

# CITY OF PORT HUENEME

## Water Cost of Service and Rate Study

Final Report / December 10, 2019

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445 S Figueroa St.  
Suite 2270  
Los Angeles, CA 90071

Phone 213 . 262 . 9300  
Fax 626 . 583 . 1411

[www.raftelis.com](http://www.raftelis.com)

December 10, 2019

Mr. Don Villafauna, PE, QSD  
Public Works Director  
City of Port Hueneme  
250 North Ventura Road  
Port Hueneme, CA 93041

**Subject: Water Cost of Service and Rate Study Report**

Dear Mr. Villafana:

Raftelis is pleased to present this water cost of service and rate study to the City of Port Hueneme. This study involved a comprehensive review of the City's water rate structure, the projection of a long-range financial plan, and the development of cost of service-based water rates.

We are confident that the calculated rates are fair and equitable for the City's water customers and are compliant with Proposition 218. This report includes an Executive Summary that summarizes the study background and results. The report's main body details the financial plan, cost of service analysis, and rate design.

It was a pleasure working with you and your team, and we wish to express our thanks for the support you and other City staff provided to us during the study. If you have any questions, please do not hesitate to call me at (213) 262-9308.

Sincerely,

**RAFTELIS FINANCIAL CONSULTANTS, INC.**

A handwritten signature in blue ink that reads 'Steve Gagnon'.

**Steve Gagnon, P.E.**  
*Manager*

A handwritten signature in blue ink that reads 'Nancy Phan'.

**Nancy Phan**  
*Consultant*

# TABLE OF CONTENTS

- 1 Executive Summary ..... 1
  - 1.1 Background..... 1
  - 1.2 Process..... 1
  - 1.3 Methodology..... 1
  - 1.4 Financial Plan..... 2
  - 1.5 Proposed Rates..... 5
  - 1.6 Bill Impacts ..... 8
- 2 Water System..... 9
  - 2.1 Water System Background..... 9
  - 2.2 Growth Assumptions ..... 9
  - 2.3 Customer Accounts..... 9
  - 2.4 Water Usage ..... 13
- 3 Financial Plan ..... 14
  - 3.1 Key Assumptions..... 14
  - 3.2 Revenue..... 14
  - 3.3 Water Purchase Cost..... 17
  - 3.4 O&M Expenses..... 18
  - 3.5 Debt Service..... 20
  - 3.6 Capital Projects ..... 21
  - 3.7 Proposed Financial Plan ..... 21
  - 3.8 Reserves..... 25
- 4 Cost of Service Analysis..... 26
  - 4.1 Legal Framework ..... 26
  - 4.2 Methodology..... 27
  - 4.3 Revenue Requirement..... 28
  - 4.4 Functionalization of Expenses ..... 29
  - 4.5 System Peaking Factors ..... 30
  - 4.6 Customer-Specific Peaking Factors ..... 31
  - 4.7 Equivalent Meters and Lines ..... 31
  - 4.8 Allocation to Cost Components ..... 33

4.9	Unit Cost Derivation.....	36
5	Rate Derivation.....	46
5.1	Fixed Charge Calculation.....	46
5.2	Volumetric Charge Calculation.....	46
5.3	Private Fire Charge Calculation.....	49
5.4	Proposed Water Rates.....	50
5.5	Bill Impacts.....	52
	Appendix.....	54

# LIST OF TABLES

Table 1-1: Current Water Rates and Charges .....	5
Table 1-2: Proposed Monthly Fixed Charges (Non-CARE) .....	6
Table 1-3: Proposed Monthly Fixed Charges (CARE) .....	6
Table 1-4: Proposed Monthly Private Fire Charges .....	7
Table 1-5: Proposed Volumetric Charges.....	7
Table 1-6: Sample Multi-Family Customers’ Bill Impacts.....	8
Table 2-1: Demand Factors .....	9
Table 2-2: Projected Accounts and Meters .....	10
Table 2-3: Projected Public and Private Fire Lines .....	13
Table 2-4: Projected Water Usage .....	13
Table 3-1: Key Assumptions .....	14
Table 3-2: Current Monthly Fixed Charge (Residential).....	15
Table 3-3: Current Monthly Fixed Charge (Commercial and Irrigation).....	15
Table 3-4: Current Volumetric Charges .....	15
Table 3-5: Projected Calculated Revenue.....	16
Table 3-6: Projected Revenue .....	17
Table 3-7: Water Purchase Cost Calculation .....	18
Table 3-8: Projected O&M Expenses .....	19
Table 3-9: Existing Debt Service.....	20
Table 3-10: Refinanced Debt Service .....	21
Table 3-11: Capital Improvement Plan.....	21
Table 3-12: Proposed Revenue Adjustments.....	22
Table 3-13: Proposed Financial Plan.....	22
Table 4-1: Revenue Requirement .....	29
Table 4-2: System-Wide Peaking Factors.....	30
Table 4-3: Customer Class Peaking Factors.....	31
Table 4-4: Equivalent Meters .....	32
Table 4-5: Equivalent Private Fire Lines.....	33
Table 4-6: Equivalent Demand of Fire Hydrants.....	33
Table 4-7: O&M Expense Allocation .....	35
Table 4-8: Capital Expense Allocation .....	35
Table 4-9: Units of Service Derivation .....	37
Table 4-10: Revenue Offset Allocation .....	39
Table 4-11: Revenue Offsets to Cost Components.....	39
Table 4-12: Unit Cost Derivation.....	40
Table 4-13: Fire Cost Allocation .....	41
Table 4-14: Adjusted Unit Cost by Cost Component Derivation .....	43
Table 4-15: Cost of Service by Customer Class .....	45
Table 5-1: Proposed Monthly Fixed Charge .....	46
Table 5-2: Supply Unit Cost by Source.....	47
Table 5-3: SFR Supply Allocation.....	48
Table 5-4: Peaking Unit Cost Derivation.....	48

Table 5-5: Volumetric Charge Calculation.....	49
Table 5-6: Private Fire Charge Calculation .....	49
Table 5-7: Proposed Monthly Fixed Charges (Non-CARE).....	50
Table 5-8: Proposed Monthly Fixed Charge (CARE).....	50
Table 5-9: Proposed Volumetric Charges.....	51
Table 5-10: Proposed Monthly Private Fire Charges.....	51
Table 1-6: Sample Multi-Family Customers' Bill Impacts.....	53
Table A-0-1: Operating Budget Functionalization.....	54

# LIST OF FIGURES

Figure 1-1: Projected FY 2020 – FY 2024 Financial Plan.....	2
Figure 1-2: FY 2020 - FY 2024 Proposed Revenue Adjustments and Debt Coverage.....	3
Figure 1-3: Proposed Capital Financing Plan.....	4
Figure 1-4: Projected Ending Balances.....	4
Figure 1-5: Single Family Residential Monthly Bills at Various Use Points (hcf) .....	8
Figure 3-1: Projected FY 2020 – FY 2024 Financial Plan.....	23
Figure 3-2: FY 2020 - FY 2024 Proposed Revenue Adjustments and Debt Coverage.....	24
Figure 3-3: Proposed Capital Financing Plan.....	24
Figure 3-4: Projected Ending Balances.....	25
Figure 1-5: Single Family Residential Monthly Bills at Various Use Points (hcf) .....	52



# 1 EXECUTIVE SUMMARY

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This section summarizes the background, methodology, major rate structure changes, and results of the water rate study.

## 1.1 BACKGROUND

From 2017 to 2019, the City of Port Hueneme contracted Raftelis Financial Consultants, Inc. to conduct a water cost of service and rate study, which includes a comprehensive financial plan. This report documents the assumptions, methodologies, and analyses utilized to determine the resulting proposed water rates. The report presents information from fiscal year (FY) 2019<sup>1</sup> to FY 2024.

