in the FY 2017/18 and FY 2018/19 customer billing data.

Tier 3, High Outdoor Usage: Tier 3 is intended to provide an allotment of water to each customer for high water use landscaping use such a full turf yard. The break points are set such that the sum of the Tier 2 and Tier 3 allotments would support high use landscaping. The break points are seasonally adjusted to recognize that more water is required in the summer months due to the weather. Tier 3 break points were adjusted for specific meter sizes based on the consumption characteristics observed in the FY 2017/18 and FY 2018/19 customer billing data.

Tier 4, Inefficient Outdoor Usage: Tier 4 is intended to recover the costs of water usage beyond what is considered to be efficient. The need to provide water for this level of consumption drives additional purchases of replenishment water and impacts the operation of the system by driving a higher seasonal and daily peak.

Table 29 Proposed Updated Seasonal Bi-Monthly Tier Break Points

Meter Size	5/8"	3/4"	1"	1.5"	2"
Winter (November through April)					
Tier 1	22 HCF	22 HCF	22 HCF	22 HCF	22 HCF
Tier 2	32	34	42	48	60
Tier 3	42	44	58	70	90
Tier 4	>42	>44	>58	>70	>90
Summer (May through October)					
Tier 1	22 HCF	22 HCF	22 HCF	22 HCF	22 HCF
Tier 2	34	42	60	70	94
Tier 3	44	58	92	112	148
Tier 4	>44	>58	>92	>112	>148

Notes:

(1) One unit equals one HCF.

5.2.1.2 Tiered Rates Cost Components

The recommended rate calculation approach is based on a rate component “layering” methodology using the remaining cost components that are not recovered through the fixed charges – water supply (Supply 1 and Supply 2), Base, Max Day, and Max Hour. Costs are allocated to each tier based on specific parameters that define the incremental burden of satisfying demands in each tier. For example, Max Day costs are allocated to each tier based on tier specific peak factors that were determined through an analysis of customer billing data. The following section outlines the specific allocation process for each cost component. Figure 5 below summarized the cost components that are collected through each tier’s rate.

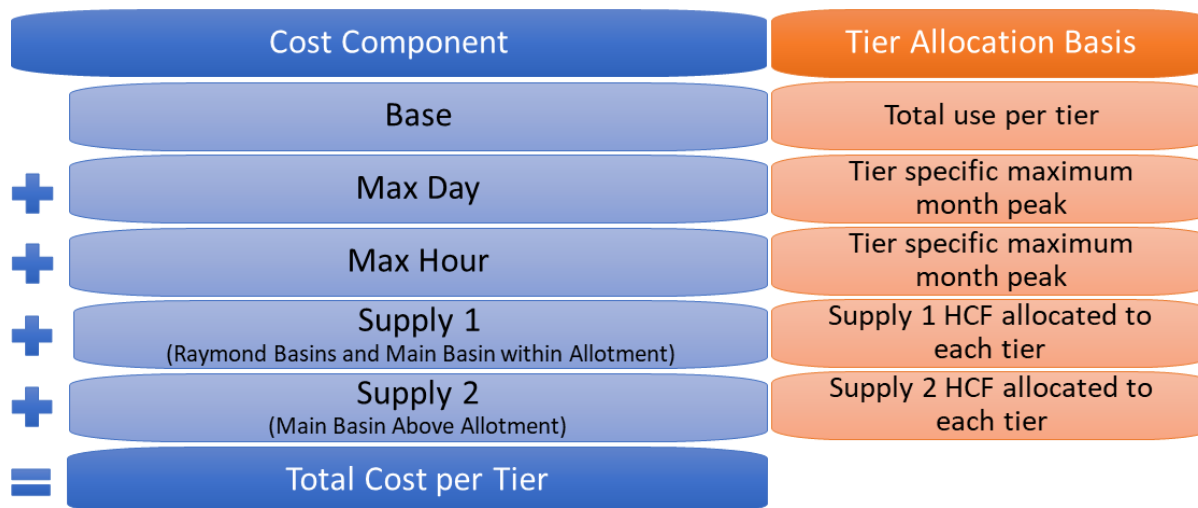


Figure 5 Single Family Tiers' Cost Components

5.2.1.3 Proposed Single Family Volumetric Rates

As discussed above, single Family commodity rates recover costs allocated to Base, Max Day, Max Hour, Supply 1, and Supply 2 functional categories. The rates are calculated by allocating the Single Family class' share of each cost to each of the tiers, then dividing the total cost allocated to each tier by the consumption per tier. The following tables outline the allocation costs from each functional category to each tier and the calculation of the proposed rates for FY 2020/21. Proposed rates for FY 2021/22 are calculated by applying the revenue requirement increase of 5.0 percent to the FY 2020/21 cost of service adjusted rates, and 6.0 percent per year from FY 2022/23 through FY 2024/25.

The base cost component is allocated to each Single Family tier based on the max month/average month usage within each tier. These calculations are shown in Appendix E. The weighting factor is then used to proportionally allocate the total base cost to each Single Family tier, as shown in Table 30.

Table 30 Single Family Base Rate Component Allocation

Tier	Base Cost Allocation to Tier	FY 2020/21 Costs (million)
Single Family Base Costs	100%	\$1.86
Tier 1	40%	\$0.75
Tier 2	30%	0.56
Tier 3	12%	0.22
Tier 4	18%	0.33

Notes:

- (1) All monetary values in millions of dollars.
- (2) Totals may not tie due to rounding.

The Single Family max day rate is allocated to each tier based on specific weighting factors as shown in Table 31. To allocate the max day revenue to Tier 1, the total revenue to recover is divided by the sum-product of each tier's allocation weight and demand, multiplied by the allocation weight for Tier 1, as shown in Appendix E. Table 31 presents the max day rate component allocated to each tier.

Table 31 Single Family Max Day Rate Component Allocation

Tier	Max Day Cost Allocation to Tier	FY 2020/21 Costs(million)
Single Family Max Day Costs	100%	\$1.16
Tier 1	31%	\$0.36
Tier 2	34%	0.39
Tier 3	14%	0.17
Tier 4	20%	0.23

Notes:

- (1) All monetary values in millions of dollars.
- (2) Totals may not tie due to rounding.

Similar to the max day rate component, the Single Family max hour rate is allocated to each tier based on specific weighting factors as shown in Table 32. To allocate the max hour revenue to Tier 1, the total revenue to recover is divided by the sum-product of each tier's allocation weight and demand, multiplied by the allocation weight for Tier 1, as shown in Appendix E. Table 32 presents the max hour rate component allocated to each tier.

Table 32 Single Family Max Hour Rate Component Allocation

Tier	Max Hour Cost Allocation to Tier	FY 2020/21 Costs (million)
Single Family Max Hour Costs	100%	\$0.47
Tier 1	31%	\$0.15
Tier 2	34%	0.16
Tier 3	14%	0.07
Tier 4	20%	0.10

Notes:

(1) All monetary values in millions of dollars.

(2) Totals may not tie due to rounding.

Usage in each of the single family tiers is satisfied with a blend of water from the City's water supply source. As usage progresses up through the tiers, it is satisfied with an increasing share of water from the more expensive source of supply, main basin pumping above allotment, defined in this report as Supply 2. The blend of supply 1 and Supply 2 water in each tier is based on an allocation of supplies to each tier that relies on the peak profile of each tier. Additionally, the allocation is set such that no water from the City's most inexpensive source, the Raymond Basins, is used to cover usage in Tier 4.

Supplies are allocated to each tier using a three-step process. First, water from Supply 1 and Supply 2 is allocated to Tier 4 to cover excessive outdoor usage. The blend of Supply 2 (more expensive water) and Supply 1 (lower cost water) is determined by adjusting the overall blend of Supply 1 and Supply 2 water available to the Single Family class, adjusted such that no water from the Raymond basins (the City's lowest cost resource) is allocated to Tier 4. Next, the remaining supplies are allocated among Tiers 1, 2, and 3 based on each tier's usage and peak factor.

Table 33 shows the allocation of supplies to each tier. The amount of Supply 1 and Supply 2 water allocated covers all usage in each tier less each tier's proportional allocation of MWD treated imported water. Additional detail of the supply allocation to each tier is included for reference in Appendix E.

The Supply 1 and Supply 2 costs allocated to each Single Family tier are shown in Table 34 and Table 35.

Table 33 Single Family Tier Supply Allocations

Tier	MWD Imported	Supply 1	Supply 2	Tier Total
Allocated HCF⁽¹⁾				
Tier 1	24,050	1,038,304	261,920	1,324,274
Tier 2	18,045	690,918	284,649	993,612
Tier 3	7,240	271,560	119,876	398,676
Tier 4	10,472	263,580	302,572	576,624
Total	59,808	2,264,361	969,018	3,293,187
Percent Share per Tier⁽²⁾				
Tier 1	40%	46%	27%	40%
Tier 2	30%	31%	29%	30%
Tier 3	12%	12%	12%	12%
Tier 4	18%	12%	31%	18%
Total	100%	100%	100%	100%

Notes:

- (1) Water supplies allocated to single family in Table 18 are allocated to each tier as shown in Appendix E.
 (2) Percent share of water from each supply based on the above supply allocations.
 (3) Totals may not tie due to rounding.

Table 34 Single Family Supply 1 Rate Component Allocation

Tier	Supply 1 Cost Allocation to Tier ⁽¹⁾	FY 2020/21 Costs (million) ⁽²⁾
Single Family Supply 1 Costs	100%	\$0.92
Tier 1	46%	\$0.42
Tier 2	31%	0.28
Tier 3	12%	0.11
Tier 4	12%	0.11

Notes:

- (1) From Table 33.
 (2) Total single family share of supply 1 costs from Table 23.
 (3) All monetary values in millions of dollars.
 (4) Totals may not tie due to rounding.

Table 35 Single Family Supply 2 Rate Component Allocation

Tier	Supply 2 Cost Allocation to Tier ⁽¹⁾	FY 2020/21 Costs (million) ⁽²⁾
Single Family Supply 2 Costs	100%	\$3.09
Tier 1	27%	\$0.84
Tier 2	29%	0.91
Tier 3	12%	0.38
Tier 4	31%	0.97

Notes:

- (1) From Table 33.
 (2) Total single family share of supply 2 costs from Table 24.
 (3) All monetary values in millions of dollars.
 (4) Totals may not tie due to rounding.

The combination of the Base, Max Day, Max Hour, Supply 1, and Supply 2 costs allocated to each Single Family tier divided by the total projected usage within each tier equals the total rate for each tier as shown in Table 36.

Table 36 Proposed Single Family Rates

Tier	FY 2020/21 Total Costs (millions) ⁽¹⁾	Consumption (HCF) ⁽²⁾	FY 2020/21 Proposed Rate (\$/HCF)
Tier 1	\$2.52	1,324,274	\$1.91
Tier 2	2.31	993,612	\$2.32
Tier 3	0.95	398,676	\$2.39
Tier 4	1.73	576,624	\$3.00

Notes:

- (1) Total of allocated costs for each tier from Table 30, Table 31, Table 32, Table 34, and Table 35.
 (2) Consumption per tier outlined in Appendix E.
 (3) Totals may not tie due to rounding.

5.2.2 Multi-Family Residential Rates

Multi-family rates are calculated using a similar process to that discussed above for Single Family. The following tables outline the allocation costs from each functional category to each tier and the calculation of the proposed rates for FY 2020/21. Proposed rates for FY 2021/22 are calculated by applying the revenue requirement increase of 5.0 percent to the FY 2020/21 cost of service adjusted rates, and 6.0 percent per year from FY 2022/23 through FY 2024/25.

Base, Max Day, and Max Hour rate components are allocated to each Multi-Family Residential tier similarly to the Single Family allocation. These rate components are shown in Table 37, Table 38, and Table 39.

Table 37 Multi-Family Base Rate Component Allocation

Tier	Base Allocation ⁽¹⁾	FY 2020/21 ⁽²⁾
Multi Family Base Costs	100%	\$0.45
Tier 1	63%	\$0.29
Tier 2	37%	0.17

Notes:

- (1) Base costs are allocated to each tier based on the total amount of usage within each tier as outlined in Appendix E.
 (2) All monetary values in millions of dollars.
 (3) Totals may not tie due to rounding.

Table 38 Multi-Family Max Day Rate Component Allocation

Tier	Max Day Allocation ⁽¹⁾	FY 2020/21 ⁽²⁾
Multi Family Max Day Costs	100%	\$0.08
Tier 1	58%	\$0.05
Tier 2	42%	0.04

Notes:

- (1) Max day allocation based on analysis of usage by tier and tier peak factors shown in Appendix E.
 (2) Total multi-family share of max day costs from Table 21.
 (3) All monetary values in millions of dollars.
 (4) Totals may not tie due to rounding.

Table 39 Multi-Family Max Hour Component Allocation

Tier	Max Hour Allocation ⁽¹⁾	FY 2020/21 ⁽²⁾
Multi Family Max Hour Costs	100%	\$0.09
Tier 1	58%	\$0.05
Tier 2	42%	0.04

Notes:

- (1) Max hour allocation based on analysis of usage by tier and tier peak factors shown in Appendix E.
 (2) Total multi-family share of max day costs from Table 22.
 (3) All monetary values in millions of dollars.
 (4) Totals may not tie due to rounding.

Supplies are allocated to each tier based on peak factors to assign a blend of water from each supply to cover usage in each tier. Table 40 shows the allocation of water supplies to each tier. Supply 1 and Supply 2 costs are allocated to each Multi-Family tier based on Table 41 and Table 42. The amount of Supply 1 and Supply 2 water allocated covers all usage in each tier less each tier's proportional allocation of MWD imported water. Additional detail of the supply allocation to each tier is included for reference in Appendix E.

Table 40 Multi-Family Tier Supply Allocation

Tier	MWD Imported	Supply 1	Supply 2	Tier Total
Allocated HCF⁽¹⁾				
Tier 1	9,189	377,856	118,922	505,967
Tier 2	5,462	208,614	86,644	300,720
Total	14,651	586,470	205,566	806,687
Percent Share per Tier⁽¹⁾				
Tier 1	63%	64%	58%	63%
Tier 2	37%	36%	42%	37%
Total	100%	100%	100%	100%

Notes:

- (1) Water supplies allocated to multi-family in Table 18 are allocated to each tier as shown in Appendix E.
 (2) Percent share of water from each supply based on the above supply allocations.
 (3) Totals may not tie due to rounding.

Table 41 Multi-Family Supply 1 Rate Component Allocation

Tier	Supply 1 Allocation ⁽¹⁾	FY 2020/21 ⁽²⁾
Multi Family Supply 1 Costs	100%	\$0.24
Tier 1	64%	\$0.15
Tier 2	36%	0.09

Notes:

- (1) From Table 40.
 (2) Total multi-family share of supply 1 costs from Table 23.
 (3) All monetary values in millions of dollars.
 (4) Totals may not tie due to rounding.

Table 42 Multi-Family Supply 2 Component Allocation

Tier	Supply 2 Allocation ⁽¹⁾	FY 2020/21 ⁽²⁾
Multi Family Supply 2 Costs	100%	\$0.66
Tier 1	58%	\$0.38
Tier 2	42%	0.28

Notes:

- (1) From Table 40.
 (2) Total multi-family share of supply 2 costs from Table 24.
 (3) All monetary values in millions of dollars.
 (4) Totals may not tie due to rounding.

