CITY OF

POMONA

Water, Recycled Water, and Wastewater Rate Study

Final Report / August 2018

RAFTELIS

RAFTELIS

August 10, 2018

Mr. Chris Diggs
Management Consultant
City of Pomona
505 South Garey Avenue,
Pomona, CA 91766

Subject: Water, Recycled Water and Wastewater Rate Study Report

Dear Mr. Diggs,

Raftelis is pleased to present this water, recycled water and wastewater rate study report. The rate study involved a comprehensive review of the City's financial plan, an assessment of alternative tiered rate structures and an allocation of costs to customer classes and tiers using Cost of Service principles.

The report includes a brief Executive Summary followed by a detailed discussion regarding study assumptions and an in-depth rate derivation.

It was a pleasure working with you and we wish to express our thanks for the support from you and your staff. If you have any questions, please call me at 213.327.4405 or Steve Gagnon at 714.351.2013

Sincerely,

Sanjay Gaur
Vice President

Steve Gagnon, PE
Manager

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1. Executive Summary

1.1 Background

In the summer of 2016, the City of Pomona (City) engaged Raftelis to conduct a Water, Recycled Water and Wastewater Rate Study (Study) which included a Financial Plan, Cost of Service Study and rate calculation. This report presents the Financial Plan and the resulting rates for implementation in October of 2018.

This Executive Summary summarizes the water, recycled water and wastewater rates and contains a description of the, methodology, results and recommendations. The City's last rate adjustment, which consisted of an inflationary increase, was effective on January 1, 2018. The City wishes to establish fair and equitable rates that:

1. Meet the City's fiscal needs in terms of operational expenses, reserve goals and capital investment to maintain the system;
2. Are fair and equitable and therefore proportionately allocate the costs of providing service in accordance with California Constitution, Article XIII D, section 6 (commonly referred to as Proposition 218),
3. Result in stable charges over time for customers;
4. Promote water conservation.

1.2 Methodology

The water rates presented in this report were developed using cost of service principles set forth by the American Water Works Association M1 Manual titled *Principles of Water Rates, Fees and Charges* (AWWA M1 Manual). Cost of service principles endeavor to distribute costs to customer classes in accordance with the way each class uses the water system. This methodology is described in detail in Sections 4 and 5. The Base-Extra Capacity Method of the AWWA M1 Manual was used to distribute costs to customer classes and tiers. This method separates costs into four main[1] components: (1) base costs, (2) extra capacity costs, (3) customer costs, and (4) fire protection costs. Base costs are costs associated with meeting average daily demand needs and include operations and maintenance costs and capital costs designed to meet average load conditions. Extra capacity costs are costs (both operating and capital costs) associated with meeting peak demand. Customer costs are costs associated with serving customers, such as meter reading, billing and customer service, etc. Fire protection costs are related solely to the fire protection function of a water system, such as fire hydrants and related mains and valves.

Wastewater rates were derived in accordance with the Water Environment Federations Manual of Practice No. 27, *Financing and Charges for Wastewater Systems.* The City collects wastewater and sends it to the Sanitation Districts of Los Angeles County for treatment.

[1] There can be other cost components such as conservation and supply; however, the four mentioned are almost always used in rate studies.

1.3 Results and Recommendations

Table 1-1 shows the revenue adjustments for the water, wastewater and recycled water enterprises as part of the selected Financial Plan. The revenue adjustment is the additional amount of revenue collected for each enterprise compared to the amount collected by current rates[2].

Table 1-1: Recommended Yearly Revenue Adjustments

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Effective Month	**October 1, 2019**	**July 1, 2020**	**July 1, 2021**	**July 1, 2022**	**July 1, 2023**
Water Revenue Adjustment	10.25%	10.25%	10.25%	10.25%	7.00%
Wastewater Revenue Adjustment	34.00%	4.00%	4.00%	4.00%	4.00%
Recycled Water Revenue Adjustment	7.00%	7.00%	7.00%	7.00%	7.00%

1.3.1 FACTORS AFFECTING REVENUE ADJUSTMENTS

The following items affect the City's revenue requirement (i.e., costs) and thus its rates for each enterprise. The City's expenses include Operation and Maintenance (O&M) expenses, capital expenses, debt service (for water and wastewater) and reserve funding.

- **O&M Expenses:** The City's O&M expenses (excluding water costs) increase each year, in line with general cost inflation and the increasing cost of employee benefits.
- **Capital Investment:** The City plans to invest millions in each system as discussed in the capital improvement section for each enterprise. Water, wastewater and recycled water system improvements total $55 million, $12 million and $2.5 million over the next five years for each system respectively.

The City will purposely make use of fund balances, as shown herein, to minimize customer rate impacts. Using fund balances to fund operating and capital costs lowers the amount of required rate revenue and therefore customer bills.

1.4 Water

1.4.1 PROPOSED WATER RATES

In this report, the terms fee and charge are often used interchangeably. The City currently charges a set of rates for customers within City limits and a set of rates for customers outside City limits. Raftelis recommends discontinuing the outside City rates due to Proposition 218 requirements which state that rates need to be based on the City's costs. The City's water rate structure includes two components: (1) a fixed bi-monthly Service Charge, and (2) a variable Commodity Rate. Each of these charges is described below.

[2] Assuming that the rates were implemented for the full fiscal year. In the case of FY 2019 with rates effective in October, each enterprise will not realize the full percentage revenue adjustment.

1.4.2 FIXED CHARGE

The City's proposed fixed charge includes two components:

$$Total\ Fixed\ Meter\ Charge = 1)\ Meter\ Service\ Charge + 2)\ Customer\ Service\ Component$$

The first component is the Meter Service Charge and it is based on the meter size serving a property. The Service Charge is calculated to recover the cost to maintain and replace meters as well as a portion of extra-capacity related costs (i.e., costs associated with meeting system capacity beyond that required for average daily demand). This cost is proportional to the size of the meter and goes up with meter size according to standards set forth by the AWWA. The second component is the customer service component. This component recovers costs associated with answering customer calls and billing customers. These costs are not related to the size of the meter. The full derivation of the total charge is described in Section 5, and the *total* Fixed Service Charge is shown in Table 1-2. The City has elected to reduce the fixed charge, thus its fixed revenue collection, to create a rate structure which incentivizes conservation by lowering water bills for those who use less water and to collect fixed revenue (i.e. revenue that is not dependent on customer water use) that is more in line with average fixed revenue collection for southern California water agencies.

Table 1-2: Current Inside City and Proposed Bi-Monthly Fixed Charge

Meter Size (A)	Current Inside City Charge (B)	FY 2019 Oct 1, 2018 (B)	FY 2020 Jul 1, 2019 (C)	FY 2021 Jul 1, 2020 (D)	FY 2022 Jul 1, 2021 (E)	FY 2023 Jul 1, 2022 (F)
5/8"	$50.69	$41.22	$45.44	$50.10	$55.24	$60.90
3/4"	$68.45	$60.16	$66.33	$73.13	$80.62	$88.89
1"	$104.03	$98.05	$108.10	$119.18	$131.39	$144.86
1-1/2"	$192.96	$192.76	$212.52	$234.30	$258.32	$284.79
2"	$299.67	$306.41	$337.82	$372.45	$410.62	$452.71
3"	$548.64	$571.61	$630.20	$694.79	$766.01	$844.52
4"	$904.35	$950.45	$1,047.88	$1,155.28	$1,273.70	$1,404.25
6"	$1,793.60	$1,897.57	$2,092.07	$2,306.51	$2,542.93	$2,803.58
8"	$2,860.67	$3,034.12	$3,345.11	$3,687.99	$4,066.01	$4,482.77
10"	$4,105.65	$4,360.08	$4,806.99	$5,299.71	$5,842.93	$6,441.83

1.4.3 POTABLE COMMODITYRATE

Table 1-3 and Table 1-4 show the current and proposed commodity rates by customer class respectively. The rates are designed to recover the costs associated with serving each class and tier as discussed in Sections 4 and 5. The City's current rate structure consists of two customer groups; 1) Single Family Residential customers and 2) All Other Customers. The proposed rate structure also consists of two customer groups, however they are revised to include; 1) All non-irrigation customers and 2) Irrigation customers. The revised customer groups better reflect how each group use the water system. Irrigation customers demonstrate greater peaking (extra capacity) needs due to their summertime water use patterns. Creating a separate class for irrigation customers equitably distributes the cost of service to each group. Raftelis also recommends discontinuing the Outside City rate.

Table 1-3: Current Commodity Rates ($/HCF)

Inside City		Outside City	
SFR		**SFR**	
Tier 1	$0.98	Tier 1	$1.24
Tier 2	$1.79	Tier 2	$2.23
Tier 3	$3.21	Tier 3	$4.05
All Other Customers		**All Other Customers**	
Tier 1	$0.98		$1.24
Tier 2	$1.95		$2.48

Table 1-4: Proposed Commodity Rates ($ / hcf) for All Classes

		10.25%	10.25%	10.25%	10.25%	7.00%
		FY 2019	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**
	Class	**Oct 1, 2018**	**Jul 1, 2019**	**Jul 1, 2020**	**Jul 1, 2021**	**Jul 1, 2022**
Line No.	**(A)**	**(B)**	**(C)**	**(D)**	**(E)**	**(F)**
1	**Non-Irrigation**					
2	Tier 1	$1.75	$1.93	$2.13	$2.35	$2.60
3	Tier 2	$2.20	$2.43	$2.68	$2.96	$3.27
4	Tier 3	$2.38	$2.62	$2.89	$3.19	$3.52
5	**Irrigation**					
6	Tier 1	$1.77	$1.95	$2.15	$2.37	$2.54
7	Tier 2	$2.56	$2.82	$3.11	$3.43	$3.67
8	Tier 3	$2.66	$2.93	$3.23	$3.56	$3.81

1.5 Wastewater

1.5.1 PROPOSED WASTEWATER RATES

The City's current wastewater rates include a fixed charge and a volumetric rate. The volumetric rate is based on (annualized) winter water use for Single Family customers and actual water use for remaining customer classes. After discussion with City Staff, Raftelis proposes no major changes to the wastewater rate structure – only increasing the rate to meet operational and capital revenue requirements. Table 1-5 shows the current and proposed five-year wastewater rates.

Table 1-5: Current and Proposed Five-Year Wastewater Rates

Line No.	Rate Component	Current FY 2018 2018 (A)	Proposed FY 2019 July 1, 2019 (B)	Proposed FY 2020 July 1, 2020 (C)	Proposed FY 2021 July 1, 2021 (D)	Proposed FY 2022 July 1, 2022 (F)	Proposed FY 2023 July 1, 2023 (G)
1	Bi-monthly Sewer Service Charge	$6.21	$9.40	$9.78	$10.17	$10.58	$11.00
2	Usage Charge ($/hcf)	$0.54	$0.69	$0.72	$0.75	$0.78	$0.81

1.6 Recycled Water

1.6.1 PROPOSED RECYCLED WATER RATES

The City's current recycled water rate is a volumetric rate, billed monthly, which is approximately 14% below the weighted average potable rate for each tier in FY 2017. The City purchases recycled water from the Los Angeles County Sanitation Districts and serves it to eight customers. The City is proposing a number of recycled water capital investment projects to increase the service area of the system. Table 1-6 shows the proposed five-year monthly fixed service charges in lines 1 through 10 and the current and proposed five-year commodity rates in line 11. Note that the volumetric rate (Lines 11 and 12) decreases in FY 2019 due to the addition of the fixed charge which collects a portion of the total revenue requirement. This reduces the revenue required from the volumetric rate. It decreases in FY 2021 due to projected new customers (and thus an increase in water use) coming online in that year. This distributes the revenue required from the volumetric rate over 15% higher water use in that year therefore creating a lower rate.

Table 1-6: Current and Proposed Recycled Water Rates

Line No.	Meter Size (A)	No. of Meters (B)	Current Fixed Charge (C)	FY 2019 Oct 1, 2018 (D)	FY 2020 Jul 1, 2019 (E)	FY 2021 Jul 1, 2020 (F)	FY 2022 Jul 1, 2021 (G)	FY 2023 Jul 1, 2022 (H)
1	2"	1	$0.00	$61.28	$67.56	$74.49	$82.12	$87.87
2	3"	3	$0.00	$114.32	$126.04	$138.96	$153.20	$163.93
3	4"	2	$0.00	$190.09	$209.58	$231.06	$254.74	$272.57
4	6"	0	$0.00	$379.51	$418.41	$461.30	$508.59	$544.19
5	8"	0	$0.00	$606.82	$669.02	$737.60	$813.20	$870.13
6	10"	0	$0.00	$872.02	$961.40	$1,059.94	$1,168.59	$1,250.39
7	12"	1	$0.00	$1,894.91	$2,089.13	$2,303.27	$2,539.35	$2,717.11
8	14"	0	$0.00	$2,842.02	$3,133.33	$3,454.50	$3,808.58	$4,075.18
9	16"	0	$0.00	$3,789.14	$4,177.53	$4,605.73	$5,077.81	$5,433.26
10	18"	1	$0.00	$4,736.26	$5,221.73	$5,756.96	$6,347.04	$6,791.34
11	**Volumetric Rate**		**$583.75**	**$568.27**	**$588.76**	**$546.29**	**$565.88**	**$587.85**
12	Percent Change			-2.7%	3.6%	-7.2%	3.6%	3.9%

The main body of this report contains the City's detailed five-year financial plan, rate derivation and customer bill impacts for the water, wastewater and recycled water utilities.

2. Water Enterprise

This section describes the water enterprise rate study, starting with the water financial plan, followed by the cost of service study, rate design and customer bill impacts.

2.1 Water System Background

Located in eastern Los Angeles County, the City of Pomona is 22.9 square miles and was incorporated in January 1888. The City provides water services to all residential, commercial and industrial customers as well as environmental and fire protection within the City, except for three areas. These areas are:

1. An irregular area of approximately 40 acres south of Foothill Boulevard and west of Towne Avenue served by Golden State Water Company (GSWC);
2. An area of about 20 acres north of Foothill Boulevard and west of Garey Avenue served by the Golden State Water Company (GSWC); and
3. A small portion of the City located north of Valley Boulevard and west of Temple Avenue served by the Walnut Valley Water District (WVWD).

The City also services about 275 acres of residential property and open space area outside of the City limits including approximately 98 percent of the Rolling Ridge Estates south of the Pomona Freeway and west of the Corona Expressway. Additionally, the City sells recycled water to eight customers including Cal Poly Pomona and Bonelli Park to the west of the service area.

Water demand within the City's service area is met through a variety of water sources including groundwater, local surface water, imported water and non-potable water. These various sources and the City's topography require a complicated water system. The existing potable water system consists of eleven pressure zones, 22 storage reservoirs, 15 active booster pumping stations, 41 groundwater wells, four imported water connections, two inter-agency connections, seven California Department of Public Health (CDPH) permitted water treatment facilities, one spreading ground and 28 pressure regulating stations. The potable water distribution system has about 6,000 fire hydrants and approximately 421 miles of pipelines. The non-potable system consists of the Sanitation District of Los Angeles County's Pomona Water Reclamation Plant (PWRP), three non-potable water wells within the Spadra Basin, two reservoirs, six booster pumps, two pressure zones and two transmission lines.

2.2 Financial Plan Assumptions

2.2.1 NUMBER OF ACCOUNTS

Raftelis created a seven-year financial plan which models anticipated revenue and expenses. This report shows the financial plan and assumptions for the next 5 years (FY 2019 to FY 2023) to correspond with the rate development for these years. Estimated rate revenue (without adjustments) was calculated by multiplying the number of accounts by the bi-monthly (fixed) charge and multiplying the total water use in each tier by the commodity rate. Table 2-1 shows the projected number of water accounts, including private fire protection accounts by meter size and class for FY 2019. FY 2019 is shown because this is the "test year", or the year used to develop rates. Raftelis projected the number of meters using City-provided FY 2016 meter data. The number of accounts are used to forecast the amount of fixed revenue the City will receive from fixed bi-monthly service charges. Though this table separates inside and

outside City accounts, Raftelis recommends identical rates for both inside and outside city accounts as discussed in Section 5.