The study's major objectives include the following:

- » Ensure revenue sufficiency to fund operating and maintenance (O&M) costs, capital expenditures, and reserves for the City's water utility despite decreasing water usage.
- » Determine a rate structure that is fair, equitable, and defensible under Proposition 218 requirements and meets the City's pricing objectives.
- » Develop rates that adequately recover the City's costs while minimizing customer impacts.

## 1.2 PROCESS

Raftelis and City Council developed a water utility financial plan that analyzed the following scenarios:

- » **Water purchase cost** with and without the reverse osmosis (RO) system.
- » **Debt service** scenarios including current debt service, refinancing debt at a lower interest rate, and reducing debt principal by approximately \$800,000, or both.
- » **Various Capital project** scenarios which included fully funding the capital improvement plan (CIP) as developed by AKM Engineers or extending the projects over a longer time frame to minimize customer bill impacts.

Raftelis presented the options to the City and the City Council, and as a result, the Council chose a financial plan that involves an active RO system, refinancing current debt without reducing principal, and a Water Master Plan CIP that extends the CIP over a period of 12 years. This report presents the proposed water rates resulting from these selected financial planning scenarios.

## 1.3 METHODOLOGY

The proposed water rates were developed using cost of service principles set forth by the American Water Works Association (AWWA) M1 Manual titled *Principles of Water Rates, Fees and Charges* (M1 Manual). Cost of service principles endeavor to distribute costs to different customer classes in

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<sup>1</sup> In this report, FY 2019 refers to the year starting in July 1, 2018 and ending June 30, 2019. All other fiscal years begin and end in the same manner.

accordance with the way each class uses the water system. A detailed rate derivation is provided in later sections of this report.

## 1.4 FINANCIAL PLAN

To determine the revenue requirement needed to fund the City’s ongoing expenses, Raftelis projected the O&M costs, existing debt service, CIP, and reserve requirements for the study period from FY 2019 to FY 2024.

O&M expenses include water purchase cost, which includes an active RO system, salaries and benefits, utilities, supplies, system maintenance, miscellaneous contract services, etc. Expected O&M expenses over the study period range from \$4.3 million to \$5.0 million per year. The City plans to spend approximately \$16.9 million from FY 2020 to 2024 on capital projects based on the Water Master Plan. The City does not plan to incur new debt, therefore all capital projects are funded through water rates and reserves, which is also known as PAYGO.

Figure 1-1 shows the City’s projected financial plan over the five-year planning period. The red line represents revenues at current rates, the green line represents proposed revenues including the revenue adjustments shown in Figure 1-2. The blue bars show water supply costs, the purple bars show other O&M expenses, the red bars show debt service, and the orange bars show rate funded CIP. The green bars represent either the funding or depletion of reserves. If the green bar is above the x-axis, then the City is funding reserves; if the green bar is below the x-axis, then the City is depleting its reserves to cover costs. Depleting reserves, in this case, is acceptable to City Council because over the long term, reserves are still above the City’s target reserves.

**Figure 1-1: Projected FY 2020 – FY 2024 Financial Plan**

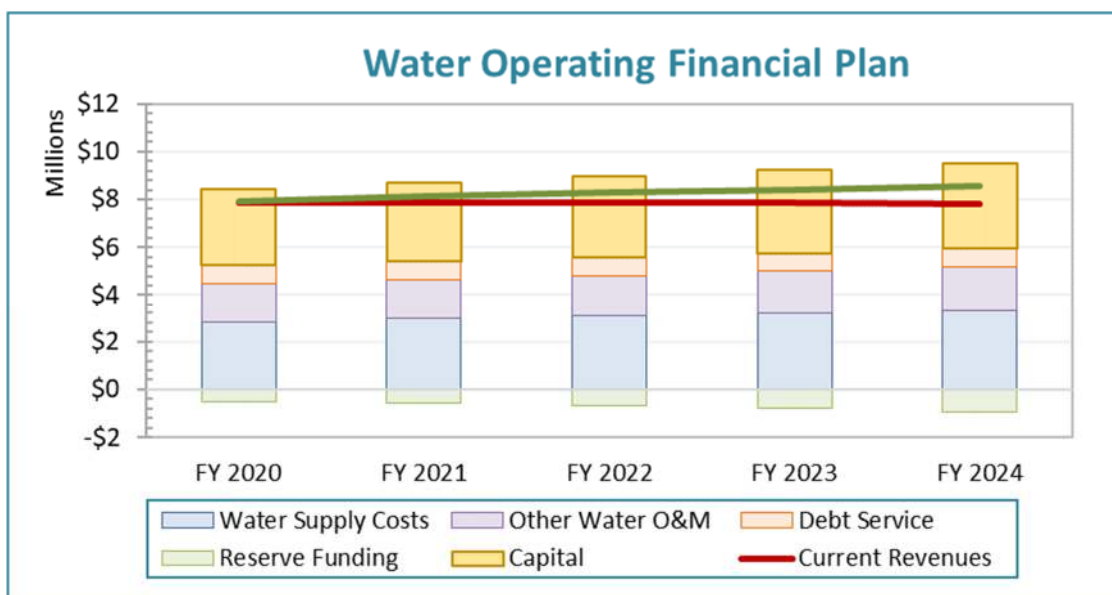


Figure 1-2 shows the proposed revenue adjustments of 1.9% and debt coverage ratio for the study period. The first revenue adjustment is anticipated to be effective in January of 2020. All subsequent revenue adjustments will be effective on July 1<sup>st</sup> of the corresponding fiscal year.

The following factors affect the proposed revenue adjustments (shown on the left axis):

- » **O&M expenses** increased approximately 3.6 percent from FY 2020 onward.
- » **Debt service** decreases due to refinancing of Promissory Notes (PN) 3, 6, 7, 8, and 9 loaned from the General Fund to the Water Enterprise
- » **Capital expenses** average approximately \$3.3 million each year for the study period.

The debt coverage target for the City’s existing debt is 1.25. The calculated debt coverage ratio remains above target for all years of the study (shown on right axis).