The combination of the Base, Max Day, Max Hour, Supply 1, and Supply 2 costs allocated to each Multi-Family tier divided by the total projected usage within each tier equals the total rate for each tier as shown in Table 43.

Table 43 Proposed Multi-Family Rates

Tier	FY 2020/21 Total Costs (millions) ⁽¹⁾	Consumption (HCF) ⁽¹⁾	FY 2020/21 Rate (\$/HCF)
Tier 1	\$0.92	505,967	\$1.82
Tier 2	\$0.60	300,720	\$2.01

Notes:

- (1) Total of allocated costs for each tier from Table 37, Table 38, Table 39, Table 41, and Table 42.
 (2) Consumption per tier outlined in Appendix E.
 (3) Totals may not tie due to rounding.

5.2.3 Commercial Rates

The Commercial customer class uses water relatively consistently throughout the course of the year, exhibiting a much lower peak than the other customer classes and the overall system average. The proposed commercial volumetric rates reflect the lowered peak burden placed on the water system by commercial customers.

Commercial rates are calculated by dividing the sum of all Base, Max Day, Max Hour, Supply 1, and Supply 2 costs that are allocated to the class customers by the total projected usage for the class. Table 44 shows the calculation of Commercial rates for FY 2020/21. Proposed rates for FY 2021/22 are calculated by applying the revenue requirement increase of 5.0 percent to the FY 2020/21 cost of service adjusted rates, and 6.0 percent per year from FY 2022/23 through FY 2024/25.

Table 44 Proposed Commercial Rates Calculation

Commercial Rates Calculation	FY 2020/21
Base Costs (millions) ⁽¹⁾	\$0.43
Max Day Costs (millions) ⁽²⁾	0.08
Max Hour Costs (millions) ⁽³⁾	0.08
Supply 1 Costs (millions) ⁽⁴⁾	0.22
Supply 2 Costs (millions) ⁽⁵⁾	0.65
Total Variable Costs (millions)	\$1.46
FY 2020/21 Usage (HCF) ⁽⁶⁾	763,546
FY 2020/21 Rate (\$/HCF)	\$1.92

Notes:

- (1) Commercial share of base costs from Table 20.
- (2) Commercial share of max day costs from Table 21.
- (3) Commercial share of max hour costs from Table 22.
- (4) Commercial share of supply 1 costs from Table 23.
- (5) Commercial share of supply 2 costs from Table 24.
- (6) Commercial consumption from Table 19.
- (7) Totals may not tie due to rounding.

5.2.4 Government, Institutional, and Irrigation Rates

The Government, Institutional, and Irrigation customer class uses significantly more water during the summer months due as it serves predominantly private and public outdoor irrigation usage. Thus, it exhibits a higher peak than the other customer classes and the overall system average. The proposed Government, Institutional, and Irrigation volumetric rates reflect the higher peak burden placed on the water system by the customers' demand patterns.

Government, Institutional, and Irrigation rates are calculated by dividing the sum of all Base, Max Day, Max Hour, Supply 1, and Supply 2 costs that are allocated to the class customers by the total projected usage for the class. Table 45 shows the calculation of Government, Institutional, and Irrigation rates for FY 2020/21. Proposed rates for FY 2021/22 are calculated by applying the revenue requirement increase of 5.0 percent to the FY 2020/21 cost of service adjusted rates, and 6.0 percent per year from FY 2022/23 through FY 2024/25.

Table 45 Proposed Government, Institutional, and Irrigation Rates

Government, Institutional, and Irrigation Rates Calculation	FY 2020/21
Base Costs (millions) ⁽¹⁾	\$0.36
Max Day Costs (millions) ⁽²⁾	0.17
Max Hour Costs (millions) ⁽³⁾	0.08
Supply 1 Costs (millions) ⁽⁴⁾	0.17
Supply 2 Costs (millions) ⁽⁵⁾	0.67
Total Variable Costs (millions)	\$1.46
FY 2020/21 Usage (HCF) ⁽⁶⁾	644,846
FY 2020/21 Rate (\$/HCF)	\$2.27

Notes:

- (1) Government, Institutional, and Irrigation share of base costs from Table 20.
- (2) Government, Institutional, and Irrigation share of max day costs from Table 21.
- (3) Government, Institutional, and Irrigation share of max hour costs from Table 22.
- (4) Government, Institutional, and Irrigation share of supply 1 costs from Table 23.
- (5) Government, Institutional, and Irrigation share of supply 2 costs from Table 24.
- (6) Government, Institutional, and Irrigation consumption from Table 19.
- (7) Totals may not tie due to rounding.

Section 6

WATER CUSTOMER CLASS BILL IMPACTS

Carollo analyzed the impact of the above proposed water rates for Single Family, Multi-Family, Commercial, and Government, Institutional, and Irrigation customers bi-monthly bills compared to the currently adopted rates.

6.1 Single Family Residential Bill Impact

A typical Single Family customer has a 1" meter and uses 37 HCF in the winter, and 55 HCF in the summer per bi-monthly bill. These customers would see a \$5.31 per bill increase in the winter and a \$6.93 per bill increase in the summer with the proposed rates in FY 2020/21, as shown in Figure 6 and Figure 7.

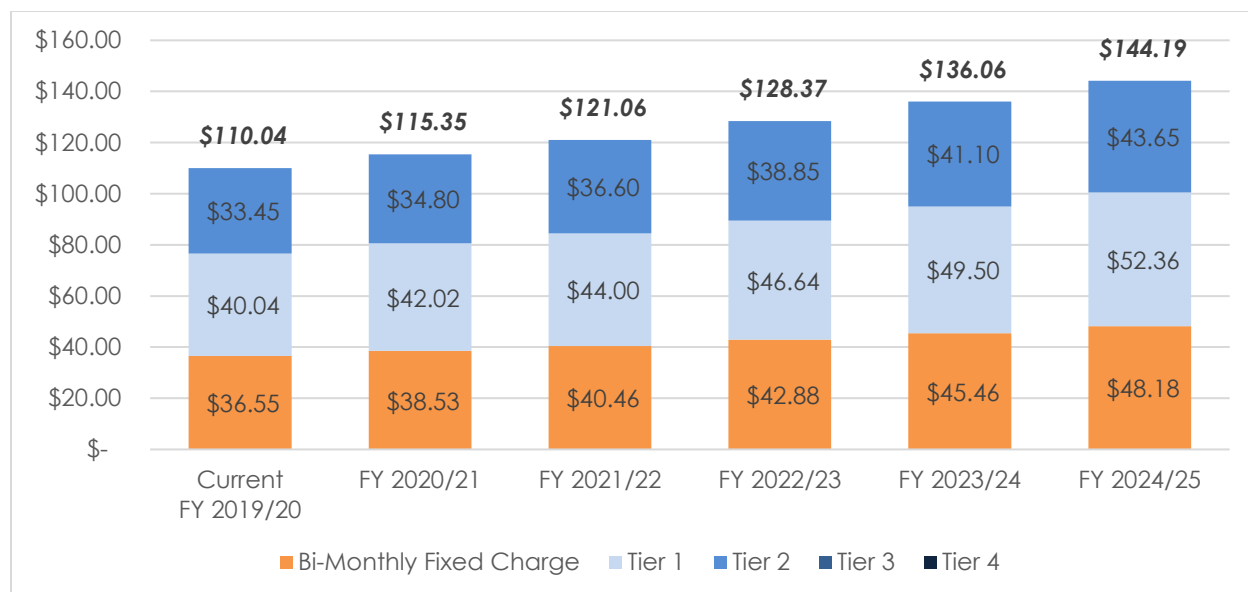


Figure 6 Single Family Customer Bi-Monthly Bill Impact – 1", Winter

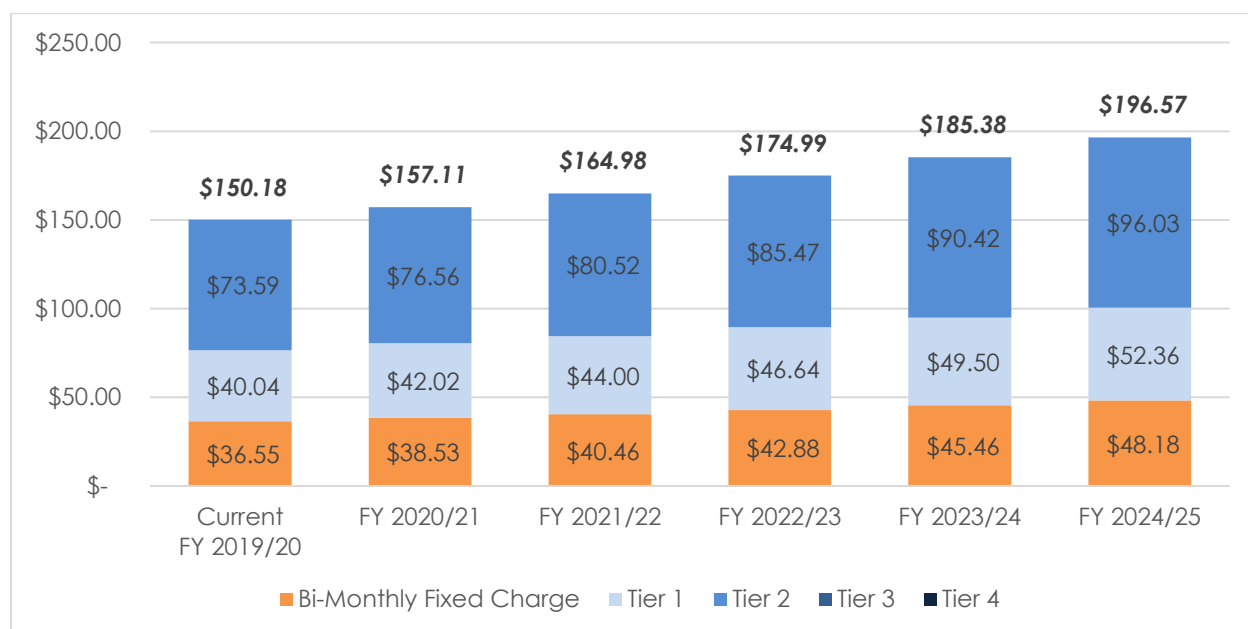


Figure 7 Single Family Customer Bi-Monthly Bill Impact – 1", Summer

6.2 Multi-Family Residential Bill Impact

A typical Multi-Family customer has a 1" meter service 4 dwelling units and uses 68 HCF bi-monthly. These customers would see a \$9.03 per bill increase with the proposed rates in FY 2020/21 as shown in Figure 8.

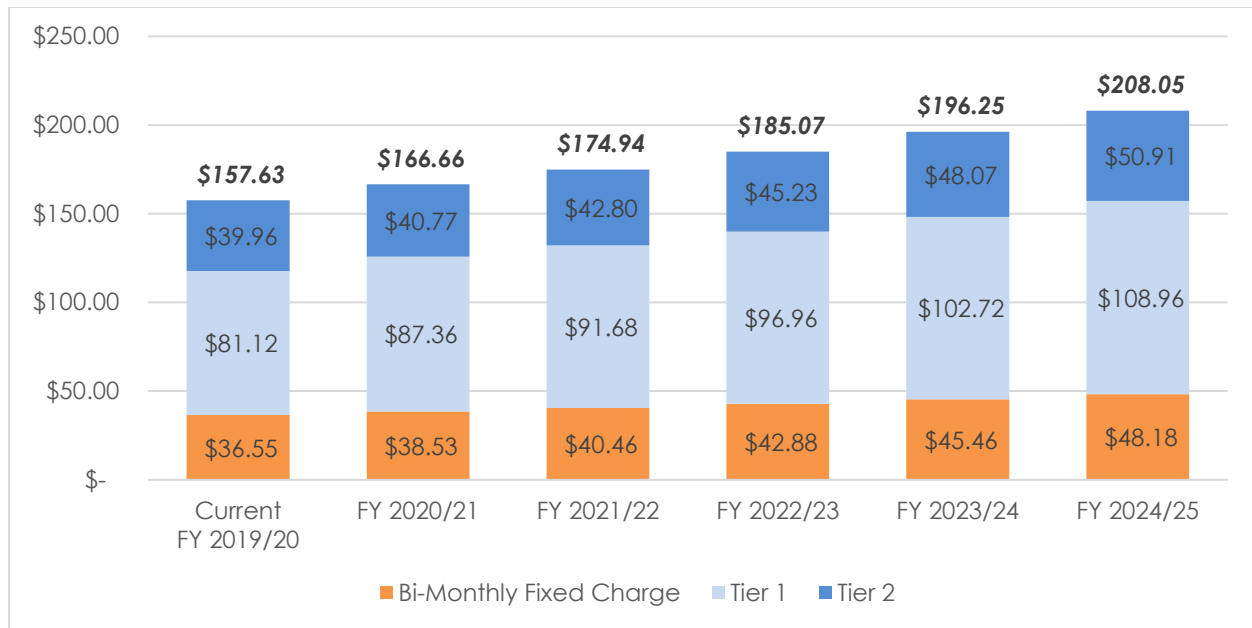


Figure 8 Multi-Family Customer Bi-Monthly Bill Impact

6.3 Commercial Bill Impact

A typical Commercial customer has a 1" meter and uses 156 HCF bi-monthly. These customers would see a \$19.18 per bill increase with the proposed rates in FY 2020/21 as shown in Figure 9.

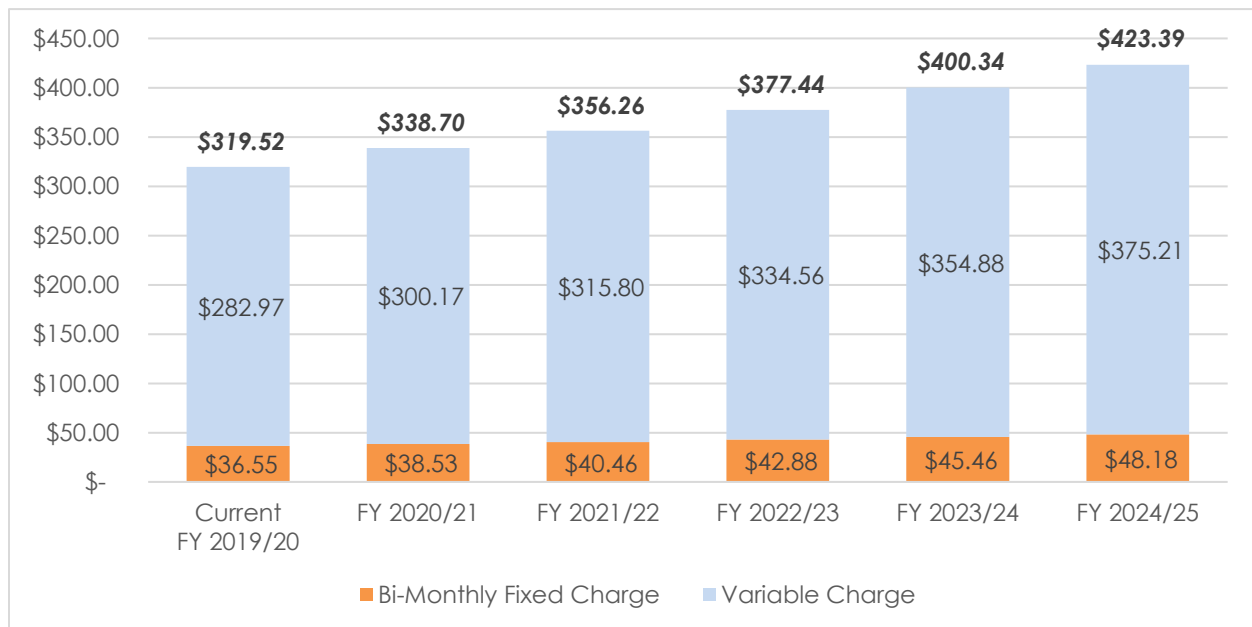


Figure 9 Commercial Customer Bi-Monthly Bill Impact

6.4 Government, Institutional, and Irrigation Bill Impact

A typical Government, Institutional, and Irrigation customer has a 2" meter and uses 249 HCF bi-monthly. These customers would see a \$38.06 per bill increase with the proposed rates in FY 2020/21 as shown in Figure 10.