Table 2-1: Projected Accounts by Meter Size (FY 2019)

Inside City Accounts

Meter Size	Single Family Residential	Multi-family	Commercial	Government	Commercial Irrigation	Government Irrigation	Fire Protection Accounts	Total
5/8"	24,197	1,359	994	15	29	19	18	26,631
3/4"	57	5	3	-	2	2	-	70
1"	1,105	628	596	25	69	25	94	2,543
1-1/2"	49	309	307	41	73	63	161	1,002
2"	24	243	415	108	136	31	222	1,179
3"	-	8	35	32	-	6	58	139
4"	-	4	30	12	-	-	1	48
6"	-	1	11	5	-	-	554	571
8"	-	1	2	3	-	-	-	6
10"	-	-	1	2	-	-	-	3
Total	**25,432**	**2,558**	**2,394**	**244**	**310**	**147**	**1,108**	**32,192**

Outside City Accounts

Meter Size	Single Family Residential	Multi-family	Commercial	Government	Commercial Irrigation	Government Irrigation	Fire Protection Accounts	Total
5/8"	242	-	5	-	-	-	-	247
3/4"	-	-	-	-	-	-	-	-
1"	3	-	8	-	-	-	-	11
1-1/2"	-	-	1	-	-	2	5	8
2"	2	-	5	-	7	-	3	17
3"	-	-	-	-	-	-	1	1
4"	-	-	-	-	-	-	1	1
6"	-	-	-	-	-	-	10	10
8"	-	-	-	-	-	-	-	-
10"	-	-	-	-	-	-	-	-
Total	**247**	**0**	**19**	**0**	**7**	**2**	**20**	**295**

2.2.2 ACCOUNT AND WATER USE GROWTH ASSUMPTIONS

The revenue calculated for each fiscal year in the Financial Plan is a function of the number of accounts, account growth, water use trends, and existing rates. Table 2-2 shows the assumed account growth rates and the anticipated water use growth in line 5. Like most water purveyors, the City's water use declined during the recent drought due to conservation outreach programs. According to local trends, however, the City will likely see a slight increase in water use as conservation pressures ease and development occurs. The Municipal Water District of Orange County saw a 6% increase in water use from FY 2016 to FY 2017[3]. Though the City is not within MWDOC service area it can assumed a reasonable and similar rebound in water use as shown in the last line of Table 2-2. FY 2017 data was provided by the City and represents actual growth for the City in this year.

[3] Presentation from General Manager of MWDOC to Mesa Water District

Table 2-2: Account Growth and Water Use Assumptions

Account Growth Rates	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
SFR	0.3%	0.3%	0.2%	0.2%	0.1%	0.1%	0.1%
Multi-family	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Commercial/Government/ Fire Protection	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Irrigation	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Water Use							
Water Use Growth or Decline	NA	5.0%	1.7%	0.3%	0.3%	0.3%	0.3%

2.2.3 WATER USE

Table 2-3 shows the estimated FY 2019 number of accounts and water use by customer class. The number of accounts and water use were projected from FY 2016 account and water use data by escalating FY 2016 data using the account and water use growth trends shown in Table 2-2. The number of accounts in Table 2-3 does not include Fire Protection accounts.

Table 2-3: Water Use in HCF by Customer Class - FY 2019

FY 2019	No. of Accts	Consumption	% of Accounts	% of Use
SFR	25,679	3,712,426	82%	47%
Multi-family	2,558	1,582,998	8%	20%
Commercial	2,413	1,352,220	8%	17%
Government	244	733,869	1%	9%
Commercial Irrigation	317	303,620	1%	4%
Government Irrigation	149	142,995	0%	2%
Construction	55	17,951	0%	0%
	31,414	**7,846,078**	**100%**	**100%**

2.2.4 INFLATIONARY AND WATER PURCHASE COST ASSUMPTIONS

To ensure future O&M costs are reasonably projected, Raftelis has made informed assumptions about inflationary factors, water costs and water use. Table 2-4 shows the inflationary categories that were used to escalate the City's FY 2018 O&M expense budget, which is part of the Financial Plan. The inflationary factors shown in Table 2-4 reflect long-term averages for general and capital (construction) inflation and energy prices. The City provided the salary and benefit inflationary factors and reflect employee salaries and benefit obligations; additionally, the City recently agreed to provide salary increases which were included.

Table 2-4: Inflationary Assumptions

Escalatory Catagories	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
General	3.0%	3.0%	3.0%	3.0%	3.0%
Salary	2.0%	2.0%	2.0%	2.0%	2.0%
Benefits	5.0%	5.0%	5.0%	5.0%	5.0%
Utilities	3.0%	3.0%	3.0%	3.0%	3.0%
Construction	3.0%	3.0%	3.0%	3.0%	3.0%

Table 2-5 shows assumed wholesale water purchase cost inflation. The City has three potable water sources: groundwater, local surface water and purchased imported water. The City purchases the

majority of its imported water from the Metropolitan Water District (MWD) through the Three Valleys Municipal Water District (TVMWD) and makes additional purchases of imported water directly from TVMWD, and pays groundwater assessment charges to the Six Basins Watermaster. The City's wholesaler costs can fluctuate widely from year to year – especially during times of drought. The cost escalators shown in Table 2-5 reflect the long-term averages for wholesaler cost increases, though at times certain charges in Table 2-5 can vary widely, showing double digit percentage increases or decreases. The City would rely on fund balances to cover increased water purchase costs should wholesale charges increase substantially above those shown in Table 2-5.

Table 2-5: Water Purchase Cost Inflation

Water Purchase Cost Inflation	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fixed Charge Percentage Increases					
MWD Capacity Charge	3.0%	3.0%	3.0%	3.0%	3.0%
TVMWD Imported Water Use Charge	3.0%	3.0%	3.0%	3.0%	3.0%
TVMWD Connected Capacity Charge	3.0%	3.0%	3.0%	3.0%	3.0%
TVMWD Equivalent Small Meter Charge	3.0%	3.0%	3.0%	3.0%	3.0%
PWR-JWL Budget Assessment	3.2%	3.2%	3.2%	3.2%	3.2%
Volumetric Rate Percentage Increases					
Groundwater Assessment Increase	3.0%	3.0%	3.0%	3.0%	3.0%
MWD (TVMWD) - Tier 1	4.0%	4.0%	4.0%	4.0%	4.0%

Table 2-6 shows the estimated imported water purchases over the study period. The amounts shown are the estimated average volume of imported water purchases – actual amounts will vary based on rainfall.

Table 2-6: Projected Imported Water District Water Purchases

Metropolitan Water District Purchases	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
MWD Purchases (Acre Feet)	3,645	3,645	3,645	3,645	3,645

Raftelis used the assumptions shown in Table 2-4 through Table 2-6 to develop the City's Water Financial Plan. The plan uses projected annual operating expenses and revenues, capital expenditures, reserve fund balances, and annual debt service coverage ratios to estimate the amount of additional rate revenue needed per year. This report section provides a discussion of O&M expenses, the Capital Improvement Plan (CIP), reserve funding, projected revenue under existing rates, and the revenue adjustments needed to ensure the fiscal sustainability and solvency of the Water Enterprise.

2.2.5 WATER SYSTEM EXPENSES

The City's expenses include O&M expenses, capital expenses, and debt service payments, each of which is described below.

2.2.6 O&M EXPENSES

The City's O&M budget is shown by fiscal year in Table 2-7. The O&M budget incorporates the inflationary factors discussed in Table 2-4. Approximately 45% of the O&M budget is water production costs.

Table 2-7: Projected O&M Expenses

O&M Expenses	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Water Production	$12,439,847	$12,848,009	$13,252,059	$13,669,350	$14,100,329	$14,545,463
Pump Zones (11H, 12H ,9)	$81,433	$83,703	$86,038	$88,439	$90,909	$93,449
Water Treatment	$3,713,371	$4,086,634	$4,193,142	$4,302,522	$4,414,857	$4,530,226
Distribution	$3,356,442	$4,057,203	$4,151,973	$4,249,047	$4,348,483	$4,450,342
General & Admin (M & O)	$1,967,587	$2,055,564	$2,104,859	$2,155,386	$2,207,177	$2,260,264
Admin & Engineering	$1,624,636	$1,248,213	$1,303,487	$1,362,728	$1,426,301	$1,480,392
Business Services	$1,348,796	$1,431,847	$1,465,625	$1,500,234	$1,535,694	$1,572,027
Water Conservation	$273,053	$299,274	$306,129	$313,147	$320,332	$327,689
Customer Service Field Oper	$527,014	$546,455	$559,191	$572,236	$585,598	$599,284
Total	**$25,332,180**	**$26,656,902**	**$27,422,503**	**$28,213,089**	**$29,029,679**	**$29,859,135**

2.2.7 CAPITAL IMPROVEMENT PLAN (CIP)

Table 2-8 shows the City's CIP summary. The City is funding capital investment through rate revenue and reserve funds (also known as PAY-GO funding) instead of taking on debt. A portion of recycled water projects are allocated to potable water since these projects will benefit the potable water system by freeing up potable water demand.

Table 2-8: Detailed Capital Improvement Plan

Capital Improvement Plan	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Funded Projects						
Groundwater Well - Evaluation and Rehabilitation	$360,500					
Meter Replacement - Advanced Metering Infrastructure Pilot	$375,174					
Palm Lakes Golf Course - Spreading Grounds Feasibility Study	$40,620					
Six Basins - Groundwater Optimization	$334,750					
Treatment - Chino Basin Groundwater VOC Plant	$132,808					
Water Main Replacement - FY 2017-18 Design	$721,000					
Water Mains - Ellen Place	$309,000					
Water Mains - District 3	$1,648,000					
Water Master Plan (2016)	$364,144					
Corporate Yard Facility	$0	$4,806,344	$4,950,534			
Other Projects						
Unfunded						
Pedley Surface Water Treatment Plant - Expansion/Optimization		$1,709,578	$1,760,865	$1,813,691	$4,766,287	$4,909,276
Reservoir - Rehab/Replacement		$1,060,900	$546,364	$562,754	$579,637	$692,550
Treatment - Rehab/Replacement	$1,545,000	$1,591,350	$1,092,727	$1,125,509	$1,159,274	
Water Production Facilities (e.g. Wells, Boosters) - Rehab/Replacement	$515,000	$848,720	$874,182	$900,407	$927,419	$955,242
Water Main Replacement - FY 2018-19 Construction		$2,249,108				
Water Main Replacement - FY 2018-19 Design		$562,277				
Water Main Replacement - FY 2019-20 Construction			$2,316,581			
Water Main Replacement - FY 2019-20 Design			$579,145			
Water Main Replacement - FY 2020-21 Construction				$2,386,079		
Water Main Replacement - FY 2020-21 Design				$596,520		
Water Main Replacement - FY 2021-22 Construction					$2,457,661	
Water Main Replacement - FY 2021-22 Design					$614,415	
Water Main Replacement - FY 2022-23 Construction						$2,531,391
Water Main Replacement - FY 2022-23 Design						$632,848
Potable's Share of Recycled Water CIP						
Palm Lakes Golf Course - Recycled Water Spreading Grounds - Design			$163,909	$168,826		
Palm Lakes Golf Course - Recycled Water Spreading Grounds - Construction						
Recycled Water - Treatment Plant Improvements						
Recycled Water Production Facilities (e.g. Wells, Boosters) - Rehab/Replac		$198,919				
Reservoir - Rehab/Replacement/New				$281,377	$289,819	$298,513
Recycled Water System Improvements - Ganesha Hills, Fairplex Area		$397,838	$409,773	$422,066		
Recycled Water System Improvements - Eastend Area						
Recycled Water Main - FY 2018-19 Design		$7,161				
Recycled Water Main - FY 2019-20 Construction			$49,173			
Recycled Water Main - FY 2019-20 Design			$7,376			
Recycled Water Main - FY 2020-21 Construction				$50,648		
Recycled Water Main - FY 2020-21 Design				$7,597		
Recycled Water Main - FY 2021-22 Construction					$52,167	
Recycled Water Main - FY 2021-22 Design					$7,825	
Recycled Water Main - FY 2022-23 Construction						$53,732
Recycled Water Main - FY 2022-23 Design						
Other Projects						
Total	**$6,345,997**	**$13,432,194**	**$12,750,628**	**$8,315,474**	**$10,854,505**	**$10,073,552**

2.2.8 EXISTING DEBT SERVICE

Table 2-9 shows the City's existing debt service payments. The Financial Plan presented in this section assumes no additional debt.

Table 2-9: Existing Water Debt Service

Existing Debt Service	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Series AY	$1,387,610	$1,452,150	$1,452,150	$1,452,150	$1,452,150	$1,452,150
Series AZ	$3,734,747	$3,679,468	$3,673,595	$3,671,593	$3,677,024	$3,673,379
Total	**$5,122,357**	**$5,131,618**	**$5,125,745**	**$5,123,743**	**$5,129,174**	**$5,125,529**

2.2.9 REVENUE ADJUSTMENTS

Using the assumed number of accounts and water use described above, Raftelis developed a financial plan using projected operating and capital expenses, revenue and resulting yearly cash balances for the financial plan study period - from FY 2019 to FY 2023. The financial plan is used to determine the overall revenue adjustments required to ensure water enterprise financial stability. Revenue adjustments represent the average increase in rates as a whole; rate changes for individual classes will depend on the cost of service – since a cost of service analysis allocates costs to each customer class. Therefore, the revenue adjustment may not be the same as the average bill impact for each customer class. This study establishes rates from FY 2019 to FY 2023.

The proposed revenue adjustments help ensure adequate revenue to fund operating expenses, capital expenditures, and compliance with bond covenants. Financial Plan modelling assumes the revenue adjustment will occur in October of 2018. The proposed revenue adjustments would enable the City to cover operating expenses and execute the CIP shown in Table 2-8 and meet its debt service coverage requirement of 120% in each year beyond FY 2019.

Table 2-10 shows the proposed revenue adjustments selected by the City. The rates presented in Section 3 are based on these revenue adjustments.

Table 2-10: Proposed Rate Adjustments

Revenue Adjustments	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Effective Month	Oct	Jul	Jul	Jul	Jul
Revenue Adjustment	10.25%	10.25%	10.25%	10.25%	7.00%

2.2.10 CASH FLOW ANALYSIS (FINANCIAL PLAN)

Table 2-11 shows the City's cash flow projection over the study period assuming the revenue adjustments shown in Table 2-10. Line 3 shows the additional revenue from the revenue adjustments. Line 33 shows the yearly ending cash flow after subtracting expenses, debt service and capital expenses from total revenue (in line 12). The City has a yearly operating deficit, meaning revenue does not cover costs when including capital expenses to minimize customer bill impacts. Line 35 shows that the City meets its debt service coverage requirement of 120% each year except for FY 2019, based on modeling projections and the assumption that all expenses will be paid in a given year and to their maximum budgeted amounts. The proposed revenue adjustment would quickly ensure the City meets future coverage requirements after FY 2019. Debt service coverage is calculated by subtracting O&M expenses from revenues (net revenues), then dividing the net revenue by debt service (line 12 - line 24 / line 29).

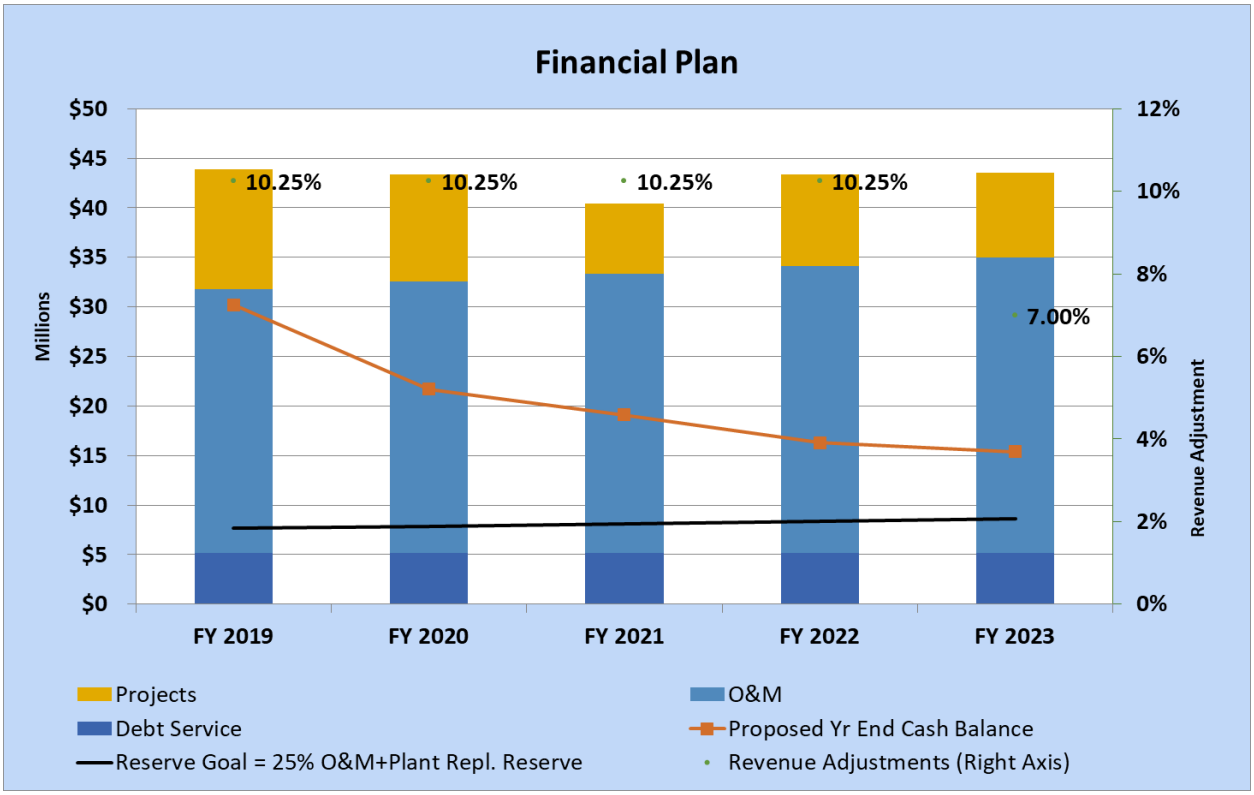
Table 2-11: Five-Year Water Operating Cash Flow