**Figure 1-2: FY 2020 - FY 2024 Proposed Revenue Adjustments and Debt Coverage**

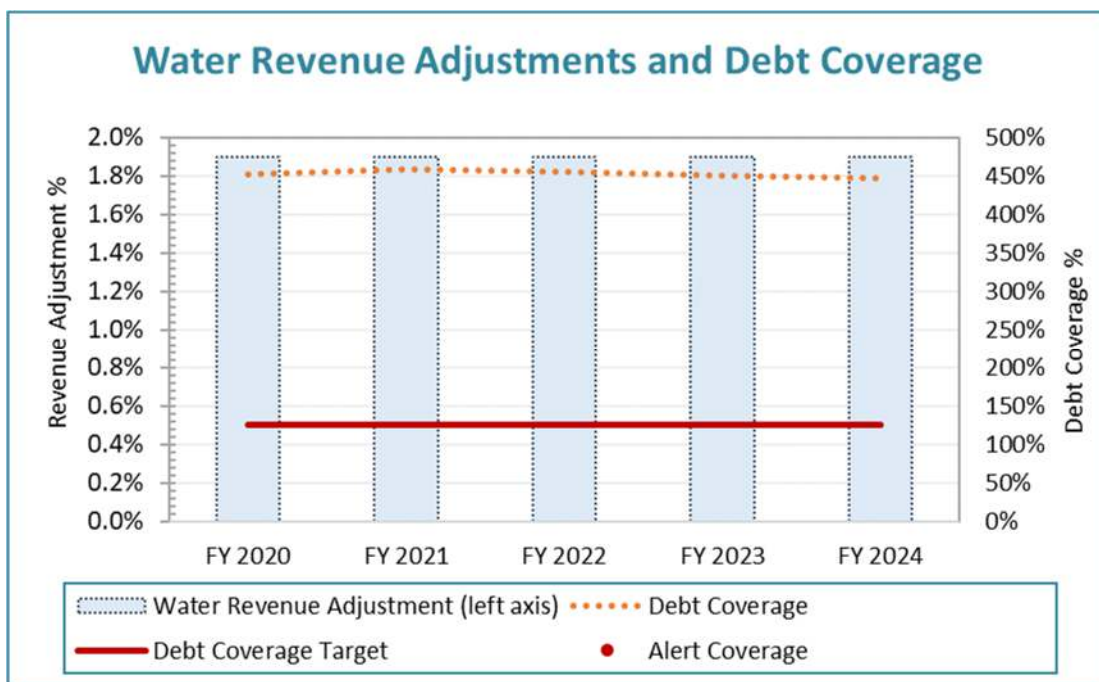


Figure 1-3 shows the total capital project expenses and their funding sources. The City expects to spend approximately \$16.9 million on CIP from FY 2020 to FY 2024, all of which will be funded through rates and reserves (also known as PAYGO).

Figure 1-3: Proposed Capital Financing Plan

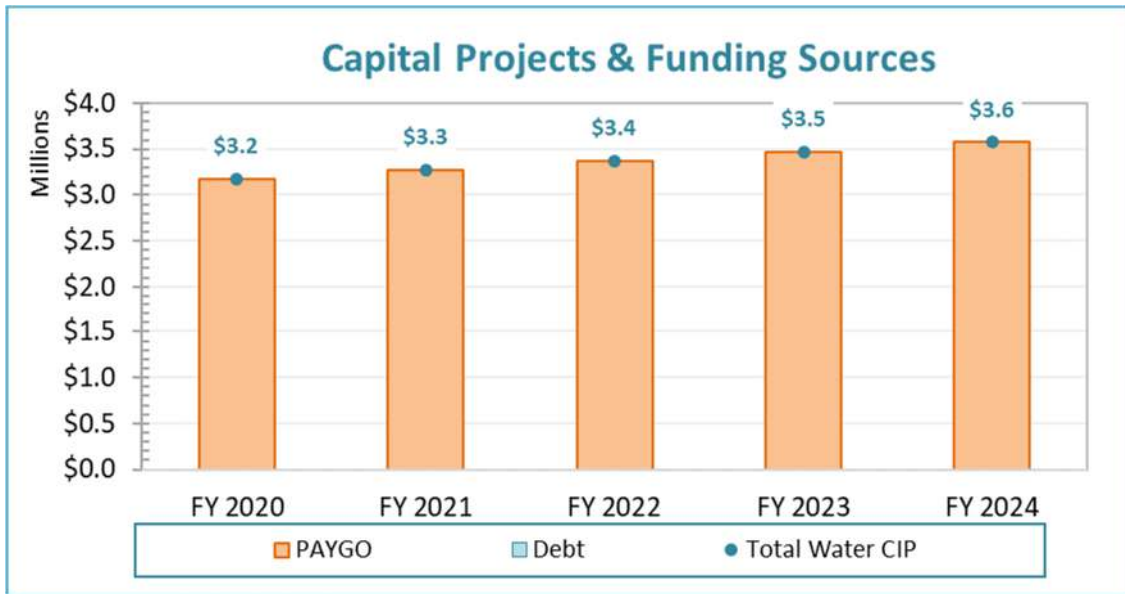
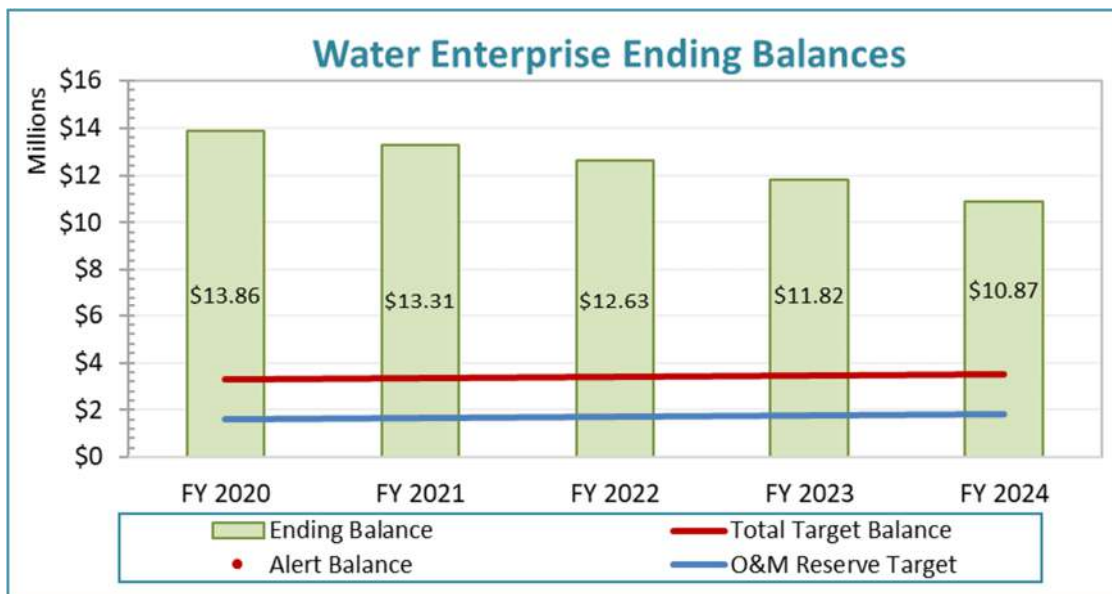


Figure 1-4 shows the City’s total reserve ending balances and reserve targets. The reserves slowly decrease but remain above reserve targets which helps mitigate cash flow risks, unexpected expenses, or asset failure.

The City modified its reserve targets slightly, which lowers the amount of revenue required. The model utilized the below reserve policy:

- » Operating Reserve: 25 percent of annual O&M expenses
- » Capital Reserve: 7.5 percent of Replacement Cost Less Depreciation (RCLD) asset value

Figure 1-4: Projected Ending Balances



## 1.5 PROPOSED RATES

Table 1-1 shows the City's current water rates and charges.

**Table 1-1: Current Water Rates and Charges**

Monthly Fixed Charges	Current Rate
<b>Residential/Small Business Rates</b>	
Single Unit Residential	\$37.62
Multi-unit Residential	\$37.62
Small Business & Auxiliary Usage	\$37.62
<b>Commercial/Irrigation Metered Water Rates</b>	
5/8"	\$31.13
3/4"	\$31.13
1"	\$77.82
1 1/2"	\$155.63
2"	\$249.01
3"	\$466.89
4"	\$778.16
6"	\$1,556.31
8"	\$2,490.10
10"	\$3,579.52
<b>Volumetric Charges</b>	
Residential/Small Business	\$3.80
Commercial/Irrigation	\$4.48

The proposed rate structure includes a monthly fixed charge based on meter size for all customer classes, a monthly fixed charge for Private Fire Lines based on line size, a three-tier inclining rate structure for Single Family Residential (SFR) volumetric charges, and a uniform volumetric charge for all other customer classes.

Raftelis expanded the customer classes from Residential and Commercial/Irrigation to SFR, Multi-Family Residential (MFR), Commercial, City Property, Irrigation, and City Irrigation based on observed peaking factors which represent how each class uses the system. SFR and MFR customers also include CARE customers, who receive a 7.5 percent discount on all rates.