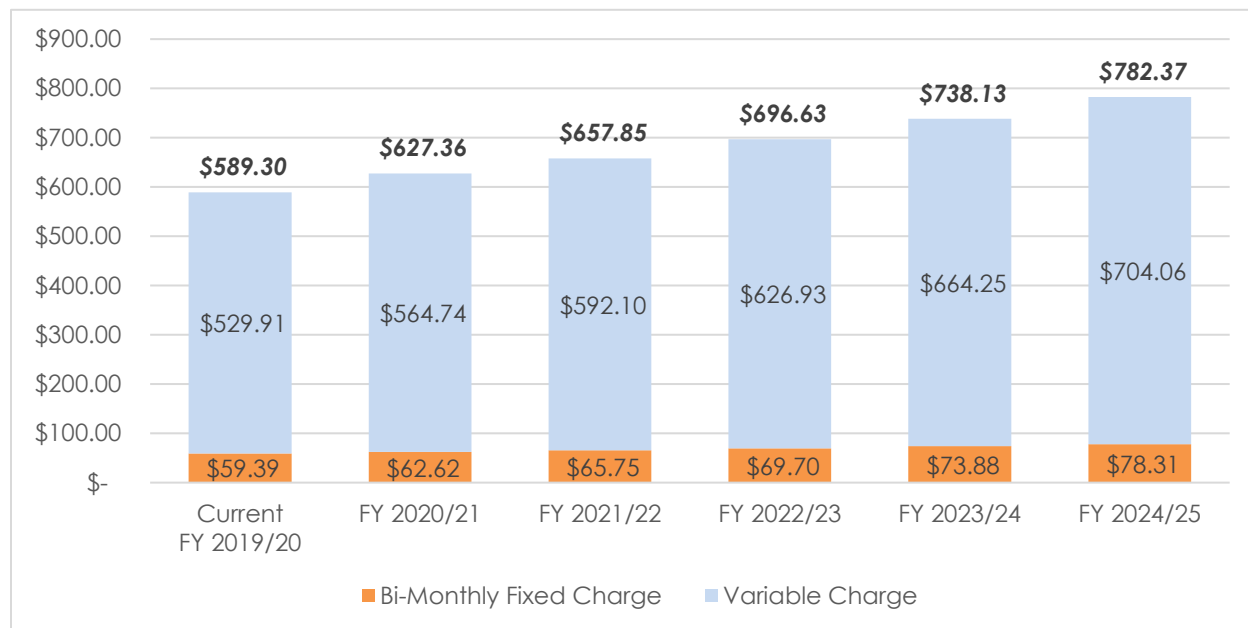


Figure 10 Government, Institutional, and Irrigation Customer Bi-Monthly Bill Impact

6.5 Regional Water Rate Comparison

Carollo conducted a water rate survey of neighboring agencies. Although every agency has differing priorities, including fiscal and policy objectives when setting rates, it is common to establish benchmarks between neighboring agencies. Figure 11 compares a typical bi-monthly bill for a Single Family customer (1" meter, 37 HCF winter usage) with the current and proposed rates against nine neighboring agencies.

When comparing rates between utilities, it is important to be mindful of differing factors that make each utility unique, including location, source of supply, consumer profile and demographics, age of the system, and various other operational and capital related needs that all play a part in rate design.

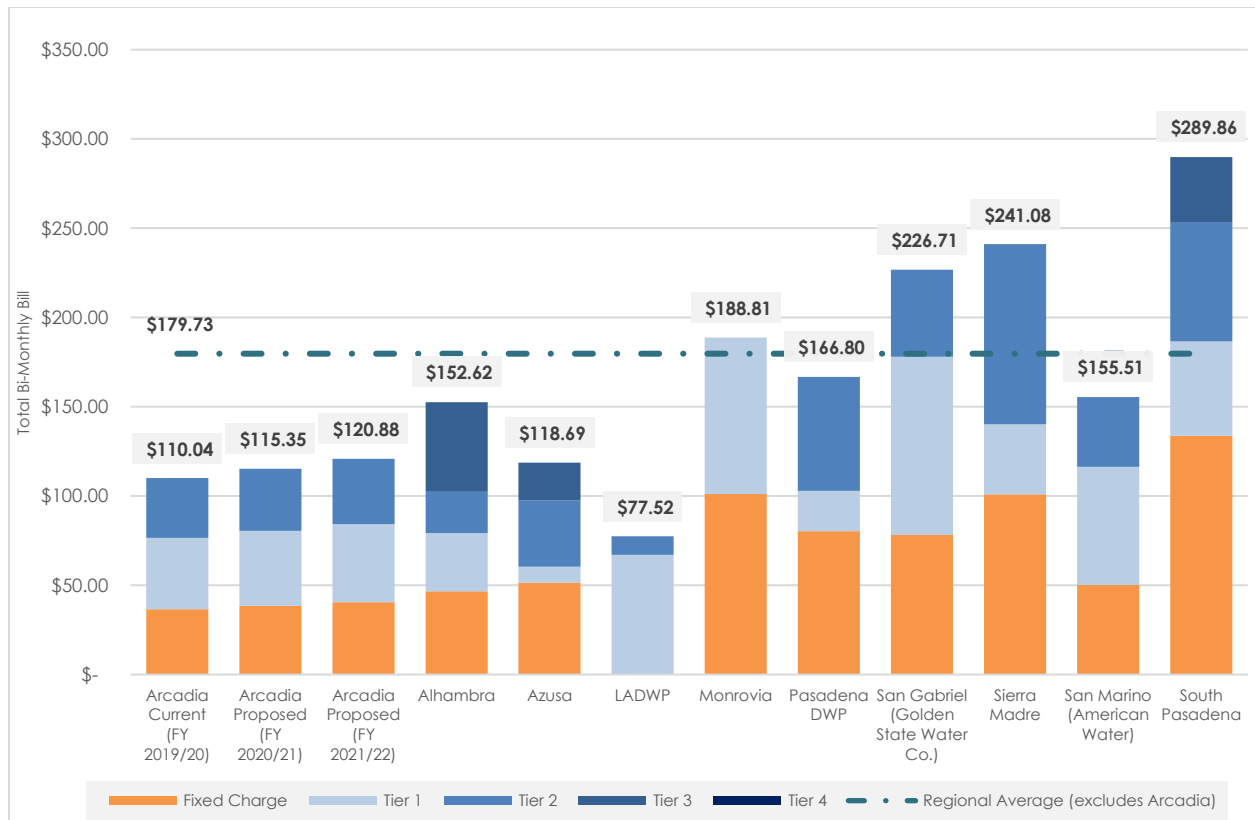


Figure 11 Regional Water Rate Comparison, Single Family (1" meter, 37 HCF bi-monthly winter usage)

Section 7

SEWER REVENUE REQUIREMENTS

The sewer revenue requirement analysis follows the same methodology as previously outlined in the water revenue requirements discussion.

7.1 Projected Sewer Revenues

The City's primary source of sewer revenues are sewer Service Fees from residential, commercial, and industrial customers, which make up 97 percent of total sewer revenues. The City's other sewer revenues include interest earnings and other miscellaneous revenues. Table 46 shows revenues from FY 2020/21 budgeted to FY 2024/25 projections. Each revenue item was projected based on an assumed growth factor as outlined in Appendix E.

Table 46 Projected Sewer Revenues

Revenue Item	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Sewer Service Fees	\$2.48	\$2.52	\$2.58	\$2.63	\$2.68
Other Revenues	0.07	0.07	0.07	0.07	0.07
Total Revenues	\$2.54	\$2.59	\$2.64	\$2.70	\$2.75

Notes:

- (1) All monetary values are in millions of dollars.
- (2) Totals may not tie due to rounding.

7.2 Projected Sewer Expenditures

For sound financial operations of the City's sewer system, the revenues generated must be sufficient to meet the expenditures or cash obligations of the utility. The revenue needs are defined as the amount of revenues that must be recovered through sewer rates in order to cover annual expenditures, less any offsetting revenues. Offsetting revenues include interest earnings and other non-operating revenues shown as "Other Revenues" above in Table 46.

The City's FY 2020/21 operating budget served as the basis for forecasting future operating expenses. The budget was compared to prior year actual financial information to identify any anomalies or one-time expenditures not appropriate for forecasting in future years. City staff also reviewed the budget for costs that may need to be adjusted due to future operational changes. Unless manually calculated, future years were forecasted using escalation factors appropriate for the type of expense. The escalation factors used as the basis for the study forecast are shown in Appendix E.

Table 47 shows expenditures from FY 2020/21 budgeted to FY 2024/25 projections. Line-item O&M budget detail is provided in Appendix E.

Table 47 Projected Sewer Operating Expenditures

Expense Item	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Salaries & Wages	\$0.94	\$0.97	\$0.99	\$1.01	\$1.03
Supplies	0.01	0.01	0.01	0.01	0.02
Operating Expenses	0.48	0.49	0.50	0.51	0.52
Total Operating Expenditures	\$1.46	\$1.49	\$1.52	\$1.55	\$1.58

Notes:

(1) All monetary values are in millions of dollars.

(2) Totals may not tie due to rounding.

Sewer operating expenses are projected to increase to \$1.58 million by FY 2024/25, representing a 9 percent overall increase from the FY 2019/20 level of \$1.46 million. This total expenditure change represents an average annual increase of 2.2 percent.

7.2.1 Capital Projects

The City's sewer CIP includes a variety of capital projects that involve repairing or replacing existing sewer system assets, as well as purchasing or replacing other small equipment. The City's planned sewer CIP expenditures average about \$1.1 million per year. Table 48 identifies the five-year CIP used in the revenue requirement analysis. The capital projects and costs were developed by the City for the latest capital improvement budget. Project costs shown in the table have been escalated to the midpoint of construction.

The City is expected to cash fund these projects through use of reserves and annual rate revenues. The City's sewer utility does not have any outstanding debt obligations. No future debt is expected as the City intends to cash fund all future capital projects.

Table 48 Sewer CIP

Sewer CIP Projects	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25 ⁽¹⁾
Annual Sewer CCTV Inspection	\$0.05	\$0.05	\$0.05	\$0.05	\$0.05
Public Works Facility Improvements	-	0.02	0.01	-	-
SCADA System Upgrades and Computerized Utilities System Mapping	0.01	0.01	0.01	0.01	0.01
Miscellaneous Sewer Main Repair Project	0.10	-	0.10	-	0.10
Cost of Service Study	-	-	-	-	-
Sewer Main CIPP Lining	-	-	0.25	0.25	0.25
Sewer Easement Along 210 Freeway	-	-	0.15	-	-
Sewer Main Replacement Program	0.90	0.75	0.75	0.75	0.75
Equipment Expenditures	-	0.02	0.01	0.01	0.01
Total Sewer CIP	\$1.06	\$0.85	\$1.33	\$1.07	\$1.17

Notes:

(1) All values are in millions of dollars.

(2) Totals may not tie due to rounding.

7.2.2 Capital Funding

The CIP will be funded using cash from existing funds held in the City's reserve funds held for the sewer system as well as revenues directly from sewer rates. The City's sewer utility does not have any outstanding debt obligations. No future debt is expected as the City intends to cash fund all future capital projects.

7.3 Reserve Needs

In addition to the operating and capital expenses, discussed above, there are also revenue requirements related to maintaining the City's sewer reserve funds.

Operating Reserve

The revenue requirement analysis targets a total minimum operating fund balance equivalent to 90 days of operating expenses. The minimum reserve amount is adjusted annually driven by changes to the City's operating expenditures. The City should continue to monitor revenues and reserve levels on an annual basis. The reserve target may also be adjusted further as policy dictates, to minimize rates, or to smooth future rate increases. Should the City reach and maintain desired reserve levels, it is recommended that it implement a reserve policy to formally define desired funding levels, needs, and uses.

Sewer Capital Projects Fund

The Capital Projects Fund is a fund maintained by the City that is used to fund capital improvements to the sewer system and to provide a source of funds for capital projects in the event of an emergency.

One component of the Capital Projects Fund is a targeted emergency capital reserve. This is set at \$1.3 million, based on 1.5 percent of the estimated system replacement value of \$90 million. If an event were to require emergency funding for the sewer system greater than the analyzed reserve levels, the sewer Capital Projects fund could presumably borrow from the water Facilities Reserve. If this occurred, the City would need to put in place proper repayment structures to refund the water Facilities Reserve, and to avoid possible equity concerns.

7.4 Recommended Sewer Rate Revenue Requirements

Based on the study projections, the City must increase sewer revenues annually in order to meet projected revenue needs due to annual increases in expenditures and to fund the CIP.

Operating Costs

Operating costs are expected to increase in each year driven by the inflationary increases discussed previously. The City has worked to increase operational efficiency in an effort to control operating cost increases. Over the study period, operating costs are expected to increase at an average of 2.6 percent per year.

Capital Funding

The CIP will be primarily funded with cash from sewer rates as well as a small amount of reserve drawdown in certain years. In most years, operating cash flows will be sufficient to fund the CIP without any net drawdown of reserves. Based on the study projections, reserves will be held relatively steady over the course of the study varying between \$1.99 and 2.26 million. The proposed revenue increases allow the City to build the necessary revenue generation capacity to fund capital projects in the long term. Long-term projections show that reserves could be maintained at the target and anticipated capital projects could be funded with continued inflationary rate increases if increases in O&M costs, customer usage, and annual capital costs remain at the status quo following the end of this rate cycle in FY 2024/25.

Revenue Increases

Increases in water supply costs, capital funding, and operating cost increases, have driven a need for sewer rate revenue increases. Currently, reserves are being utilized to fund existing shortfalls. Based on the study projections, the City will need to increase revenues by 2 percent in each year of the study period (FY 2020/21 through FY 2024/25). Rate increases will be implemented on January 1 of each year beginning on January 1, 2021. Table 49 provides a summary of the recommended sewer rate revenue increases for the rate study period.