Line No.	Operating Cash Flow	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1	Fixed Revenue	$14,562,400	$14,783,932	$14,825,841	$14,859,721	$14,893,738	$14,927,891
2	Commodity Revenue	$12,255,649	$12,594,782	$12,632,566	$12,670,464	$12,708,475	$12,746,600
3	Total - Revenue Adjustments	$0	$2,104,739	$5,628,973	$8,465,532	$11,316,907	$13,283,756
4	**Total Rate Revenue**	**$26,818,049**	**$29,483,452**	**$33,087,381**	**$35,995,717**	**$38,919,120**	**$40,958,247**
5	**Other Revenue**						
6	All Fines	$196,052	$196,542	$197,033	$197,526	$198,020	$198,515
7	Lease/Rentals	$0	$0	$0	$0	$0	$0
8	All Fees	$680,000	$681,700	$683,404	$685,113	$686,826	$688,543
9	Bad Debt/Damage to City Property	$17,000	$17,043	$17,085	$17,128	$17,171	$17,214
10	Sale of Land/Property/Storage Water	$5,600,000	$1,000,000	$0	$0	$0	$0
11	Interest Earnings	$137,460	$134,291	$101,691	$80,713	$94,543	$99,814
12	**Total Revenue**	**$33,448,561**	**$31,513,028**	**$34,086,595**	**$36,976,196**	**$39,915,679**	**$41,962,332**
13							
14	**Expenses**						
15	Water Production	$12,439,847	$12,848,009	$13,252,059	$13,669,350	$14,100,329	$14,545,463
16	Pump Zones (11H, 12H ,9)	$81,433	$83,703	$86,038	$88,439	$90,909	$93,449
17	Water Treatment	$3,713,371	$4,086,634	$4,193,142	$4,302,522	$4,414,857	$4,530,226
18	Distribution	$3,356,442	$4,057,203	$4,151,973	$4,249,047	$4,348,483	$4,450,342
19	General & Admin (M & O)	$1,967,587	$2,055,564	$2,104,859	$2,155,386	$2,207,177	$2,260,264
20	Admin & Engineering	$1,624,636	$1,248,213	$1,303,487	$1,362,728	$1,426,301	$1,480,392
21	Business Services	$1,348,796	$1,431,847	$1,465,625	$1,500,234	$1,535,694	$1,572,027
22	Water Conservation	$273,053	$299,274	$306,129	$313,147	$320,332	$327,689
23	Customer Service Field Oper	$527,014	$546,455	$559,191	$572,236	$585,598	$599,284
24	**Total - Expenses**	**$25,332,180**	**$26,656,902**	**$27,422,503**	**$28,213,089**	**$29,029,679**	**$29,859,135**
25							
26	**Debt Service**						
27	Existing Debt Service	$5,122,357	$5,131,618	$5,125,745	$5,123,743	$5,129,174	$5,125,529
28	Proposed Debt Service	$0	$0	$0	$0	$0	$0
29	**Total - Debt Service**	**$5,122,357**	**$5,131,618**	**$5,125,745**	**$5,123,743**	**$5,129,174**	**$5,125,529**
30							
31	**CIP Expenses**	**$6,345,997**	**$12,138,316**	**$10,838,034**	**$7,068,153**	**$9,226,329**	**$8,562,519**
32							
33	**Net Annual Cash Flow**	**($3,351,972)**	**($12,413,808)**	**($9,299,688)**	**($3,428,788)**	**($3,469,502)**	**($1,584,851)**
34							
35	Calculated Debt Coverage	158%	95%	130%	171%	212%	236%

2.2.11 GRAPHICAL FINANCIAL PLAN

Figure 2-1 displays the Financial Plan in Table 2-11 in graphical format. Figure 2-1 shows the revenue adjustments in bold black figures. The stacked bars show the City's expenses broken down into the categories shown in the legend. The orange line shows the projected year end cash balances and the black line shows the reserve target. The black line is the sum of the Operating Reserve target (25% of annual operating expenses) and the Plant Replacement Reserve ($1M in FY 2019, inflated annually thereafter at 3%). The resulting total annual goal is approximately $8.1M over the five-year study period. As shown by the decline in the projected year-end balance (orange line), the City is minimizing customer bill impacts by drawing down fund balances.

Figure 2-1: Financial Plan



3. Legal Framework and Rate Setting Methodology

3.1 Legal Framework

This section of the report describes the legal framework surrounding rate setting and calculating cost of service rates that provide a fair and equitable cost allocation to customer classes.

3.1.1 CALIFORNIA CONSTITUTION - ARTICLE XIII D, SECTION 6 (PROPOSITION 218)

Proposition 218 was enacted in 1996. It amended the California Constitution by adding Article XIII C and XIII D. Article XIII D, section 6 established procedural requirements for the imposition of property-related fees and charges and substantive provisions governing the amount that may be imposed and the use of such fees charged by local agencies. The substantive requirements for such fees and charges are as follows:

1. A property-related charge (such as water and sewer service fees and charges) imposed by a public agency on a parcel shall not exceed the costs required to provide the property-related service.
2. Revenues derived by the charge shall not be used for any other purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of the property.
5. No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.

Raftelis followed industry-standard rate setting methodologies set forth by the AWWA *M1 Manual* and the restrictions and requirements in Proposition 218 to ensure this study creates rates that do not exceed the cost of providing water service and are proportionate to the cost of providing water service.

3.1.2 CALIFORNIA CONSTITUTION - ARTICLE X, SECTION 2

Article X, Section 2 of the California Constitution (established in 1976) states the following:

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

As stated above Article X, section 2 of the State Constitution institutes the need to preserve the State's water supplies and to discourage the wasteful or unreasonable use of water by encouraging conservation.

As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In addition, Section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water as long is the rates also comply with other articles of the Constitution. The proposed tiered rates were designed in compliance with California Constitution Article XIII D, section 6 by allocating a proportionately greater share of the cost of providing service to those whose apply greater demands and burdens on a water system and the City's water resources, and therefore generates additional costs for the City. The tiered rates also have the incidental effect of encouraging conservation by sending a price signal to customers to use less water.

Inclining block rate structures (which are synonymous with tiered rates), when properly designed and differentiated by type of use, allow a water utility to send conservation price incentives to customers. Due to heightened interest in water conservation, tiered rates have gained widespread use, especially in relatively water-scarce regions, such as Southern California.

3.2 Cost-Based Rate-Setting Methodology

The AWWA M1 Manual states "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." To develop utility rates that comply with Proposition 218 and industry standards, while meeting other emerging goals and objectives of the utility, there are four major steps discussed below.

1.) Calculate Revenue Requirement

The rate-making process starts by determining the test year revenue requirement - which for this study is FY 2019. The revenue requirement is the amount a utility needs to sufficiently fund the utility's O&M, debt service, and capital expenses, and reserve funding.

2.) Cost of Service Analysis (COS)

The annual cost of providing water service is distributed among customer classes commensurate with their service requirements. A COS analysis involves the following:

1. Functionalizing costs. This process takes each cost item in the City's budget and organizes the items collectively based on what function is served. Examples of cost functions are supply, treatment, transmission, distribution, storage, meter servicing and customer billing and collection.
2. Allocating functionalized costs to cost components. This process allocates the functionalized costs to cost components. Cost components include base, maximum day, maximum hour[4], meter service, customer service and conservation costs.
3. Distributing the cost components. This analysis distributes the cost components, using unit costs, to customer classes in proportion to their demands on the water system. This is described in the M1 Manual published by AWWA.

[4] *Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.*

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands).[5] Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating and maintaining facilities to meet peak demands. These peak demand costs need to be allocated to those customers and customer classes whose water usage results in the City incurring the associated costs. In other words, not all customer classes share the same responsibility for peaking related costs.

3.) Rate Design and Calculations

Rates do more than simply recover costs. Within the legal framework and industry standards, properly designed rates should support and optimize a blend of various utility objectives, such as conservation, affordability for essential needs, and revenue stability, among other objectives. Rates may also act as a public information tool in communicating these objectives to customers.

4.) Rate Adoption

Rate adoption is the last step of the rate-making process to comply with Proposition 218. Raftelis documented the rate study results in this Study Report to help educate the public about the proposed changes, the rationale and justifications behind the changes, and their anticipated financial impacts in lay terms.

[5] System capacity is the system's ability to supply water to all delivery points at the time when demanded. Coincident peaking factors are calculated for each customer class at the time of greatest system demand. The time of greatest demand is known as peak demand. Both the operating costs and capital asset related costs incurred to accommodate the peak flows are generally allocated to each customer class based upon the class's contribution to the peak month, day and hour event.

4. Cost of Service Analysis

A Cost of Service analysis distributes a utility's revenue requirement (yearly revenue needed) to each customer class. This is done by allocating the City's revenue requirement to the **cost causation components**. The cost causation components include:

1. Base (average) costs[6]
2. Peaking costs (maximum day and maximum hour)
3. Meter service
4. Billing and customer service
5. Fire protection
6. Conservation
7. General and administrative costs

Additional cost components can include pumping zone costs and supply costs. Peaking costs are further divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum hour usage on the maximum usage day. Both maximum day and maximum hour peaking demand is used to calculate peaking unit rates to distribute costs to customer classes. Peaking costs are allocated in proportion to how the different customer classes use water during peak day and hour demands. Different facilities, such as distribution and storage facilities are designed to meet the peaking demands of customers. Therefore, extra capacity[7] costs include the O&M and capital costs associated with meeting peak customer demand. This method is consistent with the AWWA M1 Manual and is widely used in the water industry to perform cost of service analyses.

4.1 Allocation of Expenses to Cost Components

In a Cost of Service analysis, the City's expenses are allocated to the cost causation components. To do so it is necessary to identify system-wide peaking factors which are shown in column B, Table 4-1. The system-wide peaking factors are used to derive the cost component allocation bases (i.e., percentages) shown in columns C through E of Table 4-1. Functionalized[8] expenses are then allocated to the cost components using the allocation bases shown in column A. To understand the interpretation of the percentages shown in columns B through F we must first establish the base use as the average daily demand during the year – which is assigned an allocation basis of 1. If the base allocation basis is used to allocate an expense, it means that the costs associated with that expense are to meet average daily demand (base) related costs.

Expenses that are allocated to the cost causation components using the maximum day bases (line 2) attribute 38% (1.00/2.18 -0.075, which is half of the fire allocation or 7.5%) of the demand (and therefore costs) to base (average daily demand) use and the remaining 47% to maximum day (peaking) use. Expenses allocated using the maximum hour bases assume 21% (1.00/3.62 less 1/3 of fire allocation) of costs are due to base demands, 26% due to max day ((2.18-1.00/3.62 less 1/3 of fire)) and 33% ((3.62-2.18)/3.62 less 1/3 of fire allocation) are due to max hour costs. Twenty percent of costs

[6] The base component can be further divided into supply and base/delivery cost components as discussed in Section 6.3.
[7] The terms extra capacity, peaking and capacity costs are used interchangeably.
[8] Functions of a water utility are: supply, treatment, transmission and distribution, storage, meter service, customer service, general & administration and fire protection.

allocated using the max hour bases is allocated to fire protection. Fire protection cost allocations (of max day and max hour) normally range from 10% to 20% based on potential fire demands of the system. Collectively the maximum day and hour cost components are known as peaking costs. These allocation bases are used to assign City O&M functions, shown in column A of Table 4-2, to the cost causation components also shown across the top of Table 4-2

Table 4-1: System-Wide Peaking Factors and Allocation to Cost Components

Line No.	Allocation Bases (A)	System Wide Peaking Factor (B)	Base (C)	Max Day (D)	Max Hour (E)	Total Fire (F)
1	Base	1.00	100%	0%	0%	0%
2	Max Day	2.18	38%	47%	0%	15%
3	Max Hour	3.62	21%	26%	33%	20%

Table 4-2: Allocation of O&M Expenses to Cost Causation Components

Line No.	O&M Function (A)	Allocation Basis (B)	Supply (C)	Base (D)	Max Day (E)	Max Hour (F)	Fire (G)	Meter (H)	Customer (I)	General (J)	Lifeline (J)	Con-servation (J)	Pumping Zone (K)	Total (L)
1	Water Production	Supply	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
2	Pump Zones (11H, 12H ,9)	Pumping Zones	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	100%
3	Water Treatment	Max Day	0%	38%	47%	0%	15%	0%	0%	0%	0%	0%	0%	100%
4	Distribution	Max Hour	0%	21%	26%	33%	20%	0%	0%	0%	0%	0%	0%	100%
5	General & Admin (M & O)[1]	General	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
6	Admin & Engineering	General	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
7	Business Services	General	0%	0%	0%	0%	0%	0%	80%	20%	0%	0%	0%	100%
8	Water Conservation	Conservation	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
9	Customer Service Field Oper	Customer	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
10	Water Production	Supply	$12,848,009	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$12,848,009
11	Pump Zones (11H, 12H ,9)	Pumping Zones	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$83,703	$83,703
12	Water Treatment	Max Day	$0	$1,568,105	$1,905,534	$0	$612,995	$0	$0	$0	$0	$0	$0	$4,086,634
13	Distribution	Max Hour	$0	$850,666	$1,052,472	$1,342,625	$811,441	$0	$0	$0	$0	$0	$0	$4,057,203
14	General & Admin (M & O)	General	$0	$0	$0	$0	$0	$0	$0	$2,055,564	$0	$0	$0	$2,055,564
15	Admin & Engineering	General	$0	$0	$0	$0	$0	$0	$0	$1,248,213	$0	$0	$0	$1,248,213
16	Business Services	General	$0	$0	$0	$0	$0	$0	$1,145,477	$286,369	$0	$0	$0	$1,431,847
17	Water Conservation	Conservation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$299,274	$0	$299,274
18	Customer Service Field Oper	Customer	$0	$0	$0	$0	$0	$546,455	$0	$0	$0	$0	$0	$546,455
19	**Total O&M Expenses**		**$12,848,009**	**$2,418,771**	**$2,958,006**	**$1,342,625**	**$1,424,436**	**$546,455**	**$1,145,477**	**$3,590,146**	**$0**	**$299,274**	**$83,703**	**$26,656,902**
20	**Total O&M % Allocation**		**48.2%**	**9.1%**	**11.1%**	**5.0%**	**5.3%**	**2.0%**	**4.3%**	**13.5%**	**0.0%**	**1.1%**	**0.3%**	**100.0%**

[1]Maintenance and Operations

The allocation bases and percentages shown in the top half of Table 4-2 in lines 1 through 9 are used to allocate the functionalized costs (shown in column L in lines 10 through 18) to each cost causation component. For example, the total expense for water treatment (line 12, column L) is multiplied by the percentages in line 3 to yield the amounts shown in line 12, columns C through K.

The allocation bases, in column B, are chosen based on the type of cost for each line item and the proportion of those costs associated with each cost causation component (max day, max hour, general, conservation, etc.). For example, distribution, line 13, is allocated using the max hour basis since distribution costs are associated with serving average day demands and peak day demands in proportion to max hour allocations identified in Table 4-1. This is because the distribution and storage system must be sized and operated to meet max hour demands. Certain cost bases are identical to the cost causation components – such as supply and conservation – and therefore are easily allocated to the cost component with the same name. Lines 19 and 20 show the resulting allocation of all expenses to the cost causation components.

The total O&M expenses in line 19, column N equals the total FY 2019 O&M in line 24, of Table 2-11. This resulting allocation is used to allocate the City's operating revenue requirement (discussed in Section 4.2) to the cost components.

The City's capital assets are also allocated to the cost causation components as shown in Table 4-3. The resulting total asset allocation is derived in a similar manner as the O&M allocation in Table 4-2. Raftelis functionalized (shown in lines 1 through 10 of Table 4-3) the City's assets and then allocated them to the cost causation components in the same manner as O&M expenses. Part of the City's revenue requirement includes rate funded capital – which is discussed in Section 4.2. The capital portion of the revenue requirement (discussed in Section 4.2) is allocated to the cost causation components using the asset allocation shown in line 22 of Table 4-3.