Table 1-2 shows the fixed monthly charge for all customers (excluding CARE). Table 1-3 shows the fixed monthly charge for CARE customers. Table 1-4 shows the fixed monthly charge for Private Fire lines. Table 1-5 shows the volumetric charges for all customers.

**Table 1-2: Proposed Monthly Fixed Charges (Non-CARE)**

Fixed Monthly Meter Charge					
Meter Size	January 2020	July 2020	July 2021	July 2022	July 2023
5/8"	\$24.84	\$25.31	\$25.79	\$26.28	\$26.78
3/4"	\$24.84	\$25.31	\$25.79	\$26.28	\$26.78
1"	\$40.42	\$41.19	\$41.97	\$42.77	\$43.58
1 1/2"	\$79.39	\$80.90	\$82.44	\$84.00	\$85.60
2"	\$126.15	\$128.55	\$130.99	\$133.48	\$136.01
3"	\$274.23	\$279.44	\$284.75	\$290.16	\$295.67
4"	\$492.44	\$501.80	\$511.33	\$521.05	\$530.95
6"	\$780.80	\$795.64	\$810.75	\$826.16	\$841.85
8"	\$1,248.41	\$1,272.13	\$1,296.30	\$1,320.93	\$1,346.03
10"	\$1,793.95	\$1,828.04	\$1,862.77	\$1,898.16	\$1,934.23

**Table 1-3: Proposed Monthly Fixed Charges (CARE)**

CARE - Fixed Monthly Meter Charge					
Meter Size	January 2020	July 2020	July 2021	July 2022	July 2023
5/8"	\$22.98	\$23.42	\$23.86	\$24.31	\$24.78
3/4"	\$22.98	\$23.42	\$23.86	\$24.31	\$24.78
1"	\$37.39	\$38.10	\$38.82	\$39.56	\$40.31
1 1/2"	\$73.44	\$74.84	\$76.26	\$77.71	\$79.18
2"	\$116.69	\$118.91	\$121.17	\$123.47	\$125.81
3"	\$253.67	\$258.49	\$263.40	\$268.41	\$273.51
4"	\$455.51	\$464.16	\$472.98	\$481.97	\$491.13
6"	\$722.24	\$735.96	\$749.95	\$764.19	\$778.71
8"	\$1,154.78	\$1,176.72	\$1,199.08	\$1,221.86	\$1,245.08
10"	\$1,659.41	\$1,690.94	\$1,723.07	\$1,755.80	\$1,789.17

**Table 1-4: Proposed Monthly Private Fire Charges**

Private Fire Protection Charges					
Fireline Size	January 2020	July 2020	July 2021	July 2022	July 2023
3/4"	\$0.76	\$0.77	\$0.79	\$0.80	\$0.82
2"	\$9.98	\$10.17	\$10.36	\$10.56	\$10.76
3"	\$28.97	\$29.52	\$30.08	\$30.65	\$31.24
4"	\$61.72	\$62.89	\$64.09	\$65.31	\$66.55
6"	\$179.29	\$182.70	\$186.17	\$189.70	\$193.31
8"	\$382.06	\$389.32	\$396.72	\$404.25	\$411.93
10"	\$687.07	\$700.12	\$713.43	\$726.98	\$740.79

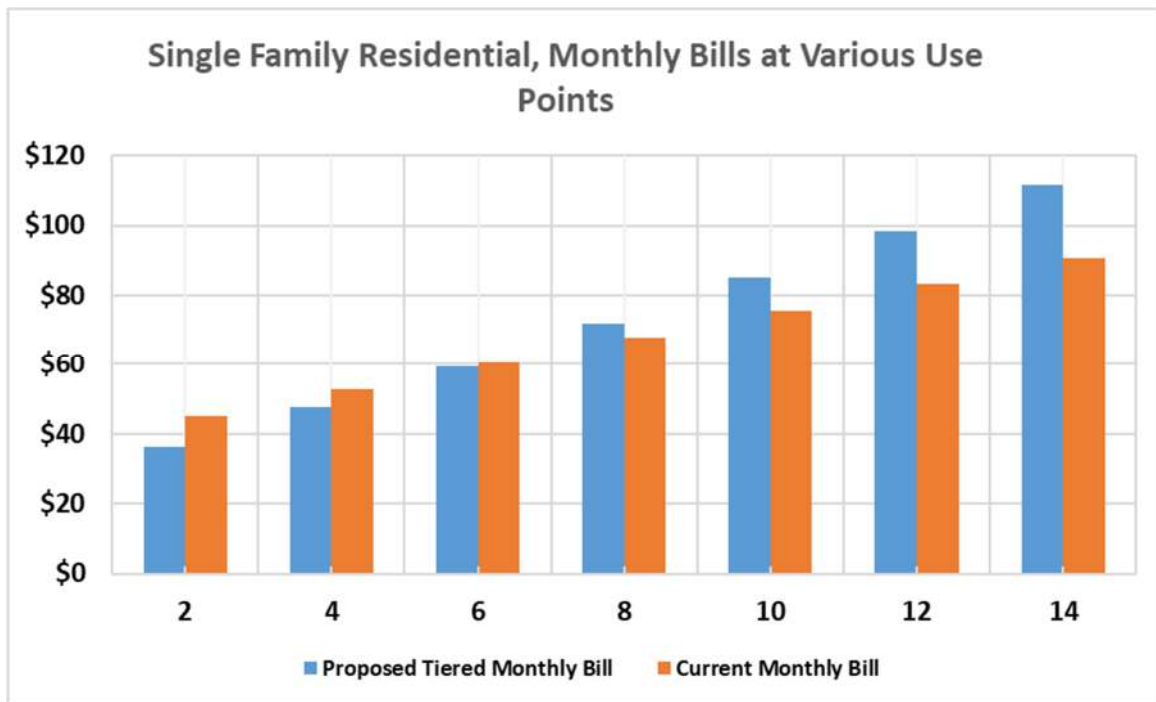
**Table 1-5: Proposed Volumetric Charges**

Volumetric Rate (\$/hcf)					
Customer Class	January 2020	July 2020	July 2021	July 2022	July 2023
Single Family Residential					
Tier 1 (0 - 4 hcf monthly)	\$5.71	\$5.82	\$5.93	\$6.04	\$6.16
Tier 2 (4 - 7 hcf)	\$5.81	\$5.92	\$6.03	\$6.15	\$6.26
Tier 3 (>7 hcf)	\$6.65	\$6.78	\$6.91	\$7.04	\$7.17
Single Family Residential CARE					
Tier 1 (0 - 4 hcf monthly)	\$5.28	\$5.38	\$5.48	\$5.58	\$5.69
Tier 2 (4 - 7 hcf)	\$5.37	\$5.47	\$5.58	\$5.68	\$5.79
Tier 3 (>7 hcf)	\$6.15	\$6.26	\$6.38	\$6.50	\$6.63
Multi-Family Residential	\$6.43	\$6.55	\$6.67	\$6.80	\$6.93
Multi-Family Residential CARE	\$5.94	\$6.06	\$6.17	\$6.29	\$6.41
Commercial	\$6.71	\$6.84	\$6.97	\$7.10	\$7.24
City Property	\$6.71	\$6.84	\$6.97	\$7.10	\$7.24
Irrigation	\$7.02	\$7.15	\$7.29	\$7.43	\$7.57
City Irrigation	\$7.02	\$7.15	\$7.29	\$7.43	\$7.57

## 1.6 BILL IMPACTS

Figure 1-5 shows the impacts of the proposed rates on a hypothetical Single-Family Residential customer with a 3/4" meter at different usage levels. Note that the average Single-Family Residential customer uses 6 hcf per month and the average bill will decrease from \$60.42 to \$59.30.