Table 49 Recommended Sewer Rate Revenue Requirement

Item	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Pre-Rate Increase Revenues					
Rate Revenues (prior to increases) ⁽¹⁾	\$2.52	\$2.52	\$2.52	\$2.52	\$2.52
Other Revenues ⁽¹⁾	0.04	0.03	0.02	0.02	0.03
Total Revenues	\$2.55	\$2.54	\$2.54	\$2.54	\$2.54
Expenditures					
Operating Costs ⁽²⁾	\$1.40	\$1.46	\$1.49	\$1.52	\$1.55
Total Expenditures	\$1.40	\$1.46	\$1.49	\$1.52	\$1.55
Cash Flows (prior to increases)					
Cash Flows (prior to increases)	\$1.15	\$1.08	\$1.05	\$1.02	\$0.99
Rate Revenue Increase					
Rate Revenue Increase	2.0%	2.0%	2.0%	2.0%	2.0%
<i>Month of Adoption</i>	January	January	January	January	January
Revenues from Rate Increase	\$0.05	\$0.10	\$0.15	\$0.21	\$0.26
Resulting Operating Cash Flows	\$1.10	\$1.13	\$1.15	\$1.17	\$1.20

Table 49 Recommended Sewer Rate Revenue Requirement (continued)

Item	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Consolidated Reserves Balance					
Beginning Balance	\$1.94	\$1.99	\$2.26	\$2.08	\$2.18
Operating Cash Flows	1.10	1.13	1.15	1.17	1.20
Use of Reserves for Capital	(1.06)	(0.85)	(1.33)	(1.07)	(1.17)
Ending Balance	\$1.99	\$2.26	\$2.08	\$2.18	\$2.20
Expected Fiscal Year Rate Revenues					
Expected Fiscal Year Rate Revenues	\$2.57	\$2.62	\$2.67	\$2.72	\$2.78
Adjustment for Mid-Year Increase	0.03	0.03	0.03	0.03	0.03
Required Rate Revenues For Rate Design	\$2.59	\$2.64	\$2.70	\$2.75	\$2.80

Notes:

- (1) From Table 46Table 7.
- (2) From Table 47.
- (3) All monetary values are in millions of dollars.
- (4) Totals may not tie due to rounding.

Section 8

SEWER COST OF SERVICE ANALYSIS

After revenue requirements for the City's sewer system were determined, a cost of service analysis was completed to validate the City's existing sewer rate structure and to update the rates based on the projected revenue requirements. The sewer cost of service analysis follows a methodology similar to that used for the water cost of service analysis.

8.1 Functional Allocation

The City's sewer budget was analyzed line-item by line-item and expenditures were distributed between the functions of Customer and Flow as shown in Appendix G.

- **Customer:** Expenditures are fixed expenditures that relate to operational support activities including accounting, billing, customer service, and administrative and technical support. These expenditures are essentially common-to-all customers and are reasonably uniform across the different customer classes.

- **Flow/Capacity:** Expenditures include those that are incurred based on the actual amount of flow discharged into the system, as well as those associated with potential discharges into the sewer system. These costs include operating and maintaining the sewer system, as well as capital costs, since the system is sized based on flow requirements.

Approximately 94 percent of the City's sewer costs fall in the Flow/Capacity function, with the remaining costs allocated to the customer function.

8.2 Customer Class Allocation

Costs are allocated to each customer class based on each class's characteristics and the results of the functional allocation. Customer costs are allocated to each class based on the number of accounts, Flow/Capacity costs are allocated to each class based on annual sewer flows. Table 50 shows the characteristics of each sewer customer class. The average estimated sewer flow per Residential connection is 9.14 HCF, equal to approximately 225 gallons per day, based on an analysis of winter water use, which was performed to estimate annual sewer flows. This value is consistent with typical residential sewer flows from similar agencies.

Table 50 Sewer Customer Class Characteristics

Customer Class	Accounts	EDUs ⁽²⁾	Annual Water Usage ⁽³⁾	Winter Water Usage (HCF) ⁽⁴⁾	Return to Sewer Factor ⁽⁵⁾	Estimated Annual Sewer Flow ⁽⁶⁾
Residential ⁽¹⁾	13,066	19,838	3,706,996	896,735	83%	2,228,197
Commercial	756	2,268	587,792	163,849	90%	442,393
Total	14,161	22,648	4,400,011	1,060,585		2,670,590

Notes:

- (1) Residential data include single family, multi-family, and sewer only users. Water consumption for sewer only accounts has been assumed at the average single family usage.
- (2) Single Family Equivalent Dwelling Units (EDUs) are based on one EDU per single family account. Multi-family EDUs are based on the total number of individual units shown in the City's billing data. Each commercial account is assumed to be equivalent to 3 EDUs, based on an analysis of estimated sewer flows per residence or commercial account. The analysis found that on a per connection basis, commercial flows are approximately 5.2 times higher than residential. A commercial EDU factor of 3 is assumed to recognize the potential variation of flows and capacity requirements from commercial accounts.
- (3) FY 2018/19 water usage for accounts with sewer service.
- (4) FY 2018/19 water usage for accounts with sewer service in December, January, February, and March. This is used as a proxy for assumed non-irrigation water usage.
- (5) Estimated return to sewer (RTS) factor for water usage in the months of December, January, February, and March. The residential RTS is based on assuming single family indoor usage of 11 HCF per month and a 90 percent RTS for multifamily accounts. The commercial RTS is assumed at a typical level of 90 percent.
- (6) Calculated based on winter water usage and winter return to sewer factor.

Table 51 shows cost allocation for each customer group based on the forecasted revenue requirement. Customer costs are allocated to each class based on the number of accounts, Flow/Capacity costs are allocated to each class based on the Estimated Annual Sewer Flow from Table 50.

Table 51 Sewer Customer Class Cost Allocation (FY 2020/21 Revenue Requirements)

Customer Class	Customer	Flow/Capacity	Total
Residential	\$0.12	\$1.99	\$2.12
Commercial	0.01	0.40	0.41
Total	\$0.14	\$2.39	\$2.52

Notes:

(1) All monetary values in millions of dollars.

(2) Totals may not tie due to rounding.

Section 9

SEWER RATE DESIGN

The rate design analysis determines how the customer class costs identified above in Table 51 are recovered from each customer class through sewer rates. The focus of this process is to achieve full cost recovery and substantiate that each customer class is paying its fair and proportionate share of system costs.

9.1 Proposed Sewer Rates

The results of the cost of service analysis indicate that the current sewer rate structure equitably recovers costs from each customer class. It is recommended that the City retain the current rate structure, and update it to reflect the increased revenue requirements and the updated cost of service analysis.

As detailed in the following sections, Residential does not have a variable rate. Residential sewer flows are viewed to be consistent (homogeneous) and are already built into the calculated rate. Because the Commercial class more heterogeneous than the Residential class, a fixed and variable structure provides greater proportionality and reflect of a commercial user's use of the system. As sewer flows are not metered, water demands are used as a proxy for sewer flows.

9.1.1 Residential Fixed Charges

Residential fixed charges are calculated by dividing the total costs allocated to the Residential class by the total number of residences served (single family residences or multi-family dwelling units). Table 52 shows the calculation of the proposed bi-monthly charge for FY 2020/21.

Table 52 Sewer Residential Fixed Charge Calculation

Residential Rate Calculation	FY 2020/21
Residential Customer Costs (millions) ⁽¹⁾	\$0.12
Residential Flow/Capacity Costs (millions) ⁽²⁾	1.99
Total Residential Costs (millions)	\$2.12
Residences Served⁽³⁾	20,324
Bi-monthly Fixed Charge per Residence	\$17.35

Notes:

(1) Residential share of Customer costs from Table 51.

(2) Residential share of Flow/Capacity costs from Table 51.

(3) Totals may not tie due to rounding.

9.1.2 Commercial Rates

Commercial fixed charges are calculated based on the Customer costs allocated to the commercial class and a portion of the allocated Flow/Capacity costs. The commercial fixed charge is set to recover the average flow associated with 3 residential EDUs. Flow/Capacity costs are assigned to the fixed charge by multiplying the number of commercial EDUs by the average flow per EDU and further multiplying that product by the overall unit cost per HCF of sewer flow. The bi-monthly fixed charge is calculated by dividing the sum of the Customer costs and fixed portion of Flow/Capacity costs by the number of Commercial accounts. The allocation of commercial Flow/Capacity costs to the fixed charge and variable rate is shown in Table 53.

Table 53 Sewer Commercial Fixed Charge Cost Allocation

Commercial Flow/Capacity Cost Allocation	FY 2020/21
Commercial Flow/Capacity Costs (millions) ⁽¹⁾	\$0.40
Estimated Commercial Sewer Flows (HCF) ⁽²⁾	442,393
Unit Cost per HCF of Flow (\$/HCF)	\$0.89
Average Monthly Flow per Residential EDU (HCF) ⁽³⁾	9.14
Commercial Accounts ⁽¹⁾	775
Commercial EDU Factor	3
Commercial Flows for Fixed Charge Allocation (HCF) ⁽⁴⁾	21,228
Flow/Capacity Costs to Collect through Fixed Charge (millions)⁽⁵⁾	\$0.23
Flow/Capacity Costs to Collect through Variable Rate (millions)⁽⁶⁾	\$0.17

Notes:

(1) Commercial share of Flow/Capacity costs from Table 51.

(2) Estimated commercial flows from Table 50.

(3) Average monthly flow per residential based on information in Table 50 and discussed in Section 8.2.

(4) Product of (Average Monthly Flow per Residential EDU) x (Commercial Accounts) x (Commercial EDU Factor).

(5) Product of (Commercial Flows for Fixed Charge Allocation) x (Unit Cost per HCF of Flow).

(6) Commercial Flow/Capacity Costs from Table 51 minus Flow/Capacity Costs to Collect through Fixed Charge.

(7) Totals may not tie due to rounding.

Table 54 and Table 55 show the calculation of the Commercial fixed charges and variable rates, respectively.

Table 54 Sewer Commercial Fixed Charge Calculation

Commercial Fixed Charge Calculation	FY 2020/21
Customer Costs (millions) ⁽¹⁾	\$0.01
Flow/Capacity Costs to Collect Through Fixed Charge (millions) ⁽²⁾	0.23
Total Costs for Fixed Charge (millions)	\$0.24
Number of Accounts ⁽³⁾	775
Bi-monthly Fixed Charge per Account	\$52.04

Notes:

- (1) Commercial share of Customer costs from Table 51.
 (2) From Table 53.
 (3) Commercial accounts from Table 50.
 (4) Totals may not tie due to rounding.

Table 55 Sewer Commercial Variable Charge Calculation

Commercial Variable Rate Calculation	FY 2020/21
Flow/Capacity Costs to Collect Through Variable Charge (millions) ⁽¹⁾	\$0.17
Billed Water Usage (HCF) ⁽²⁾	602,193
Variable Charge (\$/HCF of water use)	\$0.28

Notes:

- (1) From Table 53.
 (2) Commercial billed water usage from Table 50.
 (3) Totals may not tie due to rounding.

9.1.3 Proposed Sewer Rates

Table 56 shows the proposed sewer rates for each year of the analysis. Proposed rates for FY 2020/21 include a cost of service (COS) adjustment based on the updated analysis. Proposed rates for FY 2021/22 through FY 2024/25 are calculated by applying the revenue requirement increases of 3.0 percent per year to the COS adjusted rates.

Table 56 Proposed Sewer Rates

Customer Class	Current Rate	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
Increase	N/A	2.0% overall with COS⁽¹⁾	2.0%	2.0%	2.0%	2.0%
Residential (Bimonthly Fixed)	\$16.98	\$17.35	\$17.70	\$18.05	\$18.41	\$18.78
Commercial (Bimonthly Fixed)	50.70	52.04	53.09	54.15	55.23	56.33
Commercial (Variable, per HCF)	0.28	0.28	0.29	0.29	0.30	0.31

Notes:

- (1) Proposed rates for FY 2020/21 include a cost of service (COS) adjustment based on the updated analysis. Proposed rates for FY 2021/22 through FY 2024/25 are calculated by applying the revenue requirement increases of 3.0 percent per year to the COS adjusted rates.
 (2) Rates are rounded to the nearest \$0.01.

Appendix A

WATER OPERATIONS & MAINTENANCE BUDGET ANALYSIS

The O&M budget analysis looks at each category of costs and applies an escalation factor to project revenues and expenses into the future, at least through the time period of the rate study. In this case, these costs were escalated through FY 2024/25.

Table A1 Cost Escalation Factors

Cost Escalator	Description
Labor Inflation	Labor rates are assumed to increase at the long-term average of 2 percent.
Construction Cost Inflation	Estimated at 0 percent for the O&M budget analysis, as inflation is included in the CIP projection.
Utilities	This escalator applies to costs such as electricity and fuel, and it is set at 2 percent.
General Inflation	This escalator is set at the long-term inflation rate of 2 percent.
Customer Account Growth	This escalator is used for revenues stemming from water sales and fixed charges. It is assumed at 0 percent over the long-term.
Metered Water Demand	This escalator is assumed at 0 percent over the long-term.
Interest Income	Estimated at 1 percent based on discussions with City staff.

Cost Escalator	Constant
General Inflation	2.0%
Labor Inflation	2.0%
Utilities Inflation	2.0%
Construction Inflation	0.0%
Depreciation Funding	0.0%
Interest Income	1.0%
Customer Growth	0.0%
General Inflation + Customer Growth	2.0%
No Annual Increase	0.0%
One Time Expense	-100.0%
Delivered Water Demand	0.0%
Utilities + Delivered Water Demand	2.0%

All water revenues are projected off of FY 2018/19 end-of-year actuals, while expenses are projected off of FY 2020/21 budgeted costs as shown in the table below.

Table A2 Projected Water O&M Revenues & Expenditures

		FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
		Actual (Post-Rate Increase)	Projection (Pre-Rate Increase)	Projection (Pre-Rate Increase)	Projection (Pre-Rate Increase)	Projection (Pre-Rate Increase)	Projection (Pre-Rate Increase)	Projection (Pre-Rate Increase)
Revenues & Expenses								
User Rate Revenues								
Water Sales Revenue Without Additional Increases - For Reference								
Water Sales Prior to New Increases		Delivered Water Demand	\$ 12,661,158	\$ 13,729,872	\$ 14,690,963	\$ 14,690,963	\$ 14,690,963	\$ 14,690,963
Includes Adopted Increase								
Escalator								
3512	Water Sales	Delivered Water Demand	\$ 12,661,158	\$ 13,729,872	\$ 14,690,963	\$ 15,425,511	\$ 16,196,786	\$ 17,168,593
	XXXX	Customer Growth	-	-	-	-	-	-
	Other User Rate Revenues	General Inflation	-	-	-	-	-	-
Total User Rate Revenues			\$ 12,661,158	\$ 13,729,872	\$ 14,690,963	\$ 15,425,511	\$ 16,196,786	\$ 17,168,593
Other Charges for Services								
3201	Miscellaneous Fines	No Annual Increase	\$ 1,200	\$ 1,200	\$ 1,200	\$ 1,200	\$ 1,200	\$ 1,200
3501	Maps & Publications	No Annual Increase	1,228	800	1,000	1,000	1,000	1,000
3505	Engineering Charges	No Annual Increase	-	-	-	-	-	-
3510	Meter Services	No Annual Increase	-	-	-	-	-	-
3540	Meter Inspection Fees	No Annual Increase	43,911	40,000	50,000	50,000	50,000	50,000
3541	Demand Response	No Annual Increase	210	210	210	210	210	210
3546	Backflow Charges	No Annual Increase	96,845	80,000	90,000	90,000	90,000	90,000
Total Other Charges for Services			\$ 143,395	\$ 122,210	\$ 142,410	\$ 142,410	\$ 142,410	\$ 142,410
Grant Income								
3420	Federal Funds	One Time Expense	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3447	EPA-Restoration Program	One Time Expense	-	-	-	-	-	-
3450	Grants-Other Agencies	One Time Expense	-	-	-	-	-	-
	Other Grant Income	One Time Expense	-	-	-	-	-	-
Total Grant Income			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Interest Earnings								
3301	Interest	--Funding Page--	\$ 410,958	\$ 212,781	\$ 161,682	\$ 108,862	\$ 86,680	\$ 79,368
3305	Interest	--Funding Page--	(60,451)	-	-	-	-	-
3307	Interest	--Funding Page--	-	-	-	-	-	-
Total Interest Earnings			\$ 350,506	\$ 212,781	\$ 161,682	\$ 108,862	\$ 86,680	\$ 79,368
Other Revenues								
3306	Unrealized Gain/Loss	No Annual Increase	\$ 389,314	\$ 389,314	\$ 389,314	\$ 389,314	\$ 389,314	\$ 389,314
3320	Rent & Royalties	No Annual Increase	27,600	27,600	27,600	27,600	27,600	27,600
3505	Engineering Charges	No Annual Increase	-	-	-	-	-	-
3801	Miscellaneous	No Annual Increase	2,227	2,227	2,227	2,227	2,227	2,227
3818	Sale of Property	One Time Expense	10,529	10,000	15,000	-	-	-
Total Other Revenues			\$ 429,671	\$ 429,141	\$ 434,141	\$ 419,141	\$ 419,141	\$ 419,141
Total Revenues			\$ 13,584,729	\$ 14,494,004	\$ 15,429,196	\$ 16,095,924	\$ 16,845,018	\$ 17,809,513