Table 4-3: Allocation of Assets to Cost Causation Components

Line No.	Capital Allocation (A)	Allocation Basis (B)	Supply (C)	Base (D)	Max Day (E)	Max Hour (F)	Fire (G)	Meter (H)	Customer (I)	General (J)	Lifeline (J)	Conservation (J)	Pumping Zone (K)	TOTAL (L)
1	Supply	Supply	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
2	Treatment	Max Day	0%	38%	47%	0%	15%	0%	0%	0%	0%	0%	0%	100%
3	Pumps	Max Day	0%	38%	47%	0%	15%	0%	0%	0%	0%	0%	0%	100%
4	Reservoir	Max Hour	0%	21%	26%	33%	20%	0%	0%	0%	0%	0%	0%	100%
5	Distribution	Max Hour	0%	21%	26%	33%	20%	0%	0%	0%	0%	0%	0%	100%
6	Meter	Meter	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	100%
7	General	General	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
8	Land	General	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
9	Bldgs	General	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
10	Vehicles	General	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	100%
11	Supply		$53,097,064	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$53,097,064
12	Treatment		$0	$5,596,520	$6,800,792	$0	$2,187,761	$0	$0	$0	$0	$0	$0	$14,585,074
13	Pumps		$0	$976,759	$1,186,940	$0	$381,829	$0	$0	$0	$0	$0	$0	$2,545,528
14	Reservoir		$0	$5,974,188	$7,391,465	$9,429,193	$5,698,711	$0	$0	$0	$0	$0	$0	$28,493,557
15	Distribution		$0	$11,282,836	$13,959,501	$17,807,950	$10,762,572	$0	$0	$0	$0	$0	$0	$53,812,859
16	Meter		$0	$0	$0	$0	$0	$188,873	$0	$0	$0	$0	$0	$188,873
17	General		$0	$0	$0	$0	$0	$0	$0	$612,995	$0	$0	$0	$612,995
18	Land		$0	$0	$0	$0	$0	$0	$0	$13,628,115	$0	$0	$0	$13,628,115
19	Bldgs		$0	$0	$0	$0	$0	$0	$0	$207,554	$0	$0	$0	$207,554
20	Vehicles		$0	$0	$0	$0	$0	$0	$0	$200,238	$0	$0	$0	$200,238
21	**Total**		**$53,097,064**	**$23,830,303**	**$29,338,698**	**$27,237,144**	**$19,030,874**	**$188,873**	**$0**	**$14,648,902**	**$0**	**$0**	**$0**	**$167,371,858**
22	**Allocation to Cost Components**		**32%**	**14%**	**18%**	**16%**	**11%**	**0%**	**0%**	**9%**	**0%**	**0%**	**0%**	**100%**

4.2 Revenue Requirement Determination

Table 4-4 shows the revenue requirement derivation. The total revenue required from water rates is shown on line 19. The total in line 19, column B, is the O&M revenue requirement that is allocated to the cost components using the percentages derived in line 20 of Table 4-2. The capital revenue requirement in line 19, column C, is allocated to the cost components using the percentages derived in line 22 of Table 4-3.

Raftelis calculated the revenue requirement using budgeted FY 2019 expenses, which include water purchases, O&M expenses, capital expenses and existing debt service as shown in lines 2 – 6. To arrive at the rate revenue requirement in line 19, column D, revenue offsets are subtracted from other (non-rate) revenues and adjusted for annual cash balance. To account for the fact that the impending rate adjustment will take place four months into the fiscal year, the rate increase must be annualized so that the proposed rates collect the right amount of revenue (line 16). The adjustments, shown as negative values, are subtracted (therefore added as a result of subtracting a negative number) to arrive at the total revenue required from City rates in line 19 column D. This is the total amount the City's fixed service charges and volumetric rates are designed to collect in FY 2019 if rates were applied for a full Fiscal Year.

Line 7, column B, is the same as line 24 for FY 2019 in Table 2-11. The revenue offsets are taken from the other revenues lines 6 thru 11, in the FY 2019 column in Table 2-11. These non-rate revenues lower the revenue required from rates. The adjustment for cash balance, in line 15, is the net cash balance taken from Table 2-11. The adjustment for mid-year increase in line 16 adjusts the revenue adjustment modeled in the cash flow table (line 3 of Table 2-11) since this revenue adjustment is implemented three months into the fiscal year and must be annualized so that the proposed rates are calculated based on a full year's revenue needs.

Table 4-4: Revenue Requirement Determination

Line No.	Revenue Requirement	2019		
	(A)	(B)	(C)	(D)
1	Revenue Requirement	Operating	Capital	Total
2	Supply	$17,018,346	$0	$17,018,346
3	O&M Expenses	$9,638,556	$0	$9,638,556
4	Existing Debt Service	$0	$5,131,618	$5,131,618
5	Proposed Debt Service	$0	$0	$0
6	Rate Funded Capital Projects	$0	$12,138,316	$12,138,316
7	**Total Revenue Requirement**	**$26,656,902**	**$17,269,935**	**$43,926,837**
8				
9	Less: Revenue Offsets			
10	Interest Revenue	$134,291	$0	$134,291
11	Other Misc Revenues	$1,895,285	$0	$1,895,285
12	Total Revenue Offsets	$2,029,576	$0	$2,029,576
13				
14	Less: Adjustments			
15	Adjustment for Cash Balance	$12,413,808	$0	$12,413,808
16	Adjustment for Midyear Increase	($701,580)	$0	($701,580)
17	Total Adjustments	$11,712,229	$0	$11,712,229
18				
19	**Revenue Requirement from Rates**	**$12,915,097**	**$17,269,935**	**$30,185,032**

4.3 Allocation of Costs to Cost Components

The next step is to allocate the total revenue requirement in Table 4-4, to the cost components as shown in Table 4-5. Lines 1 and 2 of the table allocate the revenue offsets from line 12 in Table 4-4 to the cost components in proportion the capital and O&M allocations from Table 4-3 and Table 4-2 respectively. The O&M expenses and capital expenses are allocated to the cost components in lines 5 and 7. Line 6 subtracts the total allocated revenue offsets calculated in line 3. Line 8 shows the cost allocation before two final adjustments in lines 10 and 11. Line 10 reallocates general costs (column J) to the other cost components in proportion to each component's share of total costs. This reflects the fact that general costs support the other functions in proportion to their share of costs.

Line 11 reallocates peaking costs (columns E and F) as well as supply costs (columns C) to the meter component in column H. The positive value in column H is equal to the sum of the negative values in columns C through F. This reallocation to the meter component is so that the City can collect these costs through a fixed charge – since meter and customer costs (columns H and I) are collected through the fixed bi-monthly charge. The final allocation is shown in line 13. Line 14 shows whether the cost component is collected via fixed (bi-monthly) charge or a volumetric charge.

The next step is to derive the rates for each customer class using the cost components in Table 4-5 to collect the total amount shown in column M. This is discussed in detail in Section 5.

Table 4-5: Expense Allocation to Cost Components

Line No.		Allocation Basis	Peaking Costs									Pumping	
			Supply	Delivery	Max Day	Max Hour	Fire	Meter	Customer	General	Conservation	Zone	TOTAL
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
1	Interest Revenue	Capital	$42,602	$19,120	$23,540	$21,854	$15,269	$152	$0	$11,754	$0	$0	$134,291
2	Other Misc Revenue	O&M	$913,483	$171,973	$210,312	$95,460	$101,276	$38,853	$81,443	$255,257	$21,278	$5,951	$1,895,285
3	**Total Revenue Offsets**		**$956,086**	**$191,093**	**$233,852**	**$117,313**	**$116,546**	**$39,004**	**$81,443**	**$267,010**	**$21,278**	**$5,951**	**$2,029,576**
4													
5	Operating Expenses	O&M	$7,202,986	$1,356,037	$1,658,348	$752,716	$798,582	$306,360	$642,190	$2,012,746	$167,782	$46,927	$14,944,673
6	Revenue Offset	Revenue	($956,086)	($191,093)	($233,852)	($117,313)	($116,546)	($39,004)	($81,443)	($267,010)	($21,278)	($5,951)	($2,029,576)
7	Capital Expenses	Capital	$5,478,716	$2,458,883	$3,027,256	$2,810,411	$1,963,663	$19,489	$0	$1,511,518	$0	$0	$17,269,935
8	**Cost Allocation**		**$11,725,616**	**$3,623,827**	**$4,451,752**	**$3,445,814**	**$2,645,700**	**$286,844**	**$560,747**	**$3,257,253**	**$146,504**	**$40,975**	**$30,185,032**
9	Allocation without General		44%	13%	17%	13%	10%	1%	2%	0%	1%	0%	0%
10	Allocation of General Cost ($)		$1,418,361	$438,347	$538,495	$416,815	$320,031	$34,697	$67,829	($3,257,253)	$17,721	$4,956	$0
11	Reallocation to Meter Component		($1,314,398)	$0	($4,241,710)	($3,283,234)	$0	$8,839,342	$0	$0	$0	$0	$0
12	**Adjusted Cost Allocation**		**$11,829,579**	**$4,062,174**	**$748,537**	**$579,394**	**$2,965,730**	**$9,160,884**	**$628,576**	**$0**	**$164,225**	**$45,932**	**$30,185,032**
13	**Allocated to Cost Components**		**39%**	**13%**	**2%**	**2%**	**10%**	**30%**	**2%**	**0%**	**1%**	**0%**	**100%**
14	**Recovery Mechanism**		**Volumetric**	**Volumetric**	**Volumetric**	**Volumetric**	**Fixed**	**Fixed**	**Fixed**	**NA**	**Volumetric**	**Volumetric**	

5. Rate Derivation

5.1 Existing Rate Structure and Rates

The City's existing rate structure consists of a fixed bi-monthly service charge by meter size and a set of volumetric rates depending on customer type and amount of usage. The City has a three-tier, volumetric rate structure for single family customers, and a 2-tier volumetric rate structure for all other classes. Table 5-1 and Table 5-2 show the existing rate structure and rates. Raftelis recommends discontinuing the Outside City charges to meet Proposition 218 requirements which states that rates must be based the cost to serve customers.

Table 5-1: Existing Rate Structure and Rates (Bi-monthly)

Existing Bi-monthly Fixed Meter Charge		Existing Bi-monthly Private Fire Protection	
Inside City	**Jan 1, 2018**	**Inside City**	**Jan 1, 2017**
5/8"	$50.69	2" or less	$70.76
3/4"	$68.45	3"	$122.76
1"	$104.03	4"	$184.17
1-1/2"	$192.96	6"	$340.07
2"	$299.67	8"	$493.65
3"	$548.64	10"	$649.58
4"	$904.35	12"	$772.41
6"	$1,793.60		
8"	$2,860.67		
10"	$4,105.65		
Outside City		**Outside City**	
5/8"	$63.35	2" or less	$89.65
3/4"	$85.58	3"	$153.42
1"	$130.04	4"	$231.40
1-1/2"	$241.22	6"	$427.52
2"	$374.59	8"	$618.88
3"	$685.86	10"	$812.63
4"	$1,130.44	12"	$968.58
6"	$2,242.03		
8"	$3,575.89		
10"	$5,132.07		

Table 5-2: Existing Volumetric Rates

Inside City		Outside City	
Single Family Residential		**Single Family Residential**	
Tier 1	$0.98	Tier 1	$1.24
Tier 2	$1.79	Tier 2	$2.23
Tier 3	$3.21	Tier 3	$4.05
All Other Customers		**All Other Customers**	
Tier 1	$0.98		$1.24
Tier 2	$1.95		$2.48

5.2 Proposed Rate Structure

In Table 4-5, the City's revenue requirement was allocated to each cost causation component. Table 5-3 shows how the City will collect each cost component – through a fixed service charge, private fire charge or a volumetric charge. The total in Table 5-3 matches the total in column M of Table 4-5. Table 5-3 shows that the City will collect approximately 43% through the Bi-monthly and private fire fixed charges and 57% through volumetric rates.

Table 5-3: Rate Structure

Line No.	Cost Component	Cost	%
1	Meter and Capacity Costs	$9,160,884	
2	Customer	$628,576	
3	Public Fire Costs	$2,199,258	
4	**Total Collected through the Bi-monthly Meter Charge**	**$11,988,718**	**39.7%**
5			
6	**Private Fire Charge**	**$766,473**	**2.5%**
7			
8	Supply	$11,829,579	
9	Delivery	$4,062,174	
10	Max Day and Max Hour (Peaking or Extra Capcity Costs)	$1,327,931	
11	Conservation	$164,225	
12	Pumping Costs	$45,932	
13	**Total Collected through Volumetric Rates**	**$17,429,842**	**57.7%**
14	**Total Revenue from Rates**	**$30,185,032**	**100%**

5.3 Proposed Bi-Monthly Service Charge

The City's number of meter equivalent units is shown in Table 5-4, which is used to derive the bi-monthly service charge to collect the amount shown in Table 5-3. Equivalent meter units account for the potential flow through larger meters and equate this flow to the total flow through the smallest meter – in this case - the 5/8-inch meter. Equivalent meter units are calculated by multiplying the number of meters (column D) by the American Water Works Association (AWWA) capacity ratios in column F to yield equivalent meters in column G.

Table 5-4: Derivation of Equivalent Meter Units

Line No.	Meter Size (A)	Meter Count (B)	Construction Meters (C)	Total (D)	AWWA Operating Capacity (gpm) (E)	Operating Capcity Ratio to a 5/8" Meter (F)	Equivalent Meter Units (G)
1	5/8"	26,860		26,860	1.00	1.0	26,860
2	3/4"	70		70	1.50	1.5	104
3	1"	2,460	3	2,463	2.50	2.5	6,157
4	1-1/2"	844		844	5.00	5.0	4,221
5	2"	971		971	8.00	8.0	7,769
6	3"	81	52	133	15.00	15.0	1,998
7	4"	47		47	25.00	25.0	1,167
8	6"	17		17	50.00	50.0	863
9	8"	6		6	80.00	80.0	487
10	10"	3		3	115.00	115.0	350
11	12"	0		0	250.00	250.0	0
		31,359	**55**	**31,414**			**49,977**

5.3.1 BI-MONTHLY SERVICE CHARGE COMPONENTS

There are two cost components that comprise the bi-monthly service charge: meter service and customer service, which are described below. This charge recognizes the fact that the City incurs fixed costs related to maintaining meters and billing customers. It also collects a portion of capacity and base costs through the service charge to attain revenue stability. Table 5-5 shows the derivation of these components for 5/8-inch meters.

Table 5-5: Bi-monthly Meter and Customer Charge Derivation

Line No.	Meter Charge Component of Bimonthly Charge	
1	Meter Cost	$9,160,884
2	Public Fire Cost	$2,199,258
3	Total EMUs	49,977
4	Yearly Meter Charge	$227.31
5	**Bi-monthly Meter Charge**	**$37.88**
	Customer Service Component of Bimonthly Charge	
6	Customer Service Cost	$628,576
7	Total Accounts	31,414
8	Bills per year	188,486
9	**Bi-monthly Customer Service Charge**	**$3.33**

5.3.2 METER COMPONENT

The meter service component recovers two types of costs: 1) costs associated with maintaining and servicing meters (meter service component) and 2) capacity (also known as peaking) costs. Both of these costs increase as the meter size increases and are proportional to the AWWA hydraulic capacity ratios shown in column E of Table 5-4. The capacity ratios, which are a function of a meter's safe maximum flow rate, are used to increase the meter service component for larger capacity meters – as shown in

column D of Table 5-6. This assumes that the potential capacity (peaking) demand is proportional to the potential flow through each meter size as established by the AWWA hydraulic capacity ratios. The ratios shown, in column C, are the ratio of potential flow through each meter size compared to the flow through a 5/8-inch meter. The 5/8-inch meter is used as the base since it is the smallest and most numerous meter size. Larger meters have the potential to demand more peak capacity. For example, column C of Table 5-6 shows that the hydraulic capacity of a 2-inch meter is 8.0 times that of a 5/8-inch meter and therefore the meter service component is 8.0 times that of the 5/8-inch meter. The meter service component for a 5/8-inch meter was derived in Table 5-5. As shown in column D, the meter service and capacity component for larger meters is scaled up using the AWWA capacity ratios shown in column C.

Peaking costs are shown as max day and max hour costs in Table 4-5. A portion of capacity (peaking) related costs were allocated to the meter service component so that it can be collected through the fixed bi-monthly charge and allow the City to reach its fixed revenue goals. Allocating extra capacity costs by meter size (instead of using the maximum day and maximum hour cost components and allocating these costs using peaking factors as discussed in Section 5.5) is a common way to provide greater revenue stability, especially in-light of decreasing revenues during a drought or other reasons for sales declines. Stated in another way – it is quite common to reallocate peaking costs (max day and max hour) to be collected through the service charge – this is the basis for the reallocation in line 11 of Table 4-5.

The total expense recovered through the service charge is shown on line 1 of Table 5-5 (line 1 is the same as line 12, column H in Table 4-5). Public fire protection costs are also recovered through the service charge. Public and private fire protection costs are derived in Section 5.4

5.3.3 CUSTOMER COMPONENT

The customer component derivation, shown in the bottom portion of Table 5-5, recovers costs associated with meter reading, customer billing and collection, as well as answering customer calls. These costs are the same for all meter sizes as it costs the same to bill a small meter as it does a larger meter.

5.3.4 TOTAL BI-MONTHLY SERVICE CHARGE FOR ALL METERS

Table 5-6 shows the derivation of the bi-monthly service charge by meter size in column F which is the addition of the meter service and capacity component (column D), which increases in proportion to AWWA Capacity ratios (shown in column C) and the customer charge, which is the same for each meter size (column E). The total estimated revenue in line 11 is equal to the sum of line 1, 2 and 6 in Table 5-5.