**Figure 1-5: Single Family Residential Monthly Bills at Various Use Points (hcf)**



Multi-family customers vary greatly in their water use and the number of dwelling units for each account. We have attempted to show the bill impacts for several Multi-family customers in Table 1-6 based on observed number of dwelling units, meter size and average monthly use. The current bill is a function of the dwelling units; however, the proposed bill is a function of meter size and water use only.

**Table 1-6: Sample Multi-Family Customers' Bill Impacts**

Customer Class	No. of Dwelling Units	Meter Size	Monthly Usage (hcf)	Proposed Tiered Monthly Bill	Current Monthly Bill	Difference (%)	Difference (\$)
Multi-Family	4	3/4"	32	\$230.47	\$272.08	-15.3%	-\$41.61
	6	2"	163	\$1,173.60	\$845.12	38.9%	\$328.48
	60	3"	205	\$1,591.57	\$3,036.20	-47.6%	-\$1,444.63
	91	3"	639	\$4,380.49	\$5,851.62	-25.1%	-\$1,471.13
	120	2"	1,623	\$10,555.65	\$10,681.80	-1.2%	-\$126.15
	201	6"	775	\$5,761.00	\$10,506.62	-45.2%	-\$4,745.62



## 2 WATER SYSTEM

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This section briefly describes the water system and the customer account and water usage data.

### 2.1 WATER SYSTEM BACKGROUND

The City of Port Hueneme provides potable water service to a population of approximately 21,000 through approximately 6,000 connections. The City relies solely on potable water from the Port Hueneme Water Agency (PHWA). The PHWA is a Joint Powers Agency that provides water to the City and other nearby utilities.

The water that PHWA supplies to the City consists of groundwater from the United Water Conservation District (UCWD) and imported water from the Calleguas Municipal Water District (CMWD). Groundwater from UCWD is provided through the Oxnard-Hueneme Pipeline and is treated using a nanofiltration and reverse osmosis desalination process then blended with groundwater.

Although reliant on water from PHWA to meet its needs, the City also has a direct connection to the Oxnard-Hueneme Pipeline and standby groundwater wells that can be used in case of emergency. The City's water system also includes more than 100 miles of pipeline. The distribution system consists of pipelines ranging from 4 to 12 inches in size.

### 2.2 GROWTH ASSUMPTIONS

City staff provided account and usage data for FY 2017. Growth assumptions were used to project the customer accounts and water usage data for FY 2019 and onward.

The City does not expect much of an increase in customer accounts during the study period. Table 2-1 shows the demand factor used to project future years' water usage. A demand factor of 100 percent maintains the status quo – meaning this study assumes a steady water demand compared to historical use. A demand factor of more the 100 signifies an increase in water demand.

**Table 2-1: Demand Factors**

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Demand Factor</b>					
Residential/Small Business	100%	100%	100%	100%	100%
Commercial/Irrigation	100%	100%	100%	100%	100%

### 2.3 CUSTOMER ACCOUNTS

Table 2-2 shows the projected accounts by customer class and meter size.

**Table 2-2: Projected Accounts and Meters**

Line		(A)	(B)	(C)	(D)	(E)	(F)
		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	<b>SFR (WR-R)</b>						
2	5/8"	50	50	50	50	50	50
3	3/4"	4,034	4,034	4,034	4,034	4,034	4,034
4	1"	233	233	233	233	233	233
5	1 1/2"	2	2	2	2	2	2
6	2"	-	-	-	-	-	-
7	3"	-	-	-	-	-	-
8	4"	-	-	-	-	-	-
9	6"	-	-	-	-	-	-
10	8"	-	-	-	-	-	-
11	10"	-	-	-	-	-	-
12	<b>Total</b>	<b>4,319</b>	<b>4,319</b>	<b>4,319</b>	<b>4,319</b>	<b>4,319</b>	<b>4,319</b>
13	<b>SFR CARE (WR-RC)</b>						
14	5/8"	4	4	4	4	4	4
15	3/4"	896	896	896	896	896	896
16	1"	13	13	13	13	13	13
17	1 1/2"	-	-	-	-	-	-
18	2"	-	-	-	-	-	-
19	3"	-	-	-	-	-	-
20	4"	-	-	-	-	-	-
21	6"	-	-	-	-	-	-
22	8"	-	-	-	-	-	-
23	10"	-	-	-	-	-	-
24	<b>Total</b>	<b>913</b>	<b>913</b>	<b>913</b>	<b>913</b>	<b>913</b>	<b>913</b>
25	<b>MFR (WR-MF)</b>						
26	5/8"	1	1	1	1	1	1
27	3/4"	100	100	100	100	100	100
28	1"	85	85	85	85	85	85
29	1 1/2"	20	20	20	20	20	20
30	2"	45	45	45	45	45	45
31	3"	10	10	10	10	10	10
32	4"	1	1	1	1	1	1
33	6"	1	1	1	1	1	1
34	8"	-	-	-	-	-	-
35	10"	-	-	-	-	-	-
36	<b>Total</b>	<b>263</b>	<b>263</b>	<b>263</b>	<b>263</b>	<b>263</b>	<b>263</b>

	(A)	(B)	(C)	(D)	(E)	(F)
Line	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
37	<b>MFR CARE (WR-MC, WR-CV)</b>					
38	5/8"	-	-	-	-	-
39	3/4"	6	6	6	6	6
40	1"	2	2	2	2	2
41	1 1/2"	1	1	1	1	1
42	2"	-	-	-	-	-
43	3"	-	-	-	-	-
44	4"	-	-	-	-	-
45	6"	-	-	-	-	-
46	8"	-	-	-	-	-
47	10"	-	-	-	-	-
48	<b>Total</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>
49	<b>Commercial Meters (W2-C)</b>					
50	5/8"	-	-	-	-	-
51	3/4"	46	46	46	46	46
52	1"	29	29	29	29	29
53	1 1/2"	38	38	38	38	38
54	2"	31	31	31	31	31
55	3"	9	9	9	9	9
56	4"	1	1	1	1	1
57	6"	-	-	-	-	-
58	8"	-	-	-	-	-
59	10"	2	2	2	2	2
60	<b>Total</b>	<b>156</b>	<b>156</b>	<b>156</b>	<b>156</b>	<b>156</b>
61	<b>City Property (CP-C)</b>					
62	5/8"	-	-	-	-	-
63	3/4"	9	9	9	9	9
64	1"	2	2	2	2	2
65	1 1/2"	-	-	-	-	-
66	2"	6	6	6	6	6
67	3"	1	1	1	1	1
68	4"	-	-	-	-	-
69	6"	-	-	-	-	-
70	8"	-	-	-	-	-
71	10"	-	-	-	-	-
72	<b>Total</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>