Expenditures			FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
		Escalator							
DIVISION: 7201 WATER-ADMIN									
SALARIES & WAGES									
7201	4010 REGULAR EMPLOYEES	Labor Inflation	\$ 886,221	\$ 928,200	\$ 938,300	\$ 946,200	\$ 965,124	\$ 984,426	\$ 1,004,115
7201	4011 SPECIALIST PAY	Labor Inflation	1,640	1,600	1,600	1,600	1,632	1,665	1,698
7201	4013 VACATION PAY OFF	Labor Inflation	723	10,000	5,000	5,000	5,100	5,202	5,306
7201	4014 VACATION SELL BACK	Labor Inflation	12,934	15,000	12,000	12,000	12,240	12,485	12,734
7201	4015 ALLOWANCES	Labor Inflation	1,832	2,100	2,200	2,200	2,244	2,289	2,335
7201	4016 DEF COMP-CITY PAID	Labor Inflation	-	-	-	-	-	-	-
7201	4019 STAND BY PAY	Labor Inflation	-	-	-	-	-	-	-
7201	4021 LONGEVITY PAY	Labor Inflation	10,518	10,800	11,200	11,200	11,424	11,652	11,886
7201	4032 TEMPORARY	Labor Inflation	18,234	15,000	15,000	15,000	15,300	15,606	15,918
7201	4130 OVERTIME	Labor Inflation	-	-	-	-	-	-	-
7201	4241 P.E.R.S	Labor Inflation	291,797	350,300	370,900	393,800	401,676	409,710	417,904
7201	4242 .5% CITY CONTRIBUTION	Labor Inflation	2,456	2,800	2,500	2,500	2,550	2,601	2,653
7201	4244 MEDICAL/DENTAL	Labor Inflation	146,522	149,100	149,100	149,100	152,082	155,124	158,226
7201	4245 LONG TERM DISABILITY	Labor Inflation	903	800	1,000	1,000	1,020	1,040	1,061
7201	4247 LIFE INSURANCE	Labor Inflation	1,721	1,800	1,900	1,900	1,938	1,977	2,016
7201	4248 RETIREE MEDICAL	Labor Inflation	30,045	37,400	31,300	31,900	32,538	33,189	33,853
7201	4250 FICA/HOSPITAL INSURANCE	Labor Inflation	14,261	13,900	14,200	14,300	14,586	14,878	15,175
7201	4299 VACANCY RATE	Labor Inflation	-	(46,200)	(64,500)	(45,700)	(46,614)	(47,546)	(48,497)
NEW Pension Bond Debt			[Input]						
Total: SALARIES & WAGES			1,419,805	1,492,600	1,491,700	1,542,000	1,572,840	1,604,297	1,636,383
SUPPLIES									
7201	5110 OFFICE SUPPLIES	General Inflation	\$ 17,203	\$ 16,000	\$ 17,800	\$ 17,800	\$ 18,156	\$ 18,519	\$ 18,890
7201	5111 WATER BILL POSTAGE	General Inflation	49,932	48,000	48,000	48,000	48,960	49,939	50,938
7201	5120 DRAFTING SUPPLIES	General Inflation	1,130	3,000	2,500	2,500	2,550	2,601	2,653
7201	5125 PRINT SHOP	General Inflation	19,666	23,000	23,000	23,000	23,460	23,929	24,408
Total: SUPPLIES			87,932	90,000	91,300	91,300	93,126	94,989	96,888
OPERATING EXPENSES									
7201	6145 WATER CONSERVATION COST	General Inflation	\$ 31,525	\$ 40,000	\$ 71,500	\$ 71,500	\$ 72,930	\$ 74,389	\$ 75,876
7201	6160 CONTRACT SERVICES	General Inflation	174,809	161,400	170,000	170,000	173,400	176,868	180,405
7201	6210 TELEPHONE	General Inflation	-	-	-	-	-	-	-
7201	6505 GENERAL LIABILITY	General Inflation	111,700	112,700	118,000	118,700	121,074	123,495	125,965
7201	6507 WORKERS' COMPENSATION	General Inflation	84,400	92,200	92,200	92,200	94,044	95,925	97,843
7201	6540 TAXES	General Inflation	7,091	-	-	-	-	-	-
7201	6730 OFFICE EQUIPMENT	General Inflation	-	1,000	1,000	1,000	1,020	1,040	1,061
7201	6750 VEHICLE MAINTENANCE	General Inflation	3,273	3,000	1,100	1,100	1,122	1,144	1,167
7201	6751 VEHICLE FUEL USAGE	General Inflation	-	-	300	300	306	312	318
7201	6752 VEHICLE 3RD PARTY SVC	General Inflation	-	-	700	700	714	728	743
7201	6760 BUILDING REPAIR & MAINT	General Inflation	2,299	2,000	2,000	2,000	2,040	2,081	2,122
7201	6904 RENTS	General Inflation	878,410	916,300	946,400	965,000	984,300	1,003,986	1,024,066
7201	6930 MEMBERSHIP & PUBLICATIONS	General Inflation	3,348	5,200	5,200	5,200	5,304	5,410	5,518
7201	6940 OFFICIAL MEETINGS	General Inflation	4,143	2,800	2,800	2,800	2,856	2,913	2,971
7201	6970 TRAINING	General Inflation	4,000	5,000	4,000	4,000	4,080	4,162	4,245
7201	6971 TUITION REIMBURSEMENT	General Inflation	5,463	14,000	9,000	9,000	9,180	9,364	9,551
7201	6987 DUES & ASSESSMENTS	General Inflation	12,752	14,800	14,800	14,800	15,096	15,398	15,706
7201	6990 DEPRECIATION	General Inflation	-	-	-	-	-	-	-
7201	6995 GENERAL FUND CHARGES	General Inflation	408,600	408,600	422,800	431,300	439,926	448,725	457,699
Total: OPERATING EXPENSES			1,731,812	1,779,000	1,861,800	1,889,600	1,927,392	1,965,940	2,005,259
SPECIAL PROGRAMS									
7201	XXXXX Special Programs XXXXX	General Inflation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total: SPECIAL PROGRAMS			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
DIVISION: 7201 WATER-ADMIN			\$ 3,239,549	\$ 3,361,600	\$ 3,444,800	\$ 3,522,900	\$ 3,593,358	\$ 3,665,225	\$ 3,738,530

DIVISION: 7204		WATER-MAIN & REPLACEMENT							
		SALARIES & WAGES							
7204	4010 REGULAR EMPLOYEES	Labor Inflation	\$ 585,398	\$ 599,400	\$ 610,800	\$ 618,300	\$ 630,666	\$ 643,279	\$ 656,145
7204	4014 VACATION SELL BACK	Labor Inflation	6,656	9,000	9,000	9,000	9,180	9,364	9,551
7204	4019 STAND BY PAY	Labor Inflation	9,537	10,000	10,000	10,000	10,200	10,404	10,612
7204	4021 LONGEVITY PAY	Labor Inflation	11,549	12,200	12,200	12,200	12,444	12,693	12,947
7204	4032 TEMPORARY	Labor Inflation	2,619	10,000	13,300	13,300	13,566	13,837	14,114
7204	4130 OVERTIME	Labor Inflation	23,107	25,000	25,000	25,000	25,500	26,010	26,530
7204	4241 P.E.R.S	Labor Inflation	191,971	230,700	246,000	262,100	267,342	272,689	278,143
7204	4242 .5% CITY CONTRIBUTION	Labor Inflation	168	200	200	200	204	208	212
7204	4244 MEDICAL/DENTAL	Labor Inflation	132,281	129,900	129,900	129,900	132,498	135,148	137,851
7204	4245 LONG TERM DISABILITY	Labor Inflation	832	800	900	900	918	936	955
7204	4247 LIFE INSURANCE	Labor Inflation	642	600	700	700	714	728	743
7204	4250 FICA/HOSPITAL INSURANCE	Labor Inflation	9,586	9,500	9,800	9,900	10,098	10,300	10,506
7204	4299 VACANCY RATE	Labor Inflation	-	(31,100)	(30,300)	(31,000)	(31,620)	(32,252)	(32,897)
Total: SALARIES & WAGES			974,346	1,006,200	1,037,500	1,060,500	1,081,710	1,103,344	1,125,411
		SUPPLIES							
7204	5260 FIELDS	General Inflation	\$ 4,924	\$ 4,500	\$ 5,000	\$ 5,000	\$ 5,100	\$ 5,202	\$ 5,306
7204	5280 UNIFORM	General Inflation	7,877	9,000	9,000	9,000	9,180	9,364	9,551
7204	5410 TOOLS	General Inflation	5,048	5,000	5,000	5,000	5,100	5,202	5,306
Total: SUPPLIES			17,848	18,500	19,000	19,000	19,380	19,768	20,163
		OPERATING EXPENSES							
7204	6750 VEHICLE MAINTENANCE	General Inflation	\$ 109,376	\$ 110,000	\$ 55,200	\$ 55,200	\$ 56,304	\$ 57,430	\$ 58,579
7204	6751 VEHICLE FUEL USAGE	General Inflation	-	-	22,900	\$ 24,800	25,296	25,802	26,318
7204	6752 VEHICLE 3RD PARTY SVC	General Inflation	-	-	28,300	\$ 28,300	28,866	29,443	30,032
7204	6760 BUILDING REPAIR & MAINT	General Inflation	501	500	500	500	510	520	531
7204	6771 WAREHOUSE & SHOP	General Inflation	6,114	4,500	4,500	4,500	4,590	4,682	4,775
7204	6995 GENERAL FUND CHARGES	General Inflation	232,000	232,000	244,500	249,400	254,388	259,476	264,665
Total: OPERATING EXPENSES			347,991	347,000	355,900	362,700	369,954	377,353	384,900
		SPECIAL PROGRAMS							
7204	7540 REPAIRS TO MAINS	General Inflation	\$ 35,016	\$ 40,000	\$ 38,000	\$ 38,000	\$ 38,760	\$ 39,535	\$ 40,326
7204	7550 REPAIRS TO SERVICES	General Inflation	58,427	55,000	50,000	50,000	51,000	52,020	53,060
7204	7560 REPAIRS TO HYDRANTS	General Inflation	8,318	12,000	17,000	17,000	17,340	17,687	18,041
Total: SPECIAL PROGRAMS			101,761	107,000	105,000	105,000	107,100	109,242	111,427
DIVISION: 7204 WATER-MAIN & REPLACEMENT			\$ 1,441,946	\$ 1,478,700	\$ 1,517,400	\$ 1,547,200	\$ 1,578,144	\$ 1,609,707	\$ 1,641,901

DIVISION: 7205

WATER-METER CUSTOMER SV

SALARIES & WAGES

7205 4010 REGULAR EMPLOYEES Labor Inflation \$ 209,579 \$ 210,800 \$ 221,000 \$ 227,300 \$ 231,846 \$ 236,483 \$ 241,213

7205 4014 VACATION SELL BACK Labor Inflation 1,670 2,000 2,000 2,000 2,040 2,081 2,122

7205 4019 STAND BY PAY Labor Inflation 2,962 4,000 2,000 2,000 2,040 2,081 2,122

7205 4021 LONGEVITY PAY Labor Inflation 2,351 2,400 2,400 2,400 2,448 2,497 2,547

7205 4130 OVERTIME Labor Inflation 2,115 2,500 2,500 2,500 2,550 2,601 2,653

7205 4241 P.E.R.S Labor Inflation 64,821 78,900 86,600 93,900 95,778 97,694 99,647

7205 4242 .5% CITY CONTRIBUTION Labor Inflation 164 200 200 200 204 208 212

7205 4244 MEDICAL/DENTAL Labor Inflation 46,626 47,100 47,100 47,100 48,042 49,003 49,983

7205 4245 LONG TERM DISABILITY Labor Inflation 305 300 300 300 306 312 318

7205 4247 LIFE INSURANCE Labor Inflation 286 300 300 300 306 312 318

7205 4250 FICA/HOSPITAL INSURANCE Labor Inflation 3,468 3,200 3,300 3,400 3,468 3,537 3,608

7205 4299 VACANCY RATE Labor Inflation - (10,500) (10,800) (11,200) (11,424) (11,652) (11,886)

Total: SALARIES & WAGES 334,345 341,200 356,900 370,200 377,604 385,156 392,859

SUPPLIES

7205 5410 TOOLS General Inflation \$ 1,000 \$ 1,000 \$ 1,000 \$ 1,000 \$ 1,020 \$ 1,040 \$ 1,061

Total: SUPPLIES 1,000 1,000 1,000 1,000 1,020 1,040 1,061

OPERATING EXPENSES

7205 6750 VEHICLE MAINTENANCE General Inflation \$ 21,906 \$ 19,000 \$ 9,900 \$ 9,900 \$ 10,098 \$ 10,300 \$ 10,506

7205 6751 VEHICLE FUEL USAGE General Inflation - - 6,300 7,000 7,140 7,283 7,428

7205 6752 VEHICLE 3RD PARTY SVC General Inflation - - 1,900 1,900 1,938 1,977 2,016

7205 6771 WAREHOUSE & SHOP General Inflation 442 500 500 500 510 520 531

7205 6995 GENERAL FUND CHARGES General Inflation 384,900 384,900 395,300 403,200 411,264 419,489 427,879

Total: OPERATING EXPENSES 407,247 404,400 413,900 422,500 430,950 439,569 448,360

SPECIAL PROGRAMS

7205 7510 REPAIRS TO METERS General Inflation \$ 7,851 \$ 12,000 \$ 30,500 \$ 30,500 \$ 31,110 \$ 31,732 \$ 32,367

7205 7570 METERS & SERVICE CONN General Inflation - - - - - - -

7205 7610 METER READING SUPPLIES General Inflation 18,168 19,600 53,000 53,000 54,060 55,141 56,244