Table 5-6: Bi-monthly Service Charge Derivation by Meter Size

Line No.	Meter Size (A)	Total Meter Count (B)	AWWA Capacity Ratio (C)	Meter Service and Capacity Component (D)	Customer Service Component (E)	Proposed Bi-monthly Meter Charge (F)	Proposed Revenue (G)
1	5/8"	26,860	1.00	$37.88	$3.33	**$41.22**	$6,643,056
2	3/4"	70	1.50	$56.83	$3.33	**$60.16**	$25,137
3	1"	2,463	2.50	$94.71	$3.33	**$98.05**	$1,448,803
4	1-1/2"	844	5.00	$189.42	$3.33	**$192.76**	$976,305
5	2"	971	8.00	$303.08	$3.33	**$306.41**	$1,785,278
6	3"	133	15.00	$568.27	$3.33	**$571.61**	$456,848
7	4"	47	25.00	$947.12	$3.33	**$950.45**	$266,280
8	6"	17	50.00	$1,894.24	$3.33	**$1,897.57**	$196,470
9	8"	6	80.00	$3,030.78	$3.33	**$3,034.12**	$110,875
10	10"	3	115.00	$4,356.75	$3.33	**$4,360.08**	$79,665
11		**31,414**					**$11,988,718**

Table 5-7 shows the bi-monthly fixed service charge for the next five fiscal years. They are derived by applying the revenue adjustments shown in Table 2-10 to the service charges for FY 2019 shown in Table 5-6.

Table 5-7: Five Year Service Charges

Meter Size (A)	Current Inside City Charge (B)	FY 2019 Oct 1, 2018 (B)	FY 2020 Jul 1, 2019 (C)	FY 2021 Jul 1, 2020 (D)	FY 2022 Jul 1, 2021 (E)	FY 2023 Jul 1, 2022 (F)
5/8"	$50.69	$41.22	$45.44	$50.10	$55.24	$60.90
3/4"	$68.45	$60.16	$66.33	$73.13	$80.62	$88.89
1"	$104.03	$98.05	$108.10	$119.18	$131.39	$144.86
1-1/2"	$192.96	$192.76	$212.52	$234.30	$258.32	$284.79
2"	$299.67	$306.41	$337.82	$372.45	$410.62	$452.71
3"	$548.64	$571.61	$630.20	$694.79	$766.01	$844.52
4"	$904.35	$950.45	$1,047.88	$1,155.28	$1,273.70	$1,404.25
6"	$1,793.60	$1,897.57	$2,092.07	$2,306.51	$2,542.93	$2,803.58
8"	$2,860.67	$3,034.12	$3,345.11	$3,687.99	$4,066.01	$4,482.77
10"	$4,105.65	$4,360.08	$4,806.99	$5,299.71	$5,842.93	$6,441.83

5.4 Proposed Private Fire Charges

Table 5-8 shows the first step in the derivation of private fire charges. The total amount associated with public and private fire protection was derived and shown at the bottom of Table 4-5, column G. We then allocate this total cost to public and private customers in proportion to the potential fire demand of each – the results are shown in column F of Table 5-8. Line 1 calculates the demand factor in column D of public fire hydrants using the Hazen William equation for pipe flow.[9] Lines 2 through 8, column D, calculate the potential demand through private fire connections also using the Hazen Williams equation. The number of units in service (column C) are multiplied by the demand factor (column D) to calculate the demand units in column E. The resulting potential fire demand for public and private connections,

[9] The potential flow is the diameter of the outlet/connection raised to the 2.63 power – the Hazen Williams equation for pipe flow. For a 2" outlet the demand factor would be 2^2.63 = 6.2.

and therefore the cost allocation for public fire and private fire costs, is shown in column F of Table 5-8. The percentages are the proportion of the demand units for public and private connections.

Table 5-8: Calculation of Public and Private Fire Costs

Line No. (A)	Connection Size (in) (B)	Number in Service (C)	Demand Factor (D)	Demand Units (E)	% of Total Fire Protecion Cost (F)
1	1- 4" Port and 2 - 2.5" Port	4,836	60.6	292,983	**74.2%**
Private Fire Protection Potential Demand Calculation					
Line No.	**Connection Size (in)**	**Number in Service**	**Demand Factor**	**Demand Units**	**% of Total Fire Protecion Cost**
2	2"	18	6.2	111	
3	3"	0	18.0	0	
4	4"	94	38.3	3,602	
5	6"	166	111.3	18,478	
6	8"	225	237.2	53,371	
7	10"	59	426.6	25,168	
8	12"	2	689.0	1,378	
9		564		102,109	**25.8%**
10	Public and Private	**5,400**		**395,092**	**100%**

[1]Diameter of the connection raised to 2.63 - Based on the Hazen-Williams equation for flow.

Table 5-9 shows the derivation of the bi-monthly private fire charge in column D in the lower portion of the table. In lines 2 and 3, fire protection cost are allocated to public and private customers. In line 4, private fire costs are divided by the private fire demand units, which were derived in Table 5-8, to get the yearly and bi-monthly private fire charges per demand unit in lines 5 and 6. To get the charge for each private fire connection size, the charge per demand unit is multiplied by the demand factors in column C, resulting in the bi-monthly charges shown in column D. The proposed private fire charges are lower than the current charges. The proposed private fire charges are based on the potential flow through each private fire connection and are calculated in accordance with principles set forth in the American Water Works Association M1 Manual, *Principles of Water Rates, Fees and Charges*. [10]

[10] Section VII of the fifth edition

Table 5-9: Calculation of Private Fire Charges

Line No.				Cost		
(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	Total Public and Private Fire		100%	$2,965,730		
2	Public Fire Protection Cost		74.2%	$2,199,258		
3	Private Fire Protection Cost		25.8%	$766,473		
4	Private Fire Demand Units			102,109		
5	Yearly Cost per Demand Unit			$7.51		
6	**Bi-monthly Charge per Demand Unit**			**$1.25**		

Line No.	Connection Size (in)	Demand Factor	Proposed Bi-monthly Charge	Current Inside Bi-monthly Charge	Total Private Fire Revenue	Current Private Fire Revenue
7	2"	6.2	**$7.74**	$70.76	$836	$7,642
8	3"	18.0	**$22.50**	$122.76	$0	$0
9	4"	38.3	**$47.94**	$184.17	$27,038	$103,873
10	6"	111.3	**$139.26**	$340.07	$138,701	$341,337
11	8"	237.2	**$296.76**	$493.65	$400,629	$668,682
12	10"	426.6	**$533.68**	$649.58	$188,923	$230,931
13	12"	689.0	**$862.04**	$772.41	$10,345	$10,446
					$766,473	**$1,362,911**

The total projected fire charge revenue is equal to the amount shown in line 6 of Table 5-3. Rates will increase in subsequent years by the adjustments shown in Table 2-10 in the same manner as the Service Charges.

	FY 2019 Oct 1, 2018	FY 2020 Jul 1, 2019	FY 2021 Jul 1, 2020	FY 2022 Jul 1, 2021	FY 2023 Jul 1, 2022
2"	$7.74	$8.54	$9.41	$10.38	$11.10
3"	$22.50	$24.80	$27.34	$30.15	$32.26
4"	$47.94	$52.85	$58.27	$64.24	$68.74
6"	$139.26	$153.53	$169.27	$186.62	$199.68
8"	$296.76	$327.18	$360.72	$397.69	$425.53
10"	$533.68	$588.38	$648.69	$715.18	$765.25
12"	$862.04	$950.40	$1,047.82	$1,155.22	$1,236.09
Rate Increase		**10.25%**	**10.25%**	**10.25%**	**7.00%**

Table 5-10: FY 2018 – 2023 Fireline Bi-monthly Charges

5.5 Volumetric Rates

5.5.1 TOTAL VOLUMETRIC REVENUE

Table 5-3, line 13 shows the total amount of revenue the volumetric rates are designed to collect. The next step is to derive each component of the volumetric rate for each class.

5.5.2 CUSTOMER

The City decided to create two new customer classes to more accurately allocate costs based on usage trends. The first class contains all customers except irrigation customers. The second class contains irrigation customers. The rates for irrigation customers are higher due to the higher peaking (extra capacity) demands they place on the water system.

5.5.3 TIER DEFINITIONS

The City proposes to change the tier definitions from those shown in Column B to those shown in column C of Table 5-11. Column G shows the basis for each tier. Column D shows the percent of customers (bills) that will fall in each tier and Column F shows the amount of water that will be billed in each tier.

Table 5-11: Proposed Single Family Residential Tiers

Line No.	SFR Tier (A)	Current SFR[1] Teir Breakpoint (B)	Proposed Non-Irrigation Customer Breakpoint (C)	Percent of SFR[1] Bills in Each Tier (D)	Percent of SFR Use in Each Tier (E)	Proposed SFR Use by Tier (F)	Basis (G)
1	Tier 1	15	9	14.8%	36.8%	1,367,446	The estimated water from the three most economical water sources divided by all accounts on a bi-monthly basis (divided by 6) = 9 hcf
2	Tier 2	75	31	63.6%	48.6%	1,804,038	The estimated volume of treated Chino Hills well water divided by all accounts on a bi-monthly basis added to Tier 1 (22+9)
3	Tier 3	>75	>31	21.6%	14.6%	540,941	Tier 3 is water use beyond Tier 2
4				**100.0%**	**100.0%**	**3,712,426**	

[1]SFR = Single Family Residential

5.5.4 VOLUMETRIC RATE DERIVATION

The total volumetric rate is the summation of unit rates for each cost component: Supply, Delivery, Peaking (Max day and hour), Conservation and Pumping. Each unit rate will be derived and added together to get the total volumetric rate for each tier and customer class. Each cost component is defined below.

5.5.5 COST COMPONENT DEFINITIONS

The commodity rates for each class and tier are derived by summing the unit rates ($ / HCF) for:

1. Water Supply
2. Delivery
3. Peaking
4. Conservation
5. Pumping

Water Supply costs are costs associated with obtaining and treating water to make it ready for delivery from each City source:

1. Groundwater,
2. Local Surface water,
3. Imported water from Metropolitan Water District through Three Valley Municipal Water District.

Delivery costs are the operating and capital costs associated with delivering water to all customers through the distribution system (pipelines and storage reservoirs) at a constant average rate of use – also known as serving customers under average daily demand conditions. Therefore, delivery costs are spread over all units of water which results in an equal delivery unit cost for all classes and tiers.

Peaking costs, or extra-capacity costs, represent costs incurred to meet customer peak demands in- excess of base use (or in excess of average daily demand). Peaking costs are the sum of columns E and F in Table 4-5 – that is maximum day and maximum hour costs. Some of the peaking costs are collected through the service charge and the remainder through the volumetric rate. The amounts collected through each charge are shown in Table 5-3. Table 4-5, in line 11, shows the max day and max hour amounts that are reallocated to the meter component – so that they can be collected through the service charge. For the portion of peaking costs collected through the volumetric rate, peaking costs are distributed to each tier and class using peaking factors derived from customer use data – discussed later in this section. For the portion of peaking costs collected through the fixed charge, AWWA hydraulic capacity factors are used to distribute peaking costs to the various meter sizes – as derived in Table 5-6.

Conservation costs are costs which cover water conservation and efficiency programs and efforts. These programs are in existence due to for all customers to reduce their demands with extra emphasis on high volume water users. Therefore, conservation costs are allocated progressively to the upper tiers, for which conservation programs are designed to promote water efficiency. The allocation of conservation costs to upper tiers proportionately allocates such costs to those customers whose greater demand create the need for conservation and efficiency programs and efforts.

5.5.6 DERIVATION OF THE UNIT COST BY COST COMPONENT

Supply Unit Costs

Table 5-12 shows the supply cost derivation by tier for all customers. In order to fairly and equitably distribute the water supply to the customer classes, the City decided to allocate water in proportion to the number of accounts by class. The non-irrigation class represents approximately 99% of accounts. **Appendix A** shows the allocation of water to each class. Line 2 in Table 5-11 below shows the total amount of water allocated to the non-irrigation and irrigation classes. Since 99% of all customers are non-irrigation), this class has access to 99% of the most economical water (in order of cost) until its water needs are met.

The supply cost was determined for each non-irrigation tier by taking the average rate for each source weighted by the water use from each source. For example, the Tier 1 rate is as follows: (1.357M x $1.04 + 55k x $1.15 +133k x $1.32)/1.545 million hcf = $1.07 – shown in line 4 column L. The same calculation is performed for the remaining tiers.

Within this non-irrigation class, the more economical water is allocated to the lower tiers as shown in Table 5-11. As shown in line 4, Tier 1's water needs are met from the three most economical water sources (columns E, F and G). Tier 2 is allocated water from the Chino Wells (columns G and H). Tier 3 is allocated the remaining more expensive water sources. The supply cost for each water source is shown in line 10 of Table 5-12. The supply costs are derived in **Appendix A.** These supply costs are offset by the City's use of fund balances and operating deficit to minimize customer impacts. The true cost of water is slightly higher than that shown.

The lower half of Table 5-12 shows the same exact calculations to derive the tiered rate for irrigation customers. Once the non-irrigation customer class' needs are met, the remaining water sources are available to the irrigation class. Because the irrigation class represents 1% of the District's accounts, it is allocated 1% of the three most economical water supplies. Since irrigation customers' supply includes a higher percentage of water from the two most expensive sources, the supply rate for the upper tiers is higher than non-irrigation customers.

Table 5-12: Supply Cost Derivation for Non-Irrigation and Irrigation Customers

Non-Irrigation Customers

Line No.	(A)	(B)	(C)	(D)	Total Water Supply by Source (HCF) (E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(K)	(L)
1	Tier	Bi-Monthly BreakPoint	% of Use	Use in Tier	Six Basin Wells - Treated	Spadra Wells - Untreated	Chino Wells- Untreated	Chino Wells - Treated	MWD (TVMWD) - Tier 1	Pedley Surface Wtr Trtmnt Plnt - Trtd	Six Basin Wells - Untreated	Spadra Wells - Treated	MWD (TVMWD) - Tier 2	Total (hcf)	Tier Rate ($/ hcf)
2					**1,357,193**	**55,167**	**351,918**	**4,193,796**	**1,426,567**	**14,823**	**-**	**-**	**-**	**7,399,464**	
3															
4	Tier 1	9	41.6%	1,545,887	1,357,193	55,167	133,527	-	-	-	-	-	-	**1,545,887**	**$1.07**
5	Tier 2	31	60.8%	2,255,988	-	-	218,391	2,037,597	-	-	-	-	-	**2,255,988**	**$1.49**
6	Tier 3	>31	96.9%	3,597,588	-	-	-	2,156,199	1,426,567	14,823	-	-	-	**3,597,588**	**$1.66**
7	Tier 4		0.0%	-	-	-	-	-	-	-	-	-	-	**-**	**NA**
8			**199.3%**	**7,399,464**	**1,357,193**	**55,167**	**351,918**	**4,193,796**	**1,426,567**	**14,823**			**-**	**7,399,464**	
9															
10	**Average Supply Cost by Water Source ($ / HCF)**				**$1.04**	**$1.15**	**$1.32**	**$1.51**	**$1.88**	**$1.91**	**NA**	**NA**	**NA**	**$1.49**	

Irrigation Customers

Line No.	Tier	onthly Breakl	% of Use	Use in Tier	Total Water Supply by Source (HCF) Six Basin Wells - Treated	Spadra Wells - Untreated	Chino Wells- Untreated	Chino Wells - Treated	MWD (TVMWD) - Tier 1	Pedley Surface Wtr Trtmnt Plnt - Trtd	Six Basin Wells - Untreated	Spadra Wells - Treated	MWD (TVMWD) - Tier 2	Total (hcf)	Tier Rate ($/ hcf)
11	Tier	Bi-Monthly BreakPoint	% of Use	Use in Tier	Six Basin Wells - Treated	Spadra Wells - Untreated	Chino Wells- Untreated	Chino Wells - Treated	MWD (TVMWD) - Tier 1	Pedley Surface Wtr Trtmnt Plnt - Trtd	Six Basin Wells - Untreated	Spadra Wells - Treated	MWD (TVMWD) - Tier 2	Total (hcf)	Tier Rate ($/ hcf)
12					**17,185**	**699**	**4,456**	**-**	**22,782**	**401,493**	**-**	**-**	**-**	**446,614**	
13															
14	Tier 1	9	4.3%	19,408	17,185	699	1,525	-	-	-	-	-	-	**19,408**	**$1.07**
15	Tier 2	31	9.4%	42,081	-	-	2,931	-	22,782	16,368	-	-	-	**42,081**	**$1.86**
16	Tier 3	>31	86.2%	385,125	-	-	-	-	-	385,125	-	-	-	**385,125**	**$1.91**
17	Tier 4	0	0.0%	-	-	-	-	-	-	-	-	-	-	**-**	**NA**
18			**100.0%**	**446,614**	**17,185**	**699**	**4,456**	**-**	**22,782**	**401,493**			**-**	**446,614**	
19															
20	**Average Supply Cost by Water Source ($ / HCF)**				**$1.04**	**$1.15**	**$1.32**	**$1.51**	**$1.88**	**$1.91**	**NA**	**NA**	**NA**	**$1.87**	

5.5.7 DELIVERY COST

The delivery rate in Table 5-13 is derived by first calculating the average supply rate in line 3. The average supply rate is the supply revenue requirement (line 8 in Table 5-3) divided by water sales – this calculation is shown in line 3 of Table 5-13. To calculate the delivery rate, the average supply rate is subtracted from the City's cost to obtain, treat and deliver water (known as the base rate and shown in line 4). The base rate is calculated by adding supply, treatment and delivery costs, which is the sum of lines 8 & 9 in Table 5-3, and is shown in line 4 of Table 5-12, and dividing by total water sold (line 5). The base rate is the unit cost to supply and deliver water under ***average daily demand (ADD)*** conditions. Subtracting the average supply cost, line 7 identifies the rate to *deliver* water under average daily demand conditions in line 8. This delivery cost is the same for all classes and for all tiers.