Line		(A)	(B)	(C)	(D)	(E)	(F)
		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
73	<b>Irrigation (IR-C)</b>						
74	5/8"	-	-	-	-	-	-
75	3/4"	3	3	3	3	3	3
76	1"	20	20	20	20	20	20
77	1 1/2"	78	78	78	78	78	78
78	2"	45	45	45	45	45	45
79	3"	5	5	5	5	5	5
80	4"	-	-	-	-	-	-
81	6"	-	-	-	-	-	-
82	8"	-	-	-	-	-	-
83	10"	-	-	-	-	-	-
84	<b>Total</b>	<b>151</b>	<b>151</b>	<b>151</b>	<b>151</b>	<b>151</b>	<b>151</b>
85	<b>City Irrigation (CI-C)</b>						
86	5/8"	-	-	-	-	-	-
87	3/4"	1	1	1	1	1	1
88	1"	4	4	4	4	4	4
89	1 1/2"	24	24	24	24	24	24
90	2"	22	22	22	22	22	22
91	3"	2	2	2	2	2	2
92	4"	1	1	1	1	1	1
93	6"	-	-	-	-	-	-
94	8"	-	-	-	-	-	-
95	10"	-	-	-	-	-	-
96	<b>Total</b>	<b>54</b>	<b>54</b>	<b>54</b>	<b>54</b>	<b>54</b>	<b>54</b>
97	<b>Total Accounts</b>						
98	5/8"	55	55	55	55	55	55
99	3/4"	5,095	5,095	5,095	5,095	5,095	5,095
100	1"	388	388	388	388	388	388
101	1 1/2"	163	163	163	163	163	163
102	2"	149	149	149	149	149	149
103	3"	27	27	27	27	27	27
104	4"	3	3	3	3	3	3
105	6"	1	1	1	1	1	1
106	8"	-	-	-	-	-	-
107	10"	2	2	2	2	2	2
108	<b>Total</b>	<b>5,883</b>	<b>5,883</b>	<b>5,883</b>	<b>5,883</b>	<b>5,883</b>	<b>5,883</b>

Table 2-3 shows the projected public and private fire lines for the study period.

**Table 2-3: Projected Public and Private Fire Lines**

Fire Protection	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Public Fire Protection</b>						
Residential (1x4", 1x2.5")	713	713	713	713	713	713
Commercial (1x4", 2x2.5")	237	237	237	237	237	237
<b>Total</b>	<b>950</b>	<b>950</b>	<b>950</b>	<b>950</b>	<b>950</b>	<b>950</b>
<b>Private Fire Protection</b>						
0.75"	1	1	1	1	1	1
2"	1	1	1	1	1	1
3"	1	1	1	1	1	1
4"	24	24	24	24	24	24
6"	10	10	10	10	10	10
8"	4	4	4	4	4	4
10"	1	1	1	1	1	1
<b>Total</b>	<b>42</b>	<b>42</b>	<b>42</b>	<b>42</b>	<b>42</b>	<b>42</b>

## 2.4 WATER USAGE

Table 2-4 shows the projected water usage for all customer classes, using the demand factors shown in Table 2-1. As shown, the study assumed no growth in water demand.

**Table 2-4: Projected Water Usage**

Line	Water Usage Data	(A)	(B)	(C)	(D)	(E)	(F)
		FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
1	<b>Water Usage</b>						
2	Single Family Residential	327,609	327,609	327,609	327,609	327,609	327,609
3	Single Family Residential CARE	81,593	81,593	81,593	81,593	81,593	81,593
4	Multi-Family Residential	177,007	177,007	177,007	177,007	177,007	177,007
5	Multi-Family Residential CARE	4,656	4,656	4,656	4,656	4,656	4,656
6	Commercial	88,654	88,654	88,654	88,654	88,654	88,654
7	City Property	2,437	2,437	2,437	2,437	2,437	2,437
8	Irrigation	107,316	107,316	107,316	107,316	107,316	107,316
9	City Irrigation	26,302	26,302	26,302	26,302	26,302	26,302
10	<b>Total (hcf)</b>	<b>815,575</b>	<b>815,575</b>	<b>815,575</b>	<b>815,575</b>	<b>815,575</b>	<b>815,575</b>
11	<b>Total (AF)</b>	<b>1,872</b>	<b>1,872</b>	<b>1,872</b>	<b>1,872</b>	<b>1,872</b>	<b>1,872</b>

### 3 FINANCIAL PLAN

This report section discusses O&M expenses, CIP, reserve funding, projected revenue under existing rates, and revenue adjustments needed to ensure the Water Utility’s fiscal sustainability and solvency. This section covers the Study period, FY 2020 – 2024, and also includes FY 2019, the budget year. This budget year provides the basis from which we project revenues and expenses for the study period.

#### 3.1 KEY ASSUMPTIONS

To ensure that future costs and revenues are reasonably projected, it is necessary to make informed assumptions about inflationary factors. Table 3-1 shows the key assumptions used to determine the financial plan, which were developed with input from City staff and are based on industry standards, historical estimates, or future expectations.

The revenue assumptions in lines 2 through 4, are used to project non-rate, or miscellaneous, revenue (Line 2) and calculate interest income (Line 4). The expense escalation factors (Lines 5-13) are used to project O&M expenses.

**Table 3-1: Key Assumptions**

Line	(A) FY 2020	(B) FY 2021	(C) FY 2022	(D) FY 2023	(E) FY 2024
<b>1 Revenues</b>					
2 Non-Rate Revenues	0.5%	0.5%	0.5%	0.5%	0.5%
3 Water Revenue Adjustment	1.9%	1.9%	1.9%	1.9%	1.9%
4 Reserve Interest Rate	1.0%	1.0%	1.0%	1.0%	1.0%
<b>5 Escalation Factors</b>					
6 General	3.0%	3.0%	3.0%	3.0%	3.0%
7 Salary	2.5%	2.5%	2.5%	2.5%	2.5%
8 Benefits	3.5%	3.5%	3.5%	3.5%	3.5%
9 Electricity	5.0%	5.0%	5.0%	5.0%	5.0%
10 Fuel	2.0%	2.0%	2.0%	2.0%	2.0%
11 PHWA Fixed	4.0%	4.0%	4.0%	4.0%	4.0%
12 PHWA Variable	4.0%	4.0%	4.0%	4.0%	4.0%
13 Capital	3.0%	3.0%	3.0%	3.0%	3.0%

#### 3.2 REVENUE

Table 3-2, Table 3-3 and Table 3-4 show the City’s current water rates: monthly fixed charge for Residential customers, monthly fixed charge for Commercial and Irrigation customers, and volumetric charge for all customers, respectively. The current rate structure consists of a flat monthly fixed charge for Residential customers, a monthly fixed charge based on meter size for Commercial and Irrigation customers, and uniform volumetric charges per hcf for all customers.

**Table 3-2: Current Monthly Fixed Charge (Residential)**

	(A)	(B)
Line	Customer Class	Per Dwelling Unit
1	Single Unit Residential	\$37.62
2	Multi-Unit Residential	\$37.62

**Table 3-3: Current Monthly Fixed Charge (Commercial and Irrigation)**

	(A)	(B)
Line	Meter Size	Per Meter Size
1	<b>Commercial/Irrigation</b>	
2	5/8"	\$31.13
3	3/4"	\$31.13
4	1"	\$77.82
5	1 1/2"	\$155.63
6	2"	\$249.01
7	3"	\$466.89
8	4"	\$778.16
9	6"	\$1,556.31
10	8"	\$2,490.10
11	10"	\$3,579.52

**Table 3-4: Current Volumetric Charges**

	(A)	(B)
Line	Customer Class	Per HCF
1	Residential	\$3.80
2	Commercial/Irrigation	\$4.48

To calculate current water rate revenue, the rates shown in Table 3-2, Table 3-3 and Table 3-4 are multiplied by customer account and usage data from Error! Reference source not found., Table 2-2 and Table 2-4.

Table 3-5 shows the calculated water rate revenue, separated by fixed and volumetric charges and customer class.