Total: SPECIAL PROGRAMS 26,019 31,600 83,500 83,500 85,170 86,873 88,611

DIVISION: 7205 WATER-METER CUSTOMER SV \$ 768,612 \$ 778,200 \$ 855,300 \$ 877,200 \$ 894,744 \$ 912,639 \$ 930,892

DIVISION: 7206

WATER-PRODUCTION/QUALITY

SALARIES & WAGES

7206 4010 REGULAR EMPLOYEES Labor Inflation \$ 268,936 \$ 302,500 \$ 302,900 \$ 316,900 \$ 323,238 \$ 329,703 \$ 336,297

7206 4014 VACATION SELL BACK Labor Inflation 8,377 7,000 7,000 7,000 7,140 7,283 7,428

7206 4019 STAND BY PAY Labor Inflation 16,268 11,000 13,000 13,000 13,260 13,525 13,796

7206 4021 LONGEVITY PAY Labor Inflation 4,847 4,500 6,000 6,000 6,120 6,242 6,367

7206 4130 OVERTIME Labor Inflation 9,451 10,000 10,000 10,000 10,200 10,404 10,612

7206 4241 P.E.R.S Labor Inflation 84,154 114,200 120,800 133,000 135,660 138,373 141,141

7206 4242 .5% CITY CONTRIBUTION Labor Inflation 164 200 200 200 204 208 212

7206 4244 MEDICAL/DENTAL Labor Inflation 42,287 60,900 60,900 60,900 62,118 63,360 64,628

7206 4245 LONG TERM DISABILITY Labor Inflation 329 400 400 400 408 416 424

7206 4247 LIFE INSURANCE Labor Inflation 301 300 400 400 408 416 424

7206 4250 FICA/HOSPITAL INSURANCE Labor Inflation 4,961 4,800 4,900 5,100 5,202 5,306 5,412

7206 4299 VACANCY RATE Labor Inflation - (15,500) (36,800) (15,700) (16,014) (16,334) (16,661)

Total: SALARIES & WAGES 440,073 500,300 489,700 537,200 547,944 558,903 570,081

SUPPLIES

7206 5260 FIELDS General Inflation \$ 513 \$ 200 \$ 200 \$ 200 \$ 204 \$ 208 \$ 212

7206 5410 TOOLS General Inflation 800 800 800 800 816 832 849

Total: SUPPLIES 1,313 1,000 1,000 1,000 1,020 1,040 1,061

OPERATING EXPENSES

7206 6210 TELEPHONE General Inflation \$ 6,651 \$ 8,800 \$ 6,200 \$ 6,300 \$ 6,426 \$ 6,555 \$ 6,686

7206 6614 WATER General Inflation 2,088 2,200 2,400 2,400 2,448 2,497 2,547

7206 6750 VEHICLE MAINTENANCE General Inflation 42,307 39,000 21,200 21,700 22,134 22,577 23,028

7206 6751 VEHICLE FUEL USAGE General Inflation - - 11,600 13,100 13,362

7206 6752 VEHICLE 3RD PARTY SVC General Inflation - - 6,700 6,900 7,038

7206 6760 BUILDING REPAIR & MAINT General Inflation 65,236 65,000 65,000 65,000 66,300 67,626 68,979

7206 6771 WAREHOUSE & SHOP General Inflation 6,114 5,000 6,000 6,000 6,120 6,242 6,367

7206 6903 PERMITS FEES General Inflation 6,025 6,700 6,700 6,700 6,834 6,971 7,110

7206 6987 DUES & ASSESSMENTS -- Consumption Forc. -- 5,651,036 6,075,384 6,560,335 6,687,951 6,819,395 6,954,783 7,094,232

7206 6995 GENERAL FUND CHARGES General Inflation 252,900 252,900 266,600 271,900 277,338 282,885 288,542

Total: OPERATING EXPENSES 6,032,357 6,454,984 6,952,735 7,087,951 7,227,395 7,350,135 7,497,491

SPECIAL PROGRAMS

7206 7206 BULK MAILING General Inflation \$ - \$ - \$ - \$ - \$ - \$ - \$ -

7206 7410 POWER PURCHASED ties + Delivered Water Deman 1,358,357 1,600,000 1,500,000 1,500,000 1,530,000 1,560,600 1,591,812

7206 7420 PUMPING SUPPLIES General Inflation 56,958 70,000 65,000 135,000 137,700 140,454 143,263

7206 7425 WATER TESTING General Inflation 28,693 35,000 40,000 40,000 40,800 41,616 42,448

7206 7440 UNSCHEDULED REPAIR General Inflation 87,338 135,000 135,000 135,000 137,700 140,454 143,263

WELLS

7206 7450 REPAIRS TO PUMP General Inflation 16,075 26,000 26,000 26,000 26,520 27,050 27,591

FACILITIES

7206 7530 REPAIRS TO RESERVOIRS General Inflation 5,000 5,000 5,000 5,000 5,100 5,202 5,306

Total: SPECIAL PROGRAMS 1,552,420 1,871,000 1,771,000 1,841,000 1,877,820 1,915,376 1,953,684

DIVISION: 7206 WATER-PRODUCTION/QUALITY 8,026,163 8,827,284 9,214,435 9,467,151 9,654,179 9,825,455 10,022,317

Total Expenditures \$ 13,476,270 \$ 14,445,784 \$ 15,031,935 \$ 15,414,451 \$ 15,720,425 \$ 16,013,026 \$ 16,333,640

Appendix B

WATER FUNCTIONAL ALLOCATION



City of Arcadia
Water Financial & Rate Model
 Functional Allocation

Cost Allocation Basis **FY 2020/21**

Allocation Index	Notes	Customer	Capacity	Fire Protection	Base	Max Day	Max Hour	Supply 1	Supply 2	As All Others
								Raymond Basin + Main Basin In	Main Basin Out	
Customer Only	Applies to customer service functions only.	100%								0%
Capacity Only	Applies to capacity maintenance functions only.		100%							0%
Base Only	Applies to base supply functions only.				100%					0%
Max Day Only	Applies to max day supply functions only.					100%				0%
Max Hour Only	Applies to max hour functions only.						100%			0%
Source of Supply	Based on supply cost allocation. See "Source of Supply" tab.				5%			22%	73%	0%
Base / Max Day	Based on system peaking analysis. See "Units of Service" tab.				65%	35%				0%
Base / Max Day / Max Hour	Based on system peaking analysis. See "Units of Service" tab.				52%	28%	20%			0%
Max Day / Max Hour	Based on system peaking analysis. See "Units of Service" tab.					80%	20%			0%
Customer / Capacity	25/75 split between Customer Service and Capacity Maintenance functions.	25%	75%							0%
Allocated CIP	Allocation of FY 2019/20 through FY 2022/23 CIP	0%	14%		53%	24%	9%			
As Fixed Assets	Allocation of Physical Assets Replacement Cost	0%	3%	0%	54%	25%	18%			
As All Others	Weighted average reallocated based on the resulting functional allocation.	0%	0%		0%	0%	0%	0%		100%
Resulting Allocation		15.1%	7.5%		20.1%	9.7%	4.7%	10.1%	32.9%	

	FY 2020/21	Allocation Basis	Customer	Capacity	Fire Protection	Base	Max Day	Max Hour	Raymond Basin + Main Basin In	Main Basin Out	As All Others
Operating Expenses											
WATER-ADMIN											
SALARIES & WAGES											
REGULAR EMPLOYEES	\$ 938,300	Customer Only	\$ 938,300	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SPECIALIST PAY	1,600	Customer Only	1,600	-	-	-	-	-	-	-	-
VACATION PAY OFF	5,000	Customer Only	5,000	-	-	-	-	-	-	-	-
VACATION SELL BACK	12,000	Customer Only	12,000	-	-	-	-	-	-	-	-
ALLOWANCES	2,200	Customer Only	2,200	-	-	-	-	-	-	-	-
DEF COMP-CITY PAID	-	Customer Only	-	-	-	-	-	-	-	-	-
STAND BY PAY	-	Customer Only	-	-	-	-	-	-	-	-	-
LONGEVITY PAY	11,200	Customer Only	11,200	-	-	-	-	-	-	-	-
TEMPORARY	15,000	Customer Only	15,000	-	-	-	-	-	-	-	-
OVERTIME	-	Customer Only	-	-	-	-	-	-	-	-	-
P.E.R.S	370,900	Customer Only	370,900	-	-	-	-	-	-	-	-
.5% CITY CONTRIBUTION	2,500	Customer Only	2,500	-	-	-	-	-	-	-	-
MEDICAL/DENTAL	149,100	Customer Only	149,100	-	-	-	-	-	-	-	-
LONG TERM DISABILITY	1,000	Customer Only	1,000	-	-	-	-	-	-	-	-
LIFE INSURANCE	1,900	Customer Only	1,900	-	-	-	-	-	-	-	-
RETIREE MEDICAL	31,300	Customer Only	31,300	-	-	-	-	-	-	-	-
FICA/HOSPITAL INSURANCE	14,200	Customer Only	14,200	-	-	-	-	-	-	-	-
VACANCY RATE	(64,500)	Customer Only	(64,500)	-	-	-	-	-	-	-	-
Pension Bond Debt	-	As All Others	-	-	-	-	-	-	-	-	-
Total SALARIES & WAGES	\$ 1,491,700		\$ 1,491,700	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SUPPLIES											
OFFICE SUPPLIES	\$ 17,800	Customer Only	\$ 17,800	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
WATER BILL POSTAGE	48,000	Customer Only	48,000	-	-	-	-	-	-	-	-
DRAFTING SUPPLIES	2,500	Customer Only	2,500	-	-	-	-	-	-	-	-
PRINT SHOP	23,000	Customer Only	23,000	-	-	-	-	-	-	-	-
Total SUPPLIES	\$ 91,300		\$ 91,300	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OPERATING EXPENSES											
WATER CONSERVATION COST	\$ 71,500	Max Day Only	\$ -	\$ -	\$ -	\$ -	\$ 71,500	\$ -	\$ -	\$ -	\$ -
CONTRACT SERVICES	170,000	As All Others	-	-	-	-	-	-	-	-	170,000
TELEPHONE	-	Customer Only	-	-	-	-	-	-	-	-	-
GENERAL LIABILITY	118,000	Customer Only	118,000	-	-	-	-	-	-	-	-
WORKERS' COMPENSATION	92,200	Customer Only	92,200	-	-	-	-	-	-	-	-
TAXES	-	Customer Only	-	-	-	-	-	-	-	-	-
OFFICE EQUIPMENT	1,000	Customer Only	1,000	-	-	-	-	-	-	-	-
VEHICLE MAINTENANCE	1,100	Customer Only	1,100	-	-	-	-	-	-	-	-
BUILDING REPAIR & MAINT	2,000	Customer Only	2,000	-	-	-	-	-	-	-	-
RENTS	946,400	As All Others	-	-	-	-	-	-	-	-	946,400
MEMBERSHIP & PUBLICATIONS	5,200	Customer Only	5,200	-	-	-	-	-	-	-	-
OFFICIAL MEETINGS	2,800	Customer Only	2,800	-	-	-	-	-	-	-	-
TRAINING	4,000	Customer Only	4,000	-	-	-	-	-	-	-	-
TUITION REIMBURSEMENT	9,000	Customer Only	9,000	-	-	-	-	-	-	-	-
DUES & ASSESSMENTS	14,800	Customer Only	14,800	-	-	-	-	-	-	-	-
DEPRECIATION	-	Customer Only	-	-	-	-	-	-	-	-	-
GENERAL FUND CHARGES	422,800	Customer / Capacity	105,700	317,100	-	-	-	-	-	-	-
Total OPERATING EXPENSES	\$ 1,860,800		\$ 355,800	\$ 317,100	\$ -	\$ -	\$ 71,500	\$ -	\$ -	\$ -	\$ 1,116,400
SPECIAL PROGRAMS											
Special Programs XXXXX	\$ -	As All Others	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total SPECIAL PROGRAMS	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total WATER-ADMIN	\$ 3,443,800		\$ 1,938,800	\$ 317,100	\$ -	\$ -	\$ 71,500	\$ -	\$ -	\$ -	\$ 1,116,400

FY 2020/21		Allocation Basis	Customer	Capacity	Fire Protection	Base	Max Day	Max Hour	Raymond Basin + Main Basin In	Main Basin Out	As All Others
Operating Expenses											
WATER-MAIN & REPLACEMENT											
SALARIES & WAGES											
REGULAR EMPLOYEES	\$ 610,800	Base / Max Day / Max Hour	\$ -	\$ -	\$ -	\$ 318,140	\$ 170,500	\$ 122,160	\$ -	\$ -	\$ -
VACATION SELL BACK	9,000	Base / Max Day / Max Hour	-	-	-	4,688	2,512	1,800	-	-	-
STAND BY PAY	10,000	Base / Max Day / Max Hour	-	-	-	5,209	2,791	2,000	-	-	-
LONGEVITY PAY	12,200	Base / Max Day / Max Hour	-	-	-	6,354	3,406	2,440	-	-	-
TEMPORARY	13,300	Base / Max Day / Max Hour	-	-	-	6,927	3,713	2,660	-	-	-
OVERTIME	25,000	Base / Max Day / Max Hour	-	-	-	13,021	6,979	5,000	-	-	-
P.E.R.S	246,000	Base / Max Day / Max Hour	-	-	-	128,131	68,669	49,200	-	-	-
.5% CITY CONTRIBUTION	200	Base / Max Day / Max Hour	-	-	-	104	56	40	-	-	-
MEDICAL/DENTAL	129,900	Base / Max Day / Max Hour	-	-	-	67,660	36,260	25,980	-	-	-
LONG TERM DISABILITY	900	Base / Max Day / Max Hour	-	-	-	469	251	180	-	-	-
LIFE INSURANCE	700	Base / Max Day / Max Hour	-	-	-	365	195	140	-	-	-
FICA/HOSPITAL INSURANCE	9,800	Base / Max Day / Max Hour	-	-	-	5,104	2,736	1,960	-	-	-
VACANCY RATE	(30,300)	Base / Max Day / Max Hour	-	-	-	(15,782)	(8,458)	(6,060)	-	-	-
Total SALARIES & WAGES	\$ 1,037,500		\$ -	\$ -	\$ -	\$ 540,391	\$ 289,609	\$ 207,500	\$ -	\$ -	\$ -
SUPPLIES											
FIELDS	\$ 5,000	Base / Max Day / Max Hour	\$ -	\$ -	\$ -	\$ 2,604	\$ 1,396	\$ 1,000	\$ -	\$ -	\$ -
UNIFORM	9,000	Base / Max Day / Max Hour	-	-	-	4,688	2,512	1,800	-	-	-
TOOLS	5,000	Base / Max Day / Max Hour	-	-	-	2,604	1,396	1,000	-	-	-
Total SUPPLIES	\$ 19,000		\$ -	\$ -	\$ -	\$ 9,896	\$ 5,304	\$ 3,800	\$ -	\$ -	\$ -
OPERATING EXPENSES											
VEHICLE MAINTENANCE	\$ 55,200	As All Others	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 55,200
BUILDING REPAIR & MAINT	500	Base / Max Day / Max Hour	-	-	-	260	140	100	-	-	-
WAREHOUSE & SHOP	4,500	Base / Max Day / Max Hour	-	-	-	2,344	1,256	900	-	-	-
GENERAL FUND CHARGES	244,500	Base / Max Day / Max Hour	-	-	-	127,350	68,250	48,900	-	-	-
Total OPERATING EXPENSES	\$ 304,700		\$ -	\$ -	\$ -	\$ 129,954	\$ 69,646	\$ 49,900	\$ -	\$ -	\$ 55,200
SPECIAL PROGRAMS											
REPAIRS TO MAINS	\$ 38,000	Base / Max Day / Max Hour	\$ -	\$ -	\$ -	\$ 19,793	\$ 10,607	\$ 7,600	\$ -	\$ -	\$ -
REPAIRS TO SERVICES	50,000	Capacity Only	-	50,000	-	-	-	-	-	-	-
REPAIRS TO HYDRANTS	17,000	Capacity Only	-	17,000	-	-	-	-	-	-	-
Total SPECIAL PROGRAMS	\$ 105,000		\$ -	\$ 67,000	\$ -	\$ 19,793	\$ 10,607	\$ 7,600	\$ -	\$ -	\$ -
Total WATER-MAIN & REPLACEMENT	\$ 1,466,200		\$ -	\$ 67,000	\$ -	\$ 700,034	\$ 375,166	\$ 268,800	\$ -	\$ -	\$ 55,200