Table 5-13: Derivation of the Delivery Unit Cost

Line No.	Item	
1	Supply Revenue Requirement	
2	Water Sold (hcf)	7,846,078
3		
4	**Average Supply Rate ($/hcf)**	**$1.51**

Line No.	Item	
1	Supply Revenue Requirement	$11,829,579
2	Water Sold (hcf)	7,846,078
3	**Average Supply Rate ($/hcf)**	**$1.51**
4	Base Cost (supply, treatment & delivery)	$15,891,753
5	Water Sold (hcf)	7,846,078
6	Base Rate (ADD conditions)	$2.03
7	Delivery Rate (under ADD conditions)	$1.51
8	**Delivery Rate (ADD conditions, $/hcf)**	**$0.52**

5.5.8 PEAKING RATE

Table 5-14 shows the peaking rate derivation for each class. Total peaking costs shown in line 10 of Table 5-3 are allocated in proportion to the peaking factors shown in column G of Table 5-14. The peaking factors (column G) were derived using City water use data and are the ratio of peak water use (during the maximum bi-monthly summer billing cycle) divided by the average bi-monthly water use. The peaking rate (column K) is calculated by dividing the peaking costs (column J) by water use (column C) for each class and tier. The peaking rate is correlated with the peaking factor – a higher peaking factor correlates to a higher peaking rate. The total peaking costs in column J of Table 5-14 matches the total peaking costs shown in Table 5-3 (line 10).

Table 5-14: Derivation of Peaking Rate

Line No.	Customer Class (A)	Tier Breakpoint (hcf) (B)	Annual Water Use (hcf) (C)	% of Total Use (D)	Peaking Factor (G)	Weighted Use by Peaking Factor (H)	Percentage of Weighted Use (I)	Allocated Peaking Costs (J)	Peaking Rate ($ / hcf) (K)
1	**Non-Irrigation**								
2	Tier 1	9	1,545,887	20%	1.06	1,635,840	17%	$226,368	$0.15
3	Tier 2	31	2,255,988	29%	1.20	2,707,870	28%	$374,716	$0.17
4	Tier 3	>31	3,597,588	46%	1.28	4,602,602	48%	$636,909	$0.18
5									
6	**Irrigation**								
7	Tier 1	9	19,408	0%	1.18	22,913	0%	$3,171	$0.16
8	Tier 2	31	42,081	1%	1.19	50,247	1%	$6,953	$0.17
9	Tier 3	>31	385,125	5%	1.50	576,777	6%	$79,815	$0.21
10	Total		7,846,078	100%		9,596,249	100%	$1,327,931	

5.5.9 CONSERVATION RATE

Table 5-15 shows the conservation rate derivation for all customers. The final conservation rate, shown in column G, is derived by dividing the conservation costs, shown in column D for all classes, by annual use (column B). The total conservation costs shown in column D matches with the conservation cost shown in Line 11 of Table 5-3.

Table 5-15: Derivation of Conservation Unit Costs

Customer Class (A)	Annual Use (hcf) (B)	Allocated Conservation Cost (D)	Unit Rate ($/ hcf) (G)
All Classes	7,846,078	$164,225	$0.02

5.5.10 FINAL RATE DERIVATION

Table 5-12 through Table 5-15 derive the rates for each cost component - supply, delivery, peaking and conservation. Pumping rates are derived in the next section since pumping rates are applicable only to those residing in zones 9, 11H, and 12H.

Table 5-16 shows the total volumetric rate derivation for all customers in FY 2019, which is the summation of all rate components derived in earlier tables. The total volumetric rate shown in column G is designed to collect the total volumetric costs shown in line 13 of Table 5-3. The values are column G are rounded to the nearest penny.

Table 5-16: Derivation of Rates by Tier and Class

Line No.	(A)	Supply Component ($ / hcf) (B)	Delivery Component (C)	Peaking Component (D)	Conservation Component (F)	Total Volumetric Rate ($/ hcf) (G)
1	**Non-Irrigation**					
2	Tier 1	$1.07	$0.52	$0.15	$0.02	**$1.75**
3	Tier 2	$1.49	$0.52	$0.17	$0.02	**$2.20**
4	Tier 3	$1.66	$0.52	$0.18	$0.02	**$2.38**
5						
7	**Irrigation**					
8	Tier 1	$1.07	$0.52	$0.16	$0.02	**$1.77**
9	Tier 2	$1.86	$0.52	$0.17	$0.02	**$2.56**
10	Tier 3	$1.91	$0.52	$0.21	$0.02	**$2.66**

5.5.11 5-YEAR RATES

Table 5-17 shows the proposed five-year volumetric rates by escalating the volumetric rates derived in Table 5-16 by the proposed revenue adjustments shown in Table 2-10. Customer bill impacts are discussed in Section 6.

Table 5-17: Five-Year Volumetric Rates

Line No.	Class (A)	FY 2019 Oct 1, 2018 (B)	FY 2020 Jul 1, 2019 (C)	FY 2021 Jul 1, 2020 (D)	FY 2022 Jul 1, 2021 (E)	FY 2023 Jul 1, 2022 (F)
1	**Non-Irrigation**					
2	Tier 1	$1.75	$1.93	$2.13	$2.35	$2.60
3	Tier 2	$2.20	$2.43	$2.68	$2.96	$3.27
4	Tier 3	$2.38	$2.62	$2.89	$3.19	$3.52
5	**Irrigation**					
6	Tier 1	$1.77	$1.95	$2.15	$2.37	$2.54
7	Tier 2	$2.56	$2.82	$3.11	$3.43	$3.67
8	Tier 3	$2.66	$2.93	$3.23	$3.56	$3.81

6. Bill Impacts

6.2 Bi-monthly Single Family Bill Impacts

Table 6-1 shows the Single Family customer bill impacts for various use points and assuming a 5/8-inch meter – which is the most common meter size for Single Family customers. Column H shows the percent of bills that fall below a certain use point during a bi-monthly billing period. For example, 66% of the annual bills are for 25 hundred cubic feet (hcf) or less. The average bi-monthly Single Family use is approximately 23 hcf. Due to the lower fixed charge and the new tier structure and breakpoints, low water use customers (less than 12 hcf) will see a bill decrease, while higher water use customers will see bill increases.

Table 6-1: Single Family Bi-monthly Bill Impacts (5/8" Meter)

Line No.	Usage (hcf) (A)	Service Charge (B)	Volumetric Charge (C)	Current Total Bi-monthly Charge (D)	Proposed Total Bi-monthly Charge (E)	Difference ($) (F)	Difference (%) (G)	% Bills at or below (H)
1	5	$41.22	$8.76	$55.61	$49.98	-$5.62	-10.1%	5%
2	10	$41.22	$17.97	$60.53	$59.19	-$1.33	-2.2%	18%
3	15	$41.22	$28.96	$65.45	$70.18	$4.74	7.2%	35%
4	20	$41.22	$39.95	$74.42	$81.17	$6.76	9.1%	52%
5	25	**$41.22**	**$50.94**	**$83.38**	**$92.16**	**$8.78**	**10.5%**	**66%**
6	30	$41.22	$61.93	$92.35	$103.15	$10.80	11.7%	77%
7	35	$41.22	$73.64	$101.32	$114.86	$13.54	13.4%	84%
8	40	$41.22	$85.52	$110.29	$126.74	$16.45	14.9%	89%
9	45	$41.22	$97.40	$119.26	$138.62	$19.36	16.2%	92%
10	50	$41.22	$109.28	$128.23	$150.50	$22.28	17.4%	94%

6.3 Multi-family Bill Impacts

Table 6-2 shows Multi-family customer bill impacts for various use points, assuming a 5/8-inch meter – which is the most common meter size for this class. The approximate average use for Multi-family customers is 100 hcf.

Table 6-2: Multi-family bi-monthly Bill Impacts (5/8" Meter)

Line No.	Usage (hcf) (A)	Service Charge (B)	Volumetric Charge (C)	Current Total Bi-monthly Charge (D)	Proposed Total Bi-monthly Charge (E)	Difference ($) (F)	Difference (%) (G)
1	25	$41.22	$50.94	$84.92	$92.16	$7.24	9%
2	50	$41.22	$109.28	$133.61	$150.50	$16.90	13%
3	**100**	**$41.22**	**$228.11**	**$230.98**	**$269.33**	**$38.35**	17%
4	150	$41.22	$346.94	$328.36	$388.15	$59.80	18%
5	200	$41.22	$465.76	$425.73	$506.98	$81.25	19%
6	250	$41.22	$584.59	$523.11	$625.81	$102.70	20%

6.4 Commercial

Table 6-3 shows the Commercial customer bill impacts for various use points and assuming a 5/8-inch meter – the most common meter size for this class. The approximate average use is 90 hcf.

Table 6-3: Commercial Bi-monthly Bill Impacts (5/8" Meter)

Line No.	Usage (hcf) (A)	Service Charge (B)	Volumetric Charge (C)	Current Total Bi-monthly Charge (D)	Proposed Total Bi-monthly Charge (E)	Difference ($) (F)	Difference (%) (G)
1	25	$41.22	$50.94	$84.92	$92.16	$7.24	9%
2	50	$41.22	$109.28	$133.61	$150.50	$16.90	13%
3	100	$41.22	$228.11	$230.98	$269.33	$38.35	17%
4	150	$41.22	$346.94	$328.36	$388.15	$59.80	18%
5	200	$41.22	$465.76	$425.73	$506.98	$81.25	19%

6.5 Government

Table 6-4 shows the Government customer bill impacts assuming a 2-inch meter – the most common meter size for this class. The approximate average government water use is 425 hcf.

Table 6-4: Government Bi-monthly Bill Impacts (2" Meter)

Usage (hcf) (A)	Service Charge (B)	Volumetric Charge (C)	Current Total Bi-monthly Charge (D)	Proposed Total Bi-monthly Charge (E)	Difference ($) (F)	Difference (%) (G)
213	$306.41	$496.66	$700.03	$803.07	$103.03	15%
425	$306.41	$1,000.47	$1,112.90	$1,306.89	$193.98	17%
850	$306.41	$2,010.49	$1,940.59	$2,316.90	$376.31	19%

6.6 Irrigation (Commercial and Government Irrigation)

Table 6-4 shows the Irrigation customer bill impacts assuming a 2-inch meter – the most common meter size for this class. The irrigation class includes commercial and government irrigation. The approximate average irrigation water use is 160 hcf.

Table 6-5: Irrigation Bi-monthly Bill Impacts (2" Meter)

Usage (hcf) (A)	Service Charge (B)	Volumetric Charge (C)	Current Total Bi-monthly Charge (D)	Proposed Total Bi-monthly Charge (E)	Difference ($) (F)	Difference (%) (G)
75	$306.41	$189.20	$431.28	$495.61	$64.33	15%
150	$306.41	$346.94	$577.34	$653.35	$76.01	13%
300	$306.41	$703.41	$869.47	$1,009.82	$140.36	16%

7. Recycled Water Rates

The City's recycled water rates are designed to cover the operational and capital costs associated with operating, maintaining and expanding the recycled water system. Table 7-1 shows Recycled O&M cost projections. The City anticipates investing in the system and adding new customers sometime around FY 2020 or 2021. The City is also in a transitional period for recycled water. The City purchases recycled water from the Sanitation Districts of Los Angeles County (District). The City is expected to substantially increase its recycled water use as shown in line 5 of Table 7-1. The study period for the recycled water system is from FY 2019 to FY 2023. FY 2018 is shown for comparison.

Table 7-1: Recycled Water System Operation and Maintenance Costs

Line No.		FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1	Total Personnel Costs	$175,937	$168,398	$173,450	$178,653	$184,013	$189,533
2	Pump/Plant Maintenance/Repair	$20,000	$20,600	$21,218	$21,855	$22,510	$23,185
3	Contingency - General	$20,000	$20,600	$21,218	$21,855	$22,510	$23,185
4	Regulatory Compliance	$118	$122	$125	$129	$133	$137
5	LACSD Purchases	$219,944	$224,982	$234,655	$280,648	$300,630	$322,035
6	Main line Maint/Repair	$5,000	$5,150	$5,305	$5,464	$5,628	$5,796
7	Gas & Electricity	$65,000	$66,950	$70,298	$73,812	$77,503	$81,378
8	Info Systems Allocation	$2,971	$3,060	$3,152	$3,246	$3,344	$3,444
9	Liability Admin Alloc	$3,070	$3,162	$3,257	$3,355	$3,455	$3,559
10	Unemployment Admin Alloc	$21	$22	$22	$23	$24	$24
11	Workers' Compensation Admin Alloc	$1,797	$1,851	$1,906	$1,964	$2,023	$2,083
12	Admin Service Charge	$35,074	$36,126	$37,210	$38,326	$39,476	$40,660
13							
14	**Total**	**$548,932**	**$551,022**	**$571,816**	**$629,329**	**$661,248**	**$695,021**

Table 7-2 shows the recycled water capital improvement plan. As shown, the City would like to invest a significant amount of capital in the recycled system to add customers. The bottom of Table 7-2 shows the amount of capital funded through rates assuming the rates shown in Table 7-3 and 7-4. The recycled water rate charged by District, over the next five years, is based on the City's *actual* recycled water system costs (including capital). The recycled water rate is charged one year in arrears to base the rate on actual City cost incurred. This makes projecting future City reclaimed wholesale water costs difficult. District's rate is lower if the City's costs are higher as determined by District's "shared savings"[11] calculation.

[11] Readers interested the shared savings calculation may view the Agreement; 31-100.16 C#405 CSD- City of Pomona Purchase & Sale of Reclaimed Water & Related Facilities Agreement

Table 7-2: Recycled Water Capital Improvement Plan

Line No.	Recycled Capital Improvement Plan	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1	Palm Lakes Golf Course - Recyc Water Spreading Grnds - Design		$51,500	$51,500		
2	Palm Lakes Golf Course - Recycled Water Spreading Grounds - Const.					
3	Recyc Water - Treatment Plant Improvements					
4	Recyc Water Prod. Facilities (e.g. Wells, Boosters) - Rehab/Replcmnt	$64,375				
5	Reservoir - Rehab/Replacement/New			$257,500	$257,500	$257,500
6	Recyc Water System Improvements - Ganesha Hills, Fairplex Area	$128,750	$128,750	$128,750		
7	Recyc Water System Improvements - Eastend Area IEUA projects					
8	Recyc Water Main - FY 2018-19 Design	$39,398				
9	Recyc Water Main - FY 2019-20 Construction		$262,650			
10	Recyc Water Main - FY 2019-20 Design		$39,398			
11	Recyc Water Main - FY 2020-21 Construction			$262,650		
12	Recyc Water Main - FY 2020-21 Design			$39,398		
13	Recyc Water Main - FY 2021-22 Construction				$262,650	
14	Recyc Water Main - FY 2021-22 Design				$39,398	
15	Recyc Water Main - FY 2022-23 Construction					$262,650
16	Recyc Water Main - FY 2022-23 Design					
17	Recyc Water System Maintenance					
18	**Total**	**$232,523**	**$482,298**	**$739,798**	**$559,548**	**$520,150**

Table 7-3 shows the project recycled water reserve ending balance. The City has established a reserve target equal to 25% of annual O&M expenses plus $500,000 as a capital reserve, the latter inflated annually by 3% to reflect future escalating construction costs.

Table 7-3: Project Recycled Water Capital Reserve

Line No.	Recycled Water Reserve	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	Starting Balance	$501,508	$501,508	$805,602	$946,373	$891,036	$1,046,376
2	Transfers In / Out (Reserve	$0	$304,094	$140,771	-$55,337	$155,339	$256,913
3	**Ending Balance**	**$501,508**	**$805,602**	**$946,373**	**$891,036**	**$1,046,376**	**$1,303,289**
4	Target Reserve Balance	$0	$637,233	$652,756	$657,954	$672,332	$680,312

7.2 Recycled Water Rates

To add a fixed revenue stream, and therefore increase revenue stability for the recycled water enterprise, the City has decided to implement a fixed charge in addition to the current volumetric rate. The proposed recycled water rate structure consists of a fixed charge by meter size and a (uniform) volumetric rate. Table 7-4 shows the proposed recycled fixed service charge in Column D and future fixed charges for the next four years. The fixed charge is derived in the same manner as those derived for potable water. That is the rates increase in proportion to the hydraulic capacity of each meter size according to standards set by the AWWA.