The monthly fixed charge revenue for Residential customers (Lines 2-5) are calculated using the rates in Table 3-2 and the Residential unit data in Error! Reference source not found.. For example, the monthly fixed charge revenue for SFR customers for FY 2019 (Column A, Line 2) is calculated using the following equation:

$$[\text{Error! Reference source not found. A2}] \times [\text{Table 3-2 B1}] \times 12 \text{ months} = [\text{Table 3-4 A2}]$$

The monthly fixed charge revenue for Commercial and Irrigation customers (Lines 6-9) are calculated using the rates in Table 3-3 and the meter data in Table 3-4. For example, the monthly fixed charge revenue for Commercial customers for FY 2019 (Column A, Line 6) is calculated using the following equation:

$$[\text{Table 2-2 A50-59}] \times [\text{Table 3-3 B2-11}] \times 12 \text{ months} = [\text{Table 3-5 A6}]$$

The volumetric charge revenue for all customer classes is calculated by multiplying the volumetric charge for each customer class in Table 3-4 and the water usage data in Table 2-4. Residential customers (Line 12-15) are charged the Residential rate (Table 3-4, Line 1) and Commercial and Irrigation customers (Lines 16-19) are charged the Commercial/Irrigation rate (Table 3-4, Line 2).

**Table 3-5: Projected Calculated Revenue**

Line	(A) FY 2019	(B) FY 2020	(C) FY 2021	(D) FY 2022	(E) FY 2023	(F) FY 2024
<b>1 Monthly Fixed Charges</b>						
2 Single Family Residential	\$1,949,769	\$1,949,769	\$1,949,769	\$1,949,769	\$1,949,769	\$1,949,769
3 Single Family Residential CARE	\$381,252	\$381,252	\$381,252	\$381,252	\$381,252	\$381,252
4 Multi-Family Residential	\$783,248	\$783,248	\$783,248	\$783,248	\$783,248	\$783,248
5 Multi-Family Residential CARE	\$323,626	\$323,626	\$323,626	\$323,626	\$323,626	\$323,626
6 Commercial	\$353,535	\$353,535	\$353,535	\$353,535	\$353,535	\$353,535
7 City Property	\$28,761	\$28,761	\$28,761	\$28,761	\$28,761	\$28,761
8 Irrigation	\$327,946	\$327,946	\$327,946	\$327,946	\$327,946	\$327,946
9 City Irrigation	\$135,212	\$135,212	\$135,212	\$135,212	\$135,212	\$135,212
<b>10 Total</b>	<b>\$4,283,350</b>	<b>\$4,283,350</b>	<b>\$4,283,350</b>	<b>\$4,283,350</b>	<b>\$4,283,350</b>	<b>\$4,283,350</b>
<b>11 Volumetric Charges</b>						
12 Single Family Residential	\$1,244,914	\$1,244,914	\$1,244,914	\$1,244,914	\$1,244,914	\$1,244,914
13 Single Family Residential CARE	\$286,800	\$286,800	\$286,800	\$286,800	\$286,800	\$286,800
14 Multi-Family Residential	\$672,626	\$672,626	\$672,626	\$672,626	\$672,626	\$672,626
15 Multi-Family Residential CARE	\$16,367	\$16,367	\$16,367	\$16,367	\$16,367	\$16,367
16 Commercial	\$397,171	\$397,171	\$397,171	\$397,171	\$397,171	\$397,171
17 City Property	\$10,920	\$10,920	\$10,920	\$10,920	\$10,920	\$10,920
18 Irrigation	\$480,777	\$480,777	\$480,777	\$480,777	\$480,777	\$480,777
19 City Irrigation	\$117,832	\$117,832	\$117,832	\$117,832	\$117,832	\$117,832
<b>20 Total</b>	<b>\$3,227,407</b>	<b>\$3,227,407</b>	<b>\$3,227,407</b>	<b>\$3,227,407</b>	<b>\$3,227,407</b>	<b>\$3,227,407</b>

Table 3-6 shows the projected revenue for study period. Note that the calculated revenue in Table 3-5 is equal to the rate revenue in Table 3-6. The SFR revenues (Lines 4 and 8) are equal to the volumetric charge revenue and monthly fixed charge revenue, respectively, shown in Table 3-5 for SFR and SFR CARE customers. The MFR revenues (Lines 5 and 9) are equal to the revenues shown for MFR and MFR CARE customers. The Commercial/Irrigation volumetric charge revenues (Line 6) are equal the volumetric charge revenue for Commercial, City Property, Irrigation, and City Irrigation customers. The City of Port Hueneme (COPH) monthly fixed charge revenue (Line 7) is equal to the fixed charge revenue for City Property and City Irrigation customers (Table 3-5, Lines 17 and 19).



**Table 3-6: Projected Revenue**

Line	(A) FY 2019	(B) FY 2020	(C) FY 2021	(D) FY 2022	(E) FY 2023	(F) FY 2024
<b>1 Water Operations Fund (441)</b>						
2 Delinquent Fees	\$126,047	\$126,678	\$127,311	\$127,948	\$128,587	\$129,230
3 Copenhaven Services	\$4,744	\$4,768	\$4,791	\$4,815	\$4,839	\$4,864
4 Single Unit Residential	\$1,449,045	\$1,449,045	\$1,449,045	\$1,449,045	\$1,449,045	\$1,449,045
5 Multi-Unit Residential	\$596,461	\$596,461	\$596,461	\$596,461	\$596,461	\$596,461
6 Commercial/Irrigation	\$1,149,759	\$1,149,759	\$1,149,759	\$1,149,759	\$1,149,759	\$1,149,759
7 Copenhaven Fixed Charges	\$0	\$0	\$0	\$0	\$0	\$0
8 Fixed Single Unit Residential	\$2,308,087	\$2,308,087	\$2,308,087	\$2,308,087	\$2,308,087	\$2,308,087
9 Fixed Multi-unit Residential	\$1,127,080	\$1,127,080	\$1,127,080	\$1,127,080	\$1,127,080	\$1,127,080
10 Fixed Commercial/Irrigation	\$838,587	\$838,587	\$838,587	\$838,587	\$838,587	\$838,587
11 Interest	\$117,120	\$118,291	\$119,474	\$120,669	\$121,876	\$123,094
12 Misc Refunds and Claims	\$66,225	\$66,225	\$66,225	\$66,225	\$66,225	\$66,225
13 Miscellaneous Revenues	\$5,678	\$5,707	\$5,735	\$5,764	\$5,793	\$5,822
<b>14 Subtotal</b>	<b>\$7,788,834</b>	<b>\$7,790,687</b>	<b>\$7,792,556</b>	<b>\$7,794,440</b>	<b>\$7,796,339</b>	<b>\$7,798,254</b>
<b>15 Plant Operations Fund (443)</b>						
16 Interest	\$0	\$0	\$0	\$0	\$0	\$0
17 PHWA Revenue	\$0	\$1,188,447	\$1,194,389	\$1,200,361	\$1,206,363	\$1,212,395
<b>18 Subtotal</b>	<b>\$0</b>	<b>\$1,188,447</b>	<b>\$1,194,389</b>	<b>\$1,200,361</b>	<b>\$1,206,363</b>	<b>\$1,212,395</b>
<b>21 Total Budgeted Revenues</b>	<b>\$7,788,834</b>	<b>\$8,979,134</b>	<b>\$8,986,945</b>	<b>\$8,994,801</b>	<b>\$9,002,702</b>	<b>\$9,010,649</b>

### 3.3 WATER PURCHASE COST

Table 3-7 shows the water purchase cost calculations assuming the RO plant is working – which increases the cost of purchased water slightly but creates better quality water – thus City Council decided to maintain its operation. The PHWA fixed (Line 2) and variable (Lines 3-4) water rates for future years is inflated using the PHWA Fixed and the PHWA Variable (Table 3-1, Lines 11 and 12) escalation factors, respectively to anticipate future price increases.