	FY 2020/21	Allocation Basis	Customer	Capacity	Fire Protection	Base	Max Day	Max Hour	Raymond Basin + Main Basin In	Main Basin Out	As All Others
Operating Expenses											
WATER-METER CUSTOMER SV											
SALARIES & WAGES											
REGULAR EMPLOYEES	\$ 221,000	Customer / Capacity	\$ 55,250	\$ 165,750	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
VACATION SELL BACK	2,000	Customer / Capacity	500	1,500	-	-	-	-	-	-	-
STAND BY PAY	2,000	Customer / Capacity	500	1,500	-	-	-	-	-	-	-
LONGEVITY PAY	2,400	Customer / Capacity	600	1,800	-	-	-	-	-	-	-
OVERTIME	2,500	Customer / Capacity	625	1,875	-	-	-	-	-	-	-
P.E.R.S	86,600	Customer / Capacity	21,650	64,950	-	-	-	-	-	-	-
.5% CITY CONTRIBUTION	200	Customer / Capacity	50	150	-	-	-	-	-	-	-
MEDICAL/DENTAL	47,100	Customer / Capacity	11,775	35,325	-	-	-	-	-	-	-
LONG TERM DISABILITY	300	Customer / Capacity	75	225	-	-	-	-	-	-	-
LIFE INSURANCE	300	Customer / Capacity	75	225	-	-	-	-	-	-	-
FICA/HOSPITAL INSURANCE	3,300	Customer / Capacity	825	2,475	-	-	-	-	-	-	-
VACANCY RATE	(10,800)	Customer / Capacity	(2,700)	(8,100)	-	-	-	-	-	-	-
Total SALARIES & WAGES	\$ 356,900		\$ 89,225	\$ 267,675	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SUPPLIES											
TOOLS	\$ 1,000	Customer / Capacity	\$ 250	\$ 750	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total SUPPLIES	\$ 1,000		\$ 250	\$ 750	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
OPERATING EXPENSES											
VEHICLE MAINTENANCE	\$ 9,900	Customer / Capacity	\$ 2,475	\$ 7,425	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
WAREHOUSE & SHOP	500	Customer / Capacity	125	375	-	-	-	-	-	-	-
GENERAL FUND CHARGES	395,300	Customer / Capacity	98,825	296,475	-	-	-	-	-	-	-
Total OPERATING EXPENSES	\$ 405,700		\$ 101,425	\$ 304,275	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
SPECIAL PROGRAMS											
REPAIRS TO METERS	\$ 30,500	Capacity Only	\$ -	\$ 30,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
METERS & SERVICE CONN	-	Customer / Capacity	-	-	-	-	-	-	-	-	-
METER READING SUPPLIES	53,000	Customer Only	53,000	-	-	-	-	-	-	-	-
Total SPECIAL PROGRAMS	\$ 83,500		\$ 53,000	\$ 30,500	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total WATER-METER CUSTOMER SV	\$ 847,100		\$ 243,900	\$ 603,200	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

	FY 2020/21	Allocation Basis	Customer	Capacity	Fire Protection	Base	Max Day	Max Hour	Raymond Basin + Main Basin In	Main Basin Out	As All Others
Operating Expenses											
WATER-PRODUCTION/QUALITY											
SALARIES & WAGES											
REGULAR EMPLOYEES	\$ 302,900	Base / Max Day	\$ -	\$ -	\$ -	\$ 197,210	\$ 105,690	\$ -	\$ -	\$ -	\$ -
VACATION SELL BACK	7,000	Base / Max Day	-	-	-	4,558	2,442	-	-	-	-
STAND BY PAY	13,000	Base / Max Day	-	-	-	8,464	4,536	-	-	-	-
LONGEVITY PAY	6,000	Base / Max Day	-	-	-	3,906	2,094	-	-	-	-
OVERTIME	10,000	Base / Max Day	-	-	-	6,511	3,489	-	-	-	-
P.E.R.S	120,800	Base / Max Day	-	-	-	78,650	42,150	-	-	-	-
.5% CITY CONTRIBUTION	200	Base / Max Day	-	-	-	130	70	-	-	-	-
MEDICAL/DENTAL	60,900	Base / Max Day	-	-	-	39,650	21,250	-	-	-	-
LONG TERM DISABILITY	400	Base / Max Day	-	-	-	260	140	-	-	-	-
LIFE INSURANCE	400	Base / Max Day	-	-	-	260	140	-	-	-	-
FICA/HOSPITAL INSURANCE	4,900	Base / Max Day	-	-	-	3,190	1,710	-	-	-	-
VACANCY RATE	(36,800)	Base / Max Day	-	-	-	(23,959)	(12,841)	-	-	-	-
Total SALARIES & WAGES	\$ 489,700		\$ -	\$ -	\$ -	\$ 318,830	\$ 170,870	\$ -	\$ -	\$ -	\$ -
SUPPLIES											
FIELDS	\$ 200	Base / Max Day	\$ -	\$ -	\$ -	\$ 130	\$ 70	\$ -	\$ -	\$ -	\$ -
TOOLS	800	Base / Max Day	-	-	-	521	279	-	-	-	-
Total SUPPLIES	\$ 1,000		\$ -	\$ -	\$ -	\$ 651	\$ 349	\$ -	\$ -	\$ -	\$ -
OPERATING EXPENSES											
TELEPHONE	\$ 6,200	Base / Max Day	\$ -	\$ -	\$ -	\$ 4,037	\$ 2,163	\$ -	\$ -	\$ -	\$ -
WATER	2,400	Base / Max Day	-	-	-	1,563	837	-	-	-	-
VEHICLE MAINTENANCE	21,200	Base / Max Day	-	-	-	13,803	7,397	-	-	-	-
BUILDING REPAIR & MAINT	65,000	Base / Max Day	-	-	-	42,320	22,680	-	-	-	-
WAREHOUSE & SHOP	6,000	Base / Max Day	-	-	-	3,906	2,094	-	-	-	-
PERMITS FEES	6,700	Base / Max Day	-	-	-	4,362	2,338	-	-	-	-
DUES & ASSESSMENTS	6,560,335	Source of Supply	-	-	-	337,206	-	-	1,461,999	4,761,130	-
GENERAL FUND CHARGES	266,600	Base / Max Day	-	-	-	173,576	93,024	-	-	-	-
Total OPERATING EXPENSES	\$ 6,934,435		\$ -	\$ -	\$ -	\$ 580,772	\$ 130,534	\$ -	\$ 1,461,999	\$ 4,761,130	\$ -
SPECIAL PROGRAMS											
BULK MAILING	\$ -	Customer Only	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
POWER PURCHASED	1,500,000	Base / Max Day / Max Hour	-	-	-	781,288	418,712	300,000	-	-	-
PUMPING SUPPLIES	65,000	Base / Max Day / Max Hour	-	-	-	33,856	18,144	13,000	-	-	-
WATER TESTING	40,000	Base Only	-	-	-	40,000	-	-	-	-	-
UNSCHEDULED REPAIR	135,000	Base / Max Day / Max Hour	-	-	-	70,316	37,684	27,000	-	-	-
REPAIRS TO PUMP	26,000	Base / Max Day / Max Hour	-	-	-	13,542	7,258	5,200	-	-	-
REPAIRS TO RESERVOIRS	5,000	Base / Max Day / Max Hour	-	-	-	2,604	1,396	1,000	-	-	-
Total SPECIAL PROGRAMS	\$ 1,771,000		\$ -	\$ -	\$ -	\$ 941,606	\$ 483,194	\$ 346,200	\$ -	\$ -	\$ -
Total WATER-PRODUCTION/QUALITY	\$ 9,196,135		\$ -	\$ -	\$ -	\$ 1,841,860	\$ 784,946	\$ 346,200	\$ 1,461,999	\$ 4,761,130	\$ -
Total O&M Expenditures	\$ 14,953,235		\$ 2,182,700	\$ 987,300	\$ -	\$ 2,541,894	\$ 1,231,612	\$ 615,000	\$ 1,461,999	\$ 4,761,130	\$ 1,171,600
Reallocation of As All Others			\$ 2,368,255	\$ 1,071,232	\$ -	\$ 2,757,984	\$ 1,336,314	\$ 667,282	\$ 1,586,286	\$ 5,165,882	

	FY 2020/21	Allocation Basis	Customer	Capacity	Fire Protection	Base	Max Day	Max Hour	Raymond Basin + Main Basin In	Main Basin Out	As All Others
Rate Revenue Requirement											
Total O&M Expenditures	14,953,235	[Calculated Above]	\$ 2,368,255	\$ 1,071,232	\$ -	\$ 2,757,984	\$ 1,336,314	\$ 667,282	\$ 1,586,286	\$ 5,165,882	\$ -
Additional O&M		Max Day / Max Hour	-	-	-	-	-	-	-	-	-
Debt	-	As All Others	-	-	-	-	-	-	-	-	-
Capital Projects	4,353,000	Allocated CIP	-	614,414	-	2,315,567	1,029,859	393,160	-	-	-
Replacement Funding (Depreciation)	-	As All Others	-	-	-	-	-	-	-	-	-
Adjustment for Mid-Year Increase	367,274	As All Others	-	-	-	-	-	-	-	-	367,274
Cashflow	\$ 764,535	Allocated CIP	\$ -	\$ 107,912	\$ -	\$ 406,692	\$ 180,878	\$ 69,052	\$ -	\$ -	\$ -
(Less) Offsetting Revenues											
Use of Reserves for Capital Projects	(4,325,000)	Allocated CIP	\$ -	\$ (610,462)	\$ -	\$ (2,300,673)	\$ (1,023,234)	\$ (390,631)	\$ -	\$ -	\$ -
Use of Equipment Fund	(28,000)	Allocated CIP	-	(3,952)	-	(14,895)	(6,624)	(2,529)	-	-	-
Use of Bond Proceeds	-	As All Others	-	-	-	-	-	-	-	-	-
Other Capital Funding Sources	-	As All Others	-	-	-	-	-	-	-	-	-
Other Charges for Services	(142,410)	As All Others	-	-	-	-	-	-	-	-	(142,410)
Grant Income	-	As All Others	-	-	-	-	-	-	-	-	-
Interest Earnings	(161,682)	As All Others	-	-	-	-	-	-	-	-	(161,682)
Other Revenues	(434,141)	As All Others	-	-	-	-	-	-	-	-	(434,141)
Total Rate Revenues to be Collected	\$ 15,346,811		\$ 2,368,255	\$ 1,179,144	\$ -	\$ 3,164,677	\$ 1,517,192	\$ 736,334	\$ 1,586,286	\$ 5,165,882	\$ (370,959)
Reallocation of As All Others			\$ 2,312,361	\$ 1,151,315	\$ -	\$ 3,089,986	\$ 1,481,384	\$ 718,956	\$ 1,548,848	\$ 5,043,961	
Total Allocation			\$ 2,312,361	\$ 1,151,315	\$ -	\$ 3,089,986	\$ 1,481,384	\$ 718,956	\$ 1,548,848	\$ 5,043,961	
			15%	8%	0%	20%	10%	5%	10%	33%	

Appendix C

WATER SUPPLY ALLOCATION

	Step Allocation Factor	Less Previously Allocated	Remaining to Allocate	MWD Purchase	Main Bain Out	Raymond Basin + Main Basin In	Total
Total Supply Produced (HCF)				108,900	1,729,022	4,158,449	5,996,371
System Losses				(8,864)	(140,742)	(338,498)	(488,105)
Total Supply Available (HCF)				100,036	1,588,279	3,819,951	5,508,266
Step 1	Total Usage			100,036			100,036
Government, Institution, & Irrigation	644,846			11,711			11,711
Commercial	763,546			13,867			13,867
Multi-Family Residential	806,687			14,650			14,650
Single Family Residential	3,293,187			59,808			59,808
Total MWD Allocation	5,508,266			100,036			100,036
Remaining to Allocate					1,588,279	3,819,951	5,408,230
Step 2	Incremental Max Month				142,983		142,983
Government, Institution, & Irrigation	25,954	0	25,954		25,954		25,954
Commercial	14,173	0	14,173		14,173		14,173
Multi-Family Residential	8,055	0	8,055		8,055		8,055
Single Family Residential	94,801	0	94,801		94,801		94,801
Total Incremental Max Month Allocation	142,983	0	142,983		142,983		142,983
Remaining to Allocate					1,445,297	3,819,951	5,265,248
Step 3	Incremental 3 Max Months				239,404		239,404
Government, Institution, & Irrigation	76,411	(25,954)	50,457		50,457		50,457
Commercial	31,352	(14,173)	17,179		17,179		17,179
Multi-Family Residential	20,427	(8,055)	12,372		12,372		12,372
Single Family Residential	254,198	(94,801)	159,396		159,396		159,396
Total Incremental Max 3- Month Allocation	382,387	(142,983)	239,404		239,404		239,404
Remaining to Allocate					1,205,893	3,819,951	5,025,844
Step 4	Total Usage				1,205,893	3,819,951	5,025,844

	Step Allocation Factor	Less Previously Allocated	Remaining to Allocate	MWD Purchase	Main Bain Out	Raymond Basin + Main Basin In	Total
Government, Institution, & Irrigation	644,846	(88,122)	556,725		133,580	423,145	556,725
Commercial	763,546	(45,218)	718,328		172,354	545,974	718,328
Multi-Family Residential	806,687	(35,077)	771,610		185,139	586,471	771,610
Single Family Residential	3,293,187	(67,978)	1,557,016		714,820	2,264,362	2,979,182
Total Usage Allocation	5,508,266	(236,395)	3,603,678		1,205,893	3,819,951	5,025,844
Total Supply Allocation By Class				MWD Imported Purchase	Main Bain Out	Raymond Basin + Main Basin In	Total
Government, Institution, & Irrigation				11,711	209,990	423,145	644,846
Commercial				13,867	203,706	545,974	763,546
Multi-Family Residential				14,650	205,566	586,471	806,687
Single Family Residential				59,808	969,018	2,264,362	3,293,187
Total Supply Allocation				100,036	1,588,279	3,819,951	5,508,266