Table 7-4: Derivation of the Recycled Fixed Meter Charge

Line No.	Meter Size	No. of Meters	Current Fixed Charge	FY 2019 Oct 1, 2018	FY 2020 Jul 1, 2019	FY 2021 Jul 1, 2020	FY 2022 Jul 1, 2021	FY 2023 Jul 1, 2022
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
1	2"	1	$0.00	$61.28	$67.56	$74.49	$82.12	$87.87
2	3"	3	$0.00	$114.32	$126.04	$138.96	$153.20	$163.93
3	4"	2	$0.00	$190.09	$209.58	$231.06	$254.74	$272.57
4	6"	0	$0.00	$379.51	$418.41	$461.30	$508.59	$544.19
5	8"	0	$0.00	$606.82	$669.02	$737.60	$813.20	$870.13
6	10"	0	$0.00	$872.02	$961.40	$1,059.94	$1,168.59	$1,250.39
7	12"	1	$0.00	$1,894.91	$2,089.13	$2,303.27	$2,539.35	$2,717.11
8	14"	0	$0.00	$2,842.02	$3,133.33	$3,454.50	$3,808.58	$4,075.18
9	16"	0	$0.00	$3,789.14	$4,177.53	$4,605.73	$5,077.81	$5,433.26
10	18"	1	$0.00	$4,736.26	$5,221.73	$5,756.96	$6,347.04	$6,791.34
11	Fixed Charge Annual Increase (%)				10.25%	10.25%	10.25%	7.00%

Table 7-5 shows the derivation of the recycled water volumetric rates and the current volumetric rate in column B. Raftelis derived the volumetric rate by subtracting service charge revenue in line 6 from the total revenue requirement in line 4. The resulting volumetric revenue requirement in line 7 is divided by the estimated water sales in line 8 to yield the recycled volumetric rate in line 9. Line 10 shows the percent change in the volumetric rates. Column C shows a reduction in the volumetric rate due to the addition of the fixed charge. The addition of the fixed charge reduces the amount of revenue to be collected from the volumetric rates. The volumetric rate also decreases in FY 2021 due to an increase in water demand from new customers projected to connect in that year. This distributes the volumetric revenue requirement across a higher usage projection, reducing the rate.

Table 7-5: Recycled Volumetric Rate Derivation

Line No.		Current FY 2018	Proposed FY 2019	Proposed FY 2020	Proposed FY 2021	Proposed FY 2022	Proposed FY 2023
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
1	O&M Revenue Requirement		$548,932	$551,022	$571,816	$629,329	$661,248
2	Rate Funded Capital		$232,523	$482,298	$739,798	$559,548	$520,150
3	Reserve Funding		$315,827	$140,771	-$55,337	$155,339	$256,913
4	**Total O&M & Capital Revenue Requirer**	**$1,025,496**	**$1,097,281**	**$1,174,090**	**$1,256,277**	**$1,344,216**	**$1,438,311**
5	Total Revenue Requirement Increase (%)		7.0%	7.0%	7.0%	7.0%	7.0%
6	Less Revenue from Monthly Meter Charge		$88,987	$98,108	$108,164	$119,251	$127,599
7	**Volumetric Revenue Requirement**		**$1,008,294**	**$1,075,982**	**$1,148,112**	**$1,224,965**	**$1,310,712**
8	Estimated Acre Feet Sold		1,774	1,828	2,102	2,165	2,230
9	**Recycled Volumetric Rate ($/ AF)**	**$583.75**	**$568.27**	**$588.76**	**$546.29**	**$565.88**	**$587.85**
10	Percent Change in Volumetric Rates		-2.7%	3.6%	-7.2%	3.6%	3.9%

7.3 Recycled Customer Bill Impacts

Table 7-6 shows the bill impact of the proposed rates on a few of the recycled water systems largest users. The acronym AF stands for acre feet.

Table 7-6: Recycled Water Customer Bill Impacts

Customer	Avg Monthly Use	Current Bill	Meter Size	Monthly Fixed Charge	Volumetric Charge	FY 2018 Proposed Bill	Percent Change (%)	Dollar Change ($)
Cal Poly	91.83	$52,301.14	12"	$1,894.91	$52,186.81	$54,081.72	3.4%	$1,780.57
Bonelli Park	52.01	$29,621.03	18"	$4,736.26	$29,556.28	$34,292.54	15.8%	$4,671.51
Graybar	0.76	$430.31	2"	$61.28	$429.37	$490.66	14.0%	$60.34
Park Booster	0.79	$447.53	4"	$190.09	$446.55	$636.64	42.3%	$189.11
Robertson's Readymix	0.66	$378.68	3"	$114.32	$377.85	$492.17	30.0%	$113.49

8. Wastewater

The City of Pomona is responsible for the operation and maintenance of an extensive wastewater collection system and ensure the proper and efficient operation of each system. The City provides sewer service throughout the City and to a limited area outside City limits.

The City's wastewater collection system consists of approximately 306 miles of gravity sewer, 4 pump stations (managed by District), 1.4 miles of force mains, over 6,000 manholes and five siphons. Sewage collected by the City's wastewater collection system is conveyed to the Pomona Water Reclamation Plant (PWRP) for treatment and disposal under the authority of District.

Raftelis analyzed existing operating wastewater revenues, O&M and capital expenses, and reserve requirements for the wastewater enterprise. This section discusses projected revenues, O&M expenses, reserve funding and the revenue adjustments needed to ensure the fiscal sustainability of the Wastewater Enterprise.

8.1 Current Wastewater Rates

Table 8-1 shows current wastewater rates effective January 1, 2017. All users are billed a bi-monthly sewer service charge and a usage charge. All non-residential accounts and multi-family accounts are billed based on water use. Single family accounts are billed based on winter water use as defined by the City Code below.

"For City of Pomona single-family residential water customers, each July 1, the "winter months' basis" for each such user shall be calculated, where such basis is defined as an average of two complete months data within the period of December of the previous year through the following March. The city may utilize historical data of prior users at a location for such a computation if insufficient data exists for current water usage at the location until appropriate data is established."

Table 8-1: Current Sewer Service Charges

Sewer Rate Component	Jan 1, 2018
Bi-monthly Sewer Service Charge	$6.21
Usage Charge ($/hcf)	$0.54

Table 8-2 shows the number of wastewater accounts and the wastewater flow in hcf for each customer class.

Table 8-2: Wastewater Accounts and Wastewater Use in Hundred Cubic Feet

Number of Accounts	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Customer Class						
Commercial	2,230	2,237	2,241	2,246	2,248	2,250
Government	128	128	128	129	129	129
Multi-family	2,443	2,450	2,455	2,460	2,462	2,465
Single Family Residential	23,465	23,536	23,583	23,630	23,653	23,677
Tax Exempt	124	124	124	125	125	125
Total - Accounts	**28,390**	**28,475**	**28,532**	**28,589**	**28,617**	**28,646**
Sewer Use (hcf)						
Customer Class	1,275,004	1,278,829	1,281,386	1,283,949	1,285,233	1,286,518
Commercial	585,100	586,855	588,029	589,205	589,794	590,384
Government	1,527,797	1,532,380	1,535,445	1,538,516	1,540,054	1,541,594
Multi-family	3,016,337	3,025,386	3,031,437	3,037,500	3,040,537	3,043,578
Single Family Residential	13,648	13,688	13,716	13,743	13,757	13,771
Tax Exempt	6,417,885	6,437,138	6,450,013	6,462,913	6,469,376	6,475,845
Total Use	**12,835,769**	**12,874,277**	**12,900,025**	**12,925,825**	**12,938,751**	**12,951,690**

Raftelis estimated current sewer rate revenue by multiplying the current rates by the number of accounts and wastewater use for each fiscal year. The result is shown in Table 8-3. This is the projected amount of revenue if the City did not adjust wastewater rates.

Table 8-3: Projected Wastewater Revenue

Rate Revenue	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Sewer Service Charge (Fixed Charge)	$1,057,796	$1,060,969	$1,063,091	$1,065,217	$1,066,282	$1,067,349
Usage Charge (Volumetric Charge)	$3,433,568	$3,476,055	$3,483,007	$3,489,973	$3,493,463	$3,496,956
Total - Rate Revenue	**$4,491,364**	**$4,537,024**	**$4,546,098**	**$4,555,190**	**$4,559,745**	**$4,564,305**

8.2 Wastewater O&M Expenses

Raftelis projected wastewater O&M expenses by applying the inflation factors shown in Table 2-4 to the FY 2018 O&M budget. Table 8-4 summarizes the budgeted and projected O&M expenses during the Study period.

Table 8-4: Projected Wastewater O&M Expenses

Budget Component	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Sewer Operations Administration	$1,276,381	$1,347,337	$1,414,273	$1,484,543	$1,558,312	$1,635,757
Sewer Operations						
Staffing	$1,174,000	$1,264,744	$1,302,922	$1,342,257	$1,382,785	$1,424,541
Controllable Exp	$71,983	$74,142	$76,367	$78,658	$81,018	$83,448
Required Exp	$35,630	$36,699	$37,800	$38,934	$40,102	$41,305
Utilities	$409,735	$332,719	$349,354	$366,822	$385,163	$404,421
Capital	$548,500	$152,955	$157,544	$162,270	$167,138	$172,152
Total	**$3,516,229**	**$3,208,596**	**$3,338,259**	**$3,473,483**	**$3,614,518**	**$3,761,625**

8.3 Projected Capital Improvement Program

The City's capital improvement program through the end of the Study period is shown in Table 8-5. The proposed capital improvement program will be funded entirely through rate revenue and is the primary driver for the proposed revenue adjustments.

Table 8-5: Wastewater Capital Improvement Projects

Capital Projects	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Funded Projects						
Study - Sewer Model Update/Exp	$55,867					
Sewer Pipeline Replacement - Citywide (Phase 4)	$1,545,000					
Sewer Force Mains - Pump Plant 1, 2 and 3 Design	$192,610					
Sewer Master Plan (2016)	$53,169					
Sewer Main Replacement - FY 2017-18 Design	$618,000					
Corporate Yard Facility			$4,018,224			
Unfunded Projects						
Sewer Pipeline Replacement - Citywide (Phase V)		$530,450				
Sewer Main Replcmnt - FY 2018-19 Construction						
Sewer Main Replacement - FY 2018-19 Design						
Sewer Main Replcmnt - FY 2019-20 Construction			$218,545			
Sewer Main Replacement - FY 2019-20 Design			$32,782			
Sewer Main Replcmnt - FY 2020-21 Construction				$1,944,879		
Sewer Main Replacement - FY 2020-21 Design				$291,732		
Sewer Main Replcmnt - FY 2021-22 Construction					$2,003,226	
Sewer Main Replacement - FY 2021-22 Design					$300,484	
Sewer Main Replcmnt - FY 2022-23 Construction						$2,063,322
Sewer Main Replacement - FY 2022-23 Design						$309,498
Sewer Force Mains - Pumping Plants 2 Construction		$424,360				
Total CIP	**$2,464,646**	**$954,810**	**$4,269,551**	**$2,236,611**	**$2,303,709**	**$2,372,821**

8.4 Proposed Financial Plan

To ensure that the Wastewater Enterprise has adequate revenues to fund operating and capital expenditures as well as funds sufficient reserves, Raftelis and City Staff recommend the revenue adjustments shown in Table 8-6. The City has been postponing many much-needed capital improvement projects and funding these projects is one reason for the larger revenue adjustment in FY 2019. The first revenue adjustments are assumed to take effect in October.

Table 8-6: Proposed Wastewater Revenue Adjustments

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Date of Implementation	Oct 1 2018	July 1, 2019	July 1, 2020	July 1, 2021	July 1, 2022
Revenue Adjustment	34%	4%	4%	4%	4%

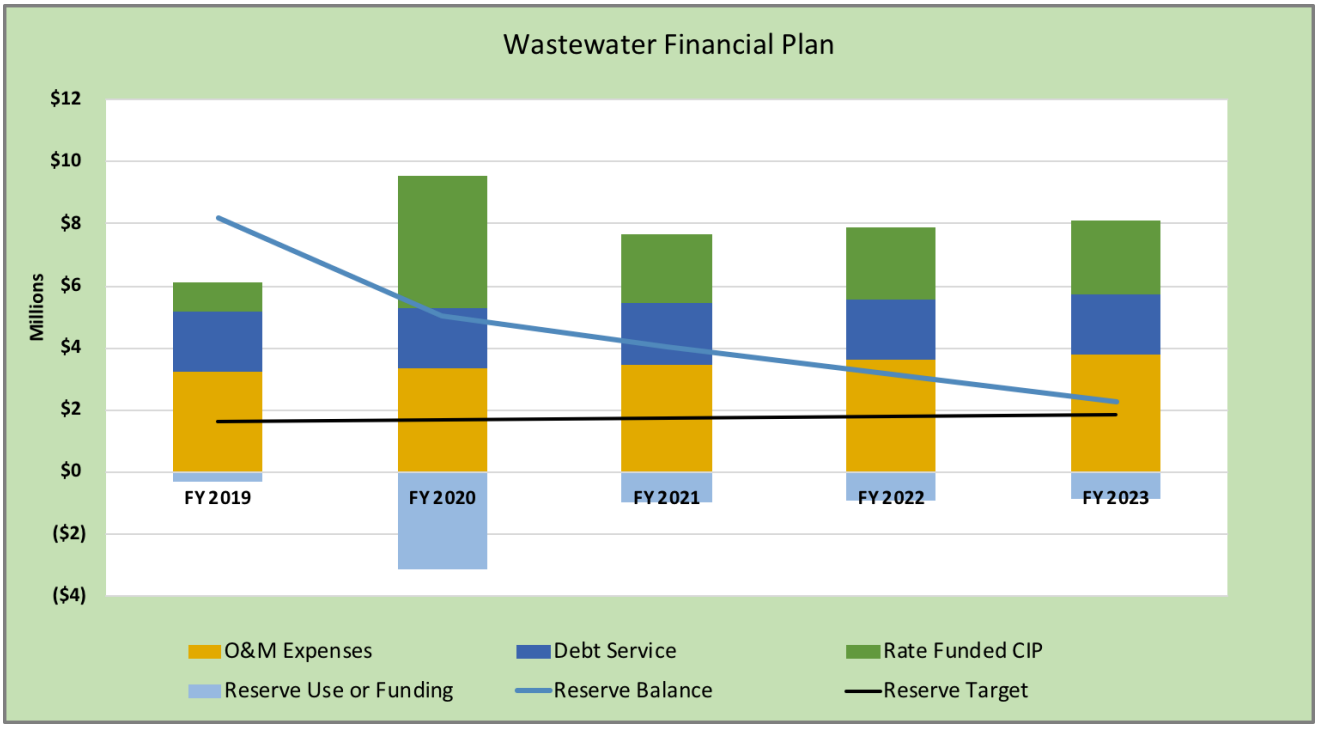
Table 8-7 shows the cash flow projection with the proposed revenue adjustments from Table 8-6. The proposed financial plan meets the City's financial needs by meeting long term reserve goals. As indicated by the negative net cash flow, the City plans to use fund balances to minimize customer impacts.

Table 8-7: Sewer Enterprise Proposed Financial Plan Pro-Forma

Operating Cash Flow	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Revenue						
Sewer Service Charge (Fixed Charge)	$1,057,796	$1,060,969	$1,063,091	$1,065,217	$1,066,282	$1,067,349
Usage Charge (Volumetric Charge)	$3,433,568	$3,476,055	$3,483,007	$3,489,973	$3,493,463	$3,496,956
Revenue Adjustments						
Subtotal - Revenue Adjustments	**$0**	**$1,156,941**	**$1,789,344**	**$2,046,847**	**$2,313,240**	**$2,590,747**
Total Rate Revenue	$4,491,364	$5,693,965	$6,335,442	$6,602,037	$6,872,985	$7,155,052
All Fines	$0	$0	$0	$0	$0	$0
Rev From Use of $ & Prop	$0	$0	$0	$0	$0	$0
Other Misc Revenue	$35,000	$35,105	$35,175	$35,246	$35,281	$35,316
Charges for Services	$20,700	$20,752	$20,804	$20,856	$20,908	$20,960
Interest Income	$33,479	$33,351	$29,688	$22,674	$26,840	$26,918
Subtotal - Revenue	**$4,580,543**	**$5,783,172**	**$6,421,108**	**$6,680,812**	**$6,956,013**	**$7,238,246**
Expenses						
Sewer Operations Administration	$1,276,381	$1,347,337	$1,414,273	$1,484,543	$1,558,312	$1,635,757
Staffing	$1,174,000	$1,264,744	$1,302,922	$1,342,257	$1,382,785	$1,424,541
Controllable Exp	$71,983	$74,142	$76,367	$78,658	$81,018	$83,448
Required Exp	$35,630	$36,699	$37,800	$38,934	$40,102	$41,305
Utilities	$409,735	$332,719	$349,354	$366,822	$385,163	$404,421
Capital	$548,500	$152,955	$157,544	$162,270	$167,138	$172,152
Transfer Out	$0	$0	$0	$0	$0	$0
Other Financing Uses	$0	$0	$0	$0	$0	$0
Subtotal - Expenses	**$3,516,229**	**$3,208,596**	**$3,338,259**	**$3,473,483**	**$3,614,518**	**$3,761,625**
Debt Service						
Existing Debt	$1,843,852	$1,959,935	$1,957,547	$1,958,513	$1,958,193	$1,956,858
Proposed Debt	$0	$0	$0	$0	$0	$0
Subtotal - Debt Service	**$1,843,852**	**$1,959,935**	**$1,957,547**	**$1,958,513**	**$1,958,193**	**$1,956,858**
Capital Projects						
Rate Funded	$2,464,646	$954,810	$4,269,551	$2,236,611	$2,303,709	$2,372,821
Subtotal - Capital Projects	**$2,464,646**	**$954,810**	**$4,269,551**	**$2,236,611**	**$2,303,709**	**$2,372,821**
Net Annual Cash Flow	**($3,244,184)**	**($340,169)**	**($3,144,249)**	**($987,795)**	**($920,407)**	**($853,056)**
Net Operating Revenue	$1,064,314	$2,574,576	$3,082,849	$3,207,329	$3,341,495	$3,476,622
Calculated Debt Coverage	58%	131%	157%	164%	171%	178%
Required Debt Coverage	110%	110%	110%	110%	110%	110%

Figure 8-1 shows the financial plan in a graphical format. The stacked bars show the expenses, the blue line represents an ending reserve balance (blue), and the black line represents the ending reserve balance target which consists of the operating reserve target and the capital reserve target. The City is using fund balances to alleviate the impact of expenses on customer rates, as shown by the light blue bars below the x-axis.