Appendix D

PROJECTED WATER DEMANDS

Class Forecast	FY 2015/16	FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
	Actual	Actual	Actual	Actual	Projection	Projection	Projection	Projection	Projection	Projection
Average of FY 2017/18 and FY 2018/19										
AR - CITY	35,048	59,603	65,361	69,394	67,377	67,377	67,377	67,377	67,377	67,377
CA - COMMERCIAL	757,370	776,413	776,486	750,606	763,546	763,546	763,546	763,546	763,546	763,546
DC - FIRE SERVICE	791	774	405	71	-	-	-	-	-	-
GV - GOVERNMENT	168,146	218,244	311,088	230,838	270,963	270,963	270,963	270,963	270,963	270,963
IM - IRRIGATION	257,739	292,392	329,215	283,797	306,506	306,506	306,506	306,506	306,506	306,506
MF - MULTI FAMILY	747,764	783,752	829,546	783,827	806,687	806,687	806,687	806,687	806,687	806,687
SF - SINGLE FAMILY	2,900,182	3,156,819	3,464,830	3,121,544	3,293,187	3,293,187	3,293,187	3,293,187	3,293,187	3,293,187
Total (HCF)	4,867,040	5,287,997	5,776,931	5,240,077	5,508,266	5,508,266	5,508,266	5,508,266	5,508,266	5,508,266
Government, Institution, Irr	460,932	570,239	705,664	584,028	644,846	644,846	644,846	644,846	644,846	644,846
Total AF Sold	11,173	12,140	13,262	12,030	12,645	12,645	12,645	12,645	12,645	12,645
Annual Change		8.65%	9.25%	-9.29%	5.12%	0.00%	0.00%	0.00%	0.00%	0.00%
Total HCF Sold	4,867,040	5,287,997	5,776,931	5,240,077	5,508,266	5,508,266	5,508,266	5,508,266	5,508,266	5,508,266

Tier Forecast		FY 2016/17	FY 2017/18	FY 2018/19	FY 2019/20	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25
		Actual	Actual	Actual	Projection	Projection	Projection	Projection	Projection	Projection
Single Family Residential - Tier Splits		Current Tier Breaks				UPDATED TIER BREAKS				
Tier 1	44%	40%	44%	42%	40%	40%	40%	40%	40%	40%
Tier 2	29%	30%	29%	29%	30%	30%	30%	30%	30%	30%
Tier 3	10%	11%	10%	10%	12%	12%	12%	12%	12%	12%
Tier 4	17%	19%	17%	18%	18%	18%	18%	18%	18%	18%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Single Family Residential - Use per Tier										
Tier 1	1,389,000	1,383,774	1,382,720	1,386,987	1,324,274	1,324,274	1,324,274	1,324,274	1,324,274	1,324,274
Tier 2	915,478	1,029,498	893,370	960,496	993,612	993,612	993,612	993,612	993,612	993,612
Tier 3	315,682	380,529	307,426	343,004	398,676	398,676	398,676	398,676	398,676	398,676
Tier 4	536,659	671,030	538,028	602,700	576,624	576,624	576,624	576,624	576,624	576,624
Total	3,156,819	3,464,830	3,121,544	3,293,187	3,293,187	3,293,187	3,293,187	3,293,187	3,293,187	3,293,187
Multi Family Residential - Tier Splits										
Tier 1	55%	61%	64%	63%	63%	63%	63%	63%	63%	63%
Tier 2	45%	39%	36%	37%	37%	37%	37%	37%	37%	37%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Multi Family Residential - Use per Tier										
Tier 1	431,063	507,370	503,851	505,967	505,967	505,967	505,967	505,967	505,967	505,967
Tier 2	352,688	322,176	279,976	300,720	300,720	300,720	300,720	300,720	300,720	300,720
Total	783,752	829,546	783,827	806,687	806,687	806,687	806,687	806,687	806,687	806,687

Appendix E

WATER RESIDENTIAL TIER ANALYSIS

To allocate Base, Max Day, and Max Hour rate components to each Single Family and Multi-Family tier, a tier analysis was performed. The Base allocation is based on tier percent of total usage. To determine the Max Day and Max Hour allocations, first the max month was divided by the average month of FY 2017/18 and FY 2018/19 to calculate the peak factor of each tier. The sum-product of the percent of total usage and peak factor yield the Max Day and Max Hour allocations shown in Table C1 below.

Table D1 Projected Water O&M Revenues & Expenditures

Single Family Residential

Tier Usage	% of Total Usage	Peak factor	Allocation Basis	Base	Max Day	Max Hour
Tier 1	40%	1.07	Max Month / Average Month	40%	31%	31%
Tier 2	30%	1.55	Max Month / Average Month	30%	34%	34%
Tier 3	12%	1.63	Max Month / Average Month	12%	14%	14%
Tier 4	18%	1.59	Max Month / Average Month	18%	20%	20%

Multi-Family Residential

Tier Usage	% of Total Usage	Peak factor	Allocation Basis	Base	Max Day	Max Hour
Tier 1	63%	1.05	Max Month / Average Month	63%	58%	58%
Tier 2	37%	1.29	Max Month / Average Month	37%	42%	42%

Single Family Residential water supplies are allocated to each tier using a three-step process to assign a blend of water from each supply to cover usage in each tier. First, water from Supply 1 and Supply 2 is allocated to Tier 4 to cover excessive outdoor usage. The blend of Supply 2 (more expensive water) and Supply 1 (lower cost water) is determined by adjusting the overall blend of Supply 1 and Supply 2 water available to the Single Family class, adjusted such that no water from the Raymond basins (the City's lowest cost resource) is allocated to Tier 4. Next, the remaining supplies are allocated among Tiers 1, 2, and 3 based on each tier's usage and peak factor. Table D2 and D3 detail this methodology and the resulting allocation of supplies to each tier for FY 2020/21.

Table D2 SFR Supply 1 Composition and Breakout

SFR Supply Allocation Among Tiers Methodology:

		Acre-ft	% of Supply 1	
Raymond Basin		3,200	34%	A
Main Basing Within Allotment		6,346	66%	B
Supply 1 Total		9,546	100%	C = A + B
Supplies Allocated to SFR				
Supply 1	HCF	2,264,362	70%	D
Supply 2	HCF	969,018	30%	E
SFR Supply 1 Breakout				
Raymond Basin	HCF	759,018.38		
Main Basing Within Allotment	HCF	1,505,343		

Supply 1 Allocation for Tier 4 **47%** **F = D x B**

Overall blend adjusted so that no Raymond Basin Water is used in Tier 4

Table D3 SFR Tier Supply Allocation Details

	Tier Usage (HCF)	MWD Imported Water Allocation (HCF)	Tier Use Less MWD Allocation (HCF)	Max Month Peak		Supply 1 (HCF)	Supply 2 (HCF)	Supply 1	Supply 2	
Total Allocation	3,293,187	59,808	3,233,379			2,264,362	969,018	70%	30%	
Outdoor Excessive - Tier 4	576,624	10,472	566,152	1.59		263,580	302,572	47%	53%	
Remaining for Usage Within Allotments						2,000,782	666,445			
			Tier Use Less MWD Allocation (HCF)	Max Month Peak	Peak Weighted Demand	Percent of Peak Weighted Demand	Supply 1	Supply 2	Supply 1	Supply 2
Indoor - Tier 1	1,324,274	24,050	1,300,224	1.07	1,391,094	39%	1,038,304	261,920	80%	20%
Outdoor Efficient - Tier 2	993,612	18,045	975,567	1.55	1,511,807	43%	690,918	284,649	71%	29%
Outdoor High Use - Tier 3	398,676	7,240	391,436	1.63	636,680	18%	271,560	119,876	69%	31%

Multi-family Residential water supplies are allocated to each tier based on peak factors to assign a blend of water from each supply to cover usage in each tier. The amount of Supply 1 and Supply 2 water allocated covers all usage in each tier less each tier's proportional allocation of MWD imported water. Table D4 details this methodology and the resulting allocation of supplies to each tier for FY 2020/21.

Table D4 MFR Tier Supply Allocation Details

	Tier Usage (HCF)	MWD Imported Water Allocation (HCF)	Tier Use Less MWD Allocation (HCF)	Max Month Peak	Peak Weighted Demand	Percent of Peak Weighted Demand	Supply 1 (HCF)	Supply 2 (HCF)	Supply 1	Supply 2
Total Allocation	806,687	14,651	792,036				586,471	205,566	74%	26%
Tier 1	505,967	9,189	496,778	1.05	523,971	58%	377,856	118,922	76%	24%
Tier 2	300,720	5,462	295,258	1.29	381,754	42%	208,614	86,644	71%	29%

Appendix F

SEWER OPERATIONS & MAINTENANCE BUDGET ANALYSIS

Similar to the water O&M budget analysis, the sewer budget analysis looks at each category of costs and applies an escalation factor to project revenues and expenses through the time period of the rate study. In this case, these costs were escalated through FY 2024/25.

Table E1 Sewer Cost Escalation Factors

Cost Escalator	Description
Labor Inflation	Labor rates are assumed to increase at the long-term average of 2 percent.
Construction Cost Inflation	Although capital cost inflation is commonly linked to the Engineering News Record (ENR) Construction Cost Index (CCI), the inflation rate assumes the ENR's long-term average of 3.5 percent.
Utilities	This escalator applies to costs such as electricity and fuel, and it is set at 2 percent.
General Inflation	This escalator is set at the long-term inflation rate of 2 percent.
Customer Account Growth	This escalator is used for revenues stemming from water sales and fixed charges. It is assumed at 0 percent over the long-term.
Interest Income	Estimated at 1 percent based on discussions with City staff.

Cost Escalator	Constant
General Inflation	2.00%
Labor Inflation	2.00%
Utilities Inflation	2.00%
Construction Inflation	3.50%
Depreciation Funding	3.50%
Interest Income	1.00%
Customer Growth	0.00%
General Inflation + Customer Growth	2.00%
No Annual Increase	0.00%
One Time Expense	-100.00%

All sewer revenues are projected off of FY 2018/19 end-of-year actuals, while expenses are projected off of FY 2020/21 budgeted costs as shown in the table below.

Expenditures

Escalator

Appendix G

SEWER FUNCTIONAL ALLOCATION



City of Arcadia Sewer Financial and Rate Model Functional Allocation

Time Period for Allocation **FY 2020/21**

Allocation Index		CUSTOMER	CAPACITY	FLOW	BOD	TSS	Six	As All Others	Total
Customer Only	Costs associated with providing services (common to all accounts)	100%	0%	0%	0%	0%	0%	0%	100%
Capacity Only		0%	100%	0%	0%	0%	0%	0%	100%
Flow Only	Costs based on water usage	0%	0%	100%	0%	0%	0%	0%	100%
BOD Only	Costs associated with assumed BOD strength	0%	0%	0%	100%	0%	0%	0%	100%
TSS Only	Costs associated with assumed TSS strength	0%	0%	0%	0%	100%	0%	0%	100%
As All Others	Catch all basis that uses the weighted average of the system allocation	0%	0%	0%	0%	0%	0%	100%	100%
As Labor		13%	0%	87%			0%	0%	100%

Operating Expenditures				FY 2020/21	Allocation	CUSTOMER	CAPACITY	FLOW	BOD	TSS	Six	As All Others	Total
SEWER-MAINTENANCE													
SALARIES & WAGES													
3306	4010	REGULAR EMPLOYEES	\$	579,800	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4013	VACATION PAYOFF		1,000	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4014	VACATION SELL BACK		8,000	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4015	ALLOWANCES		300	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4019	STANDBY PAY		-	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4021	LONGEVITY PAY		9,200	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4032	PART-TIME NON-PERS		13,300	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4130	OVERTIME		2,000	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4241	P.E.R.S		231,100	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4242	NON-PERSABLE COMPENSATION		900	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4244	MEDICAL/DENTAL INSURANCE		104,500	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4245	LONG TERM DISABILITY		700	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4247	LIFE INSURANCE		900	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4248	RETIREE MEDICAL		7,700	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4249	UNEMPLOYMENT INSURANCE		-	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
3306	4250	FICA/HOSPITAL INSURANCE		8,800	As Labor	13%	0%	87%	0%	0%	0%	0%	100%
0	NEW	Pension Bond Debt		-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
SUPPLIES													
3306	5125	PRINT SHOP	\$	5,000	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
3306	5260	FIELDS		6,000	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
3306	5280	UNIFORM		2,000	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
3306	5410	TOOLS		500	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
OPERATING EXPENSES													
7201	6160	CONTRACT SERVICES	\$	105,700	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6505	GENERAL LIABILITY		19,500	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6507	WORKERS' COMPENSATION		25,800	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6614	WATER		200	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6750	VEHICLE MAINTENANCE		32,000	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6902	DISPOSAL CHARGES		2,000	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6903	PERMITS FEES		11,000	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6970	TRAINING		2,400	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6990	DEPRECIATION		-	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
7201	6995	GENERAL FUND CHARGES		251,300	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
SPECIAL PROGRAMS													
7201	7990	Special Programs XXXXX	\$	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Operating Expenditures Sub Total				\$	1,431,600	\$	126,969	\$	-	\$	-	\$	251,300
Reallocation of "As All Others"						\$	27,033	\$	-	\$	-	\$	(251,300)
Total Allocation				\$	1,431,600	\$	154,003	\$	-	\$	-	\$	-
Percentage Allocation					100.0%		10.8%		0.0%		89.2%		0.0%

Rate Revenue Requirement	FY 2020/21	Allocation	CUSTOMER	CAPACITY	FLOW	BOD	TSS	Six	As All Others	Total
Operating Expenses	\$ 1,431,600	As O&M	9%	0%	74%	0%	0%	0%	18%	100%
Additional O&M	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Debt	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Rate Funded Capital	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Additional Policy Expenditures	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Additions to Meet Minimum Fund Balances	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Coverage Driven Increase	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Cashflow	\$ 1,104,721	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
Less Offsetting Revenues										
Public Works Inspection	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Engineering Charges	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Interest Earnings	(27,163)	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Investments	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Other Financing Sources	-	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Industrial Waste Fees With Full Year Increase	(40,800)	As All Others	0%	0%	0%	0%	0%	0%	100%	100%
Total Rate Revenues to be Collected	\$ 2,468,358		\$ 126,969	\$ -	\$ 2,158,051	\$ -	\$ -	\$ -	\$ 183,337	\$ 2,468,358
Reallocation of "As All Others"			\$ 10,187	\$ -	\$ 173,150	\$ -	\$ -	\$ -	\$ (183,337)	
Total Allocation	\$ 2,468,358		\$ 137,157	\$ -	\$ 2,331,201	\$ -	\$ -	\$ -	\$ -	
Percentage Allocation	100.0%		5.6%	0.0%	94.4%	0.0%	0.0%	0.0%	0.0%	

Allocation With Mid-Year Increase Adjustment			CUSTOMER	CAPACITY	FLOW	BOD	TSS	Six	As All Others	Total
Adjustment for Mid-Year Increase	\$ 24,753	Flow Only	0%	0%	100%	0%	0%	0%	0%	100%
Allocated Adjustment	\$ 24,753		\$ -	\$ -	\$ 24,753	\$ -	\$ -	\$ -	\$ -	\$ 24,753
Total Rate Revenues to be Collected	\$ 2,468,358		\$ 126,969	\$ -	\$ 2,158,051	\$ -	\$ -	\$ -	\$ 183,337	\$ 2,468,358
Reallocation of "As All Others"			\$ 10,078	\$ -	\$ 173,259	\$ -	\$ -	\$ -	\$ (183,337)	
Final Allocation	\$ 2,493,111		\$ 137,048	\$ -	\$ 2,356,063	\$ -	\$ -	\$ -	\$ -	
Final Percentage Allocation	100.0%		5.5%	0.0%	94.5%	0.0%	0.0%	0.0%	0.0%	