Figure 8-1: Proposed Sewer Operating Financial Plan



9. Wastewater Enterprise Cost of Service and Rate Derivation

9.1 Wastewater Cost of Service Analysis

This section discusses the allocation of O&M expenses and capital costs to the wastewater cost components, which is simplified for the City since it operates as a sewer collection agency and does not operate a wastewater treatment plant. The City collects sewage and sends it to the Pomona Water Reclamation Plant. The District bills customers directly on the property tax bill. Therefore, the City's cost components consist of Flow, Customer and General components. As discussed in Section 7.1, the City's rate structure consists of a bi-monthly sewer service charge and a volumetric rate based on sewer use. The City requested to maintain the current level of fixed revenue collected from the current bi-monthly sewer service charge. The City currently collects approximately 23% of its sewer revenue from the fixed charge. To maintain this ratio, a portion of general costs were allocated to the bi-monthly sewer service charge.

9.1.1 COST ALLOCATION TO COST COMPONENTS

Table 9-1 shows the allocation of the City's FY 2018 O&M budget to the cost components – Flow, Customer and General costs. The total allocation to each cost component is shown on the final line of the table. The final allocation is used to allocate the wastewater revenue requirement to the cost components. The total O&M expense aligns with the total FY 2018 expense shown in Table 8-7.

Table 9-1: Allocating FY 2018 O&M Costs to Cost Causation Components

Line No.	Budget Item	Flow	Customer	General	Total
1	Sewer Operations Administratic	0%	0.0%	100%	**100%**
2	Staffing	100%	0.0%	0%	**100%**
3	Controllable Exp	35%	64.6%	0%	**100%**
4	Required Exp	100%	0.0%	0%	**100%**
5	Utilities	100%	0.0%	0%	**100%**
6	Capital	100%	0.0%	0%	**100%**
7					
8	**Budget Item**	**Flow**	**Customer**	**General**	**Total**
9	Sewer Operations Administratic	$0	$0	$1,347,337	**$1,347,337**
10	Staffing	$1,264,744	$0	$0	**$1,264,744**
11	Controllable Exp	$26,269	$47,873	$0	**$74,142**
12	Required Exp	$36,699	$0	$0	**$36,699**
13	Utilities	$332,719	$0	$0	**$332,719**
14	Capital	$152,955	$0	$0	**$152,955**
15					
16	**Total O&M Expenses**	**$1,813,385**	**$47,873**	**$1,347,337**	**$3,208,596**
17	Percent Allocation	57%	1%	42%	100%

Table 9-2 shows the allocation of wastewater assets to the cost components. This allocation is used to allocate the City's capital costs to each cost component. The resulting cost component allocations are shown on the final line of the table.

Table 9-2: Allocating Capital Cost to Cost Components

Line No.	Asset Item	Flow	Customer	General	Total
1	Land			100%	**100%**
2	General Structures & Improvements	100%			**100%**
3	Sewer Lines	100%			**100%**
4	Machinery & Equipment			100%	**100%**
5	Autos & Trucks			100%	**100%**
6					
7	**Asset Item**	**Flow**	**Customer**	**General**	**Total**
8	Land	$0		$302,999	**$302,999**
9	General Structures & Improvements	$3,874		$0	**$3,874**
10	Sewer Lines	$122,878,520		$0	**$122,878,520**
11	Machinery & Equipment	$0		$1,615,760	**$1,615,760**
12	Autos & Trucks	$0		$1,435,557	**$1,435,557**
13					
14	**Total Assets**	**$122,882,394**	**$0**	**$3,354,316**	**$126,236,711**
15	Percent Allocation	97%	0%	3%	100%

9.1.2 REVENUE REQUIREMENT DETERMINATION

The revenue required from rates is the amount of revenue required to fund all wastewater expenses in the test year (FY 2018). The utility must generate annual revenues adequate to meet its estimated annual

O&M expenses, reserve targets, debt service and capital investment. Table 9-3 shows the derivation of the revenue requirement for FY 2018.

The total wastewater revenue requirement includes O&M, debt service and capital expenses shown in the upper portion of the table. Revenue from other sources is subtracted from this total and several other adjustments are made to ensure the adequate collection of revenue. A revenue adjustment is made to account for the fact that the proposed rate increase takes place mid-way through the fiscal year. Another adjustment is made for the yearly ending cash balance as shown in the last line of the table. These final adjustments are subtracted.

Table 9-3: Sewer Enterprise Revenue Requirement for FY 2017

Line No.	Revenue Requirement	FY 2019 Operating (A)	Capital (B)	Total (C)
1	O&M Expenses	$3,208,596		$3,208,596
2	Debt Service		$1,959,935	$1,959,935
3	Rate Funded CIP		$954,810	$954,810
4	**Subtotal**	**$3,208,596**	**$2,914,745**	**$6,123,341**
5				
6	**Less Other Revenue**			
7	Other Revenue	$55,857		$55,857
8	Interest Income		$33,351	$33,351
9	**Subtotal**	**$55,857**	**$33,351**	**$89,207**
10				
11	**Less Adjustments**			
12	Adjustments to Annualize Rat	($385,647)		($385,647)
13	Adjustments for Annual Cash Balance		$340,169	$340,169
14	**Subtotal**	**($385,647)**	**$340,169**	**($45,478)**
15				
16	**Revenue to be Recovered from**	**$3,538,386**	**$2,541,226**	**$6,079,612**

9.1.3 ALLOCATING THE REVENUE REQUIREMENT TO COST CAUSATION COMPONENTS AND RATE CALCULATION

The revenue requirement in Table 9-3 is then allocated to the cost components to calculate the wastewater bi-monthly service charge and rate. Table 9-4 shows the revenue requirement allocation and the rate calculation. In lines 1 and 2, the operating and capital revenue requirement from the bottom of columns A and B in Table 9-3 are allocated to the cost components using the percent allocations shown at the bottom of Tables 9-1 and 9-2. Line 4 shows a portion of general costs re-allocated to the customer cost component so that the City can maintain revenue stability and collect a portion (29%) of the revenue requirement through a fixed charge. Line 5 shows the final allocation to the cost components.

Line 7 shows the units of service, the total wastewater flow and number of accounts. The total cost by component in line 5 is divided by the units of service in line 7 in Line 10, which shows the resulting fixed charge and volumetric rate.

Table 9-4: Revenue Requirement Allocation to Cost Components and Rate Calculation

Line No.	Revenue Requirement	Flow	Customer	General	Total
1	Operating Expenses	$1,999,771	$52,794	$1,485,821	$3,538,386
2	Capital Expenses	$2,473,701	$0	$67,525	$2,541,226
3	**Subtotal**	**$4,473,472**	**$52,794**	**$1,553,346**	**$6,079,612**
4	Allocation of General Costs	$0	$1,553,346	($1,553,346)	$0
5	**Total Adjusted COS**	**$4,473,472**	**$1,606,139**		**$6,079,612**
6					
7	Units of Service	6,437,138	28,475		
8	Unit of Measure	hcf	accounts		
9					
10	**Proposed Rates**	**$0.69**	**$9.40**		
11		$/hcf	Bi-monthly Rate		
12					
13	**Current Rate**	**$0.54**	**$6.21**		
14		$/hcf	Bi-monthly Rate		

9.1.4 FIVE YEAR PROPOSED SEWER SERVICE RATES

Table 9-5 shows the proposed 5-year rates for all customer classes. The out-year rates are derived by escalating the rates from Table 9-4 by the revenue adjustments from Table 8-6.

Table 9-5: Proposed Five-Year Fixed and Variable Sewer Rates

Line No.	Rate Component	Current FY 2018 (A)	Proposed FY 2019 October 1, 2018 (B)	Proposed FY 2020 July 1, 2019 (C)	Proposed FY 2021 July 1, 2020 (D)	Proposed FY 2022 July 1, 2021 (F)	Proposed FY 2023 July 1, 2022 (G)
1	Bi-monthly Sewer Service Charge	$6.21	$9.40	$9.78	$10.17	$10.58	$11.00
2	Usage Charge ($/hcf)	$0.54	$0.69	$0.72	$0.75	$0.78	$0.81

9.1.5 SINGLE FAMILY RESIDENTIAL SEWER BILL IMPACTS

Based on wastewater flow data and the number of SFR accounts, Raftelis estimated the average SFR and Commercial wastewater discharge to be approximately 21 and 95 hcf of wastewater bi-monthly respectively. Table 9-6 shows the projected *average* wastewater bill impacts for each class.

Table 9-6: Single Family Residential Wastewater Bill Impact

Customer Class	Current Bill	Proposed SFR Bill	Dollar Increase	Percent Increase
Single Family Residential	$17.84	$24.37	$6.53	37%
Commercial	$57.66	$75.61	$17.95	31%

APPENDIX A:

Water Supply Cost Derivation

Line No.	Water Supply Source	Cost ($/ AF)	Cost ($/ hcf)	Water Supplied/ Produced (AF)	Water Supplied (hcf)	Total Cost of Water Produced	% of Water Cost	Supply Revenue Requirement	Water Sold (hcf)	Water Cost Based on Revenue Requirement* ($/ hcf)	Rank
								$11,829,579			
1	Chino Wells - Treated	$809	$1.86	10,547	4,594,304	$8,537,055	54%	$6,340,718	4,193,796	$1.51	4
2	Chino Wells- Untreated	$706	$1.62	896	390,408	$632,751	4%	$469,962	356,374	$1.32	3
3	Six Basin Wells - Treated	$557	$1.28	3,456	1,505,632	$1,923,609	12%	$1,428,720	1,374,378	$1.04	1
4	Six Basin Wells - Untreated	$355	$0.82	-	-	$0	0%	$0	-	NA	NA
5	Spadra Wells - Treated	$0	$0.00	-	-	$0	0%	$0	-	NA	NA
6	Spadra Wells - Untreated	$617	$1.42	140	61,200	$86,710	1%	$64,402	55,865	$1.15	2
7	Pedley Surface Wtr Trtmnt Plnt - Trtd	$1,024	$2.35	1,047	456,073	$1,072,198	7%	$796,353	416,315	$1.91	6
8	MWD (TVMWD) - Tier 1	$1,008	$2.31	3,645	1,587,762	$3,674,859	23%	$2,729,424	1,449,349	$1.88	5
9	MWD (TVMWD) - Tier 2	$1,129	$2.59	-	-	$0	0%	$0	-	NA	NA
10	**Total**			**19,732**	**8,595,379**	**$15,927,182**	**100%**	**$11,829,579**	**7,846,078**		
11	Water Supplied (hcf)			8,595,379	8,595,379						
12	Water Sold (hcf) (from revenue worksheet)			7,846,078	7,846,078						
13	Water Loss (%) as a % of Water Purchased			-8.72%							
14	**Average Supply Cost ($/hcf)**			**$1.51**							
15											
16	Base Cost (supply, treatment & delivery)			$15,891,753							
17	Water Sold			7,846,078							
18	**Base Rate**			**$2.03**							
19	**Delivery Rate (under ADD conditions)**			**$0.52**							
20	Supply Cost			$11,829,579	TRUE						
21	Delivery Cost			$4,062,174	TRUE						
22	Total			**$15,891,753**							

* Not true water cost, this accounts for the fact that the City is using reserves to lower rates

Line No.	(A)	SFR (B)	MFR (C)	Commercial (D)	Government (E)	Comm-Irrigation (F)	Government - Irrigation (G)	Construction (H)	Total (I)
1	Total Use (HCF)	3,712,426	1,582,998	1,352,220	733,869	303,620	142,995	17,951	**7,846,078**
2	Number of Accounts	25,679	2,558	2,413	317	244	149	55	**31,414**
3	**% of Accounts**	**82%**	**8%**	**8%**	**1%**	**1%**	**0%**	**0%**	**100%**

Rank	Water Source	Water Sold (hcf)	Water Cost per Unit Sold ($/ hcf)	SFR	MFR	Commercial	Government	Comm-Irrigation	Government - Irrigation	Construction	Total	Non-SFR	All Classes but Irrigation	Irrigation	Total Check
1	Six Basin Wells - Treated	1,374,378	$1.04	1,123,475	111,912	105,549	13,851	10,658	6,527	2,406	1,374,378	250,904	1,357,193	17,185	1,374,378
2	Spadra Wells - Untreated	55,865	$1.15	45,667	4,549	4,290	563	433	265	98	55,865	10,199	55,167	699	55,865
3	Chino Wells- Untreated	356,374	$1.32	291,315	29,019	27,369	3,592	2,764	1,692	624	356,374	65,059	351,918	4,456	356,374
4	Chino Wells - Treated	4,193,796	$1.51	3,428,185	341,490	322,074	42,266	32,523	19,916	7,342	4,193,796	765,611	4,141,357	52,439	4,193,796
5	MWD (TVMWD) - Tier 1	1,449,349	$1.88	1,184,759	118,017	111,307	14,607	11,240	6,883	2,538	1,449,349	264,590	1,431,227	18,123	1,449,349
6	Pedley Surface Wtr Trtmnt Plnt - Trtd	416,315	$1.91	340,313	33,899	31,972	4,196	3,229	1,977	729	416,315	76,002	411,110	5,206	416,315
NA	Six Basin Wells - Untreated	-	NA	-	-	-	-	-	-	-	-	-	-	-	-
NA	Spadra Wells - Treated	-	NA	-	-	-	-	-	-	-	-	-	-	-	-
NA	MWD (TVMWD) - Tier 2	-	NA	-	-	-	-	-	-	-	-	-	-	-	-
	Total	**7,846,078**		**6,413,713**	**638,886**	**602,561**	**79,074**	**60,846**	**37,261**	**13,737**	**7,846,078**	**1,432,365**	**7,747,971**	**98,107**	**7,846,078**
	Average Supply Cost	**TRUE**		**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**	**$1.51**

This Table is for Allocating Water by Account, so that each Class does not get beyond what it needs 99%

Rank	Water Source	Water Sold (hcf)	Water Cost per Unit Sold ($/ hcf)	SFR	MFR	Commercial	Government	Comm-Irrigation	Government - Irrigation	Construction	Total	Non-SFR	All Classes but Irrigation	Irrigation	Total Check
1	Six Basin Wells - Treated	1,374,378	$1.04	1,123,475	111,912	105,549	13,851	10,658	6,527	2,406	1,374,378	250,904	1,357,193	17,185	1,374,378
2	Spadra Wells - Untreated	55,865	$1.15	45,667	4,549	4,290	563	433	265	98	55,865	10,199	55,167	699	55,865
3	Chino Wells- Untreated	356,374	$1.32	291,315	29,019	27,369	3,592	2,764	1,692	624	356,374	65,059	351,918	4,456	356,374
4	Chino Wells - Treated	4,193,796	$1.51	2,251,970	341,490	1,215,011	385,324	-	-	-	4,193,796	1,941,826	4,193,796	-	4,193,796
5	MWD (TVMWD) - Tier 1	1,449,349	$1.88	0	1,096,028	-	330,539	22,782	-	-	1,449,349	1,449,349	1,426,567	22,782	1,449,349
6	Pedley Surface Wtr Trtmnt Plnt - Trtd	416,315	$1.91	-	-	-	-	266,982	134,510	14,823	416,315	416,315	14,823	401,493	416,315
NA	Six Basin Wells - Untreated	-	NA	-	-	-	-	-	-	-	-	-	-	-	-
NA	Spadra Wells - Treated	-	NA	-	-	-	-	-	-	-	-	-	-	-	-
NA	MWD (TVMWD) - Tier 2	-	NA	-	-	-	-	-	-	-	-	-	-	-	-
	Total	**7,846,078**		**3,712,426**	**1,582,998**	**1,352,220**	**733,869**	**303,620**	**142,995**	**17,951**	**7,846,078**	**4,133,652**	**7,399,464**	**446,614**	**7,846,078**
	Average Supply Cost	**TRUE**		**$1.35**	**$1.73**	**$1.47**	**$1.67**	**$1.87**	**$1.86**	**$1.77**	**$1.51**	**$1.65**	**$1.49**	**$1.87**	**$1.51**