The total AF sold (Line 5) is equal to the total water usage in AF (Table 2-4, Line 11). The water loss percentage (Line 6) was estimated by City staff. The total water purchased (Line 7) is equal to the total water sold (Line 5) accounting for water loss. The equation used to calculate the total water purchased for FY 2019 is as follows:

$$[A5] / [1-A6] = A7$$

The fixed charge cost from PHWA (Line 9) is calculated using the monthly fixed charge (Line 2) multiplied by 12 months. The variable rates (Lines 3-4) are multiplied by the total AF purchased (Line 7) to determine the variable cost (Lines 10-11). The reverse osmosis cost (line 11) is also the rate in line 4 multiplied by the AF purchased in line 7.

**Table 3-7: Water Purchase Cost Calculation**

Line	Water Purchases Costs	(A) FY 2019	(B) FY 2020	(C) FY 2021	(D) FY 2022	(E) FY 2023	(F) FY 2024
1	<b>PHWA Water Rates (R.O. Active)</b>						
2	PHWA Monthly Fixed Charge	\$95,589	\$99,413	\$103,389	\$107,525	\$111,826	\$116,299
3	PHWA Variable Rate (\$/AF)	\$761	\$791	\$823	\$855	\$890	\$925
4	Reverse Osmosis Operation (\$/AF)	\$45	\$47	\$49	\$51	\$53	\$55
5	Total AF Sold	1,872	1,872	1,872	1,872	1,872	1,872
6	Water Loss Percentage	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
7	<b>Total AF Purchased</b>	2,080	2,080	2,080	2,080	2,080	2,080
8	<b>Water Supply Costs (R.O. Active)</b>						
9	Water PHWA Fixed Charges	\$1,147,068	\$1,192,950	\$1,240,668	\$1,290,295	\$1,341,907	\$1,395,583
10	Water PHWA Variable Chrgs	\$1,582,137	\$1,645,423	\$1,711,240	\$1,779,689	\$1,850,877	\$1,924,912
11	Reverse Osmosis Operation	\$93,560	\$97,302	\$101,194	\$105,242	\$109,452	\$113,830
12	<b>Total Water Supply Costs</b>	<b>\$2,822,765</b>	<b>\$2,935,675</b>	<b>\$3,053,102</b>	<b>\$3,175,226</b>	<b>\$3,302,235</b>	<b>\$3,434,325</b>

### 3.4 O&M EXPENSES

Table 3-8 shows the projected O&M expenses, which are inflated using the escalation factors in Table 3-1. Note that the water purchase cost (Lines 35-47) are the same as those in Table 3-7.

**Table 3-8: Projected O&M Expenses**

Line	(A) FY 2019	(B) FY 2020	(C) FY 2021	(D) FY 2022	(E) FY 2023	(F) FY 2024
<b>1 Water Operations Fund (441)</b>						
<b>2 Salary and Benefits</b>						
3 Full Time	\$368,920	\$378,143	\$387,597	\$397,286	\$407,219	\$417,399
4 Overtime	\$22,655	\$23,221	\$23,802	\$24,397	\$25,007	\$25,632
5 Standby	\$24,080	\$24,923	\$25,795	\$26,698	\$27,632	\$28,599
6 Cafeteria Earnings	\$18,563	\$19,212	\$19,885	\$20,581	\$21,301	\$22,047
7 Longevity Pay	\$4,536	\$4,695	\$4,859	\$5,029	\$5,205	\$5,387
8 Car Allowance	\$448	\$464	\$480	\$497	\$514	\$532
9 Bilingual Premium	\$724	\$749	\$776	\$803	\$831	\$860
10 Annual Leave Buyout	\$11,991	\$12,411	\$12,845	\$13,295	\$13,760	\$14,242
11 Compensatory Leave Buyo	\$288	\$298	\$309	\$320	\$331	\$342
12 Taxes FICA-Employer	\$27,335	\$28,291	\$29,281	\$30,306	\$31,367	\$32,465
13 Taxes Medicare-Employer	\$6,310	\$6,531	\$6,759	\$6,996	\$7,241	\$7,494
14 PERS	\$144,936	\$150,009	\$155,260	\$160,694	\$166,318	\$172,139
15 POB PERS Debt Svc Alloc	\$26,048	\$26,960	\$27,903	\$28,880	\$29,891	\$30,937
16 LTD/Life Insurance	\$2,549	\$2,639	\$2,731	\$2,826	\$2,925	\$3,028
17 City Contr Def Comp-401K	\$1,677	\$1,736	\$1,796	\$1,859	\$1,924	\$1,992
18 Medical Insurance	\$35,903	\$37,160	\$38,460	\$39,806	\$41,199	\$42,641
19 Dental Insurance	\$3,342	\$3,459	\$3,580	\$3,706	\$3,835	\$3,969
20 Vision Insurance	\$575	\$595	\$616	\$637	\$660	\$683
21 Incr/Decr Annual Lv Value	\$7,034	\$7,245	\$7,462	\$7,686	\$7,916	\$8,154
<b>22 Subtotal</b>	<b>\$707,914</b>	<b>\$728,740</b>	<b>\$750,196</b>	<b>\$772,301</b>	<b>\$795,077</b>	<b>\$818,542</b>
<b>23 Operating (Includes Water Purchases)</b>						
24 Attorney Fees	\$4,696	\$4,837	\$4,982	\$5,131	\$5,285	\$5,444
25 Cont Svcs-Miscellaneous	\$190,759	\$196,481	\$202,376	\$208,447	\$214,700	\$221,141
26 Utilities	\$18,976	\$19,924	\$20,921	\$21,967	\$23,065	\$24,218
27 Cell Phones	\$2,979	\$3,068	\$3,160	\$3,255	\$3,352	\$3,453
28 Conference/Travel	\$4,250	\$4,377	\$4,509	\$4,644	\$4,783	\$4,927
29 Office Supplies	\$2,232	\$2,298	\$2,367	\$2,438	\$2,512	\$2,587
30 Printing/Publications	\$5,295	\$5,454	\$5,617	\$5,786	\$5,959	\$6,138
31 General System Maint	\$86,478	\$89,073	\$91,745	\$94,497	\$97,332	\$100,252
32 Safety Supplies	\$1,165	\$1,200	\$1,236	\$1,273	\$1,311	\$1,350
33 Dues/Memberships	\$9,875	\$10,171	\$10,477	\$10,791	\$11,115	\$11,448
34 Water Analysis	\$14,827	\$15,272	\$15,730	\$16,202	\$16,688	\$17,189
35 Water PHWA Fixed Charge	\$1,147,068	\$1,192,950	\$1,240,668	\$1,290,295	\$1,341,907	\$1,395,583
36 Water PHWA Variable Chrg	\$1,582,137	\$1,645,423	\$1,711,240	\$1,779,689	\$1,850,877	\$1,924,912
37 Water PHWA RO Active Pre	\$97,302	\$101,194	\$105,242	\$109,452	\$113,830	\$118,383
38 Water Meters	\$3,254	\$3,351	\$3,452	\$3,555	\$3,662	\$3,772
39 WATER CONSERVATION	\$2,775	\$2,858	\$2,944	\$3,033	\$3,124	\$3,217
<b>40 Subtotal</b>	<b>\$3,174,066</b>	<b>\$3,297,932</b>	<b>\$3,426,664</b>	<b>\$3,560,454</b>	<b>\$3,699,502</b>	<b>\$3,844,014</b>
<b>41 Capital</b>						
42 Vehicles	\$5,249	\$5,406	\$5,568	\$5,736	\$5,908	\$6,085
<b>43 Subtotal</b>	<b>\$5,249</b>	<b>\$5,406</b>	<b>\$5,568</b>	<b>\$5,736</b>	<b>\$5,908</b>	<b>\$6,085</b>
<b>44 Other</b>						
45 Cost Allocation	\$357,628	\$368,357	\$379,408	\$390,790	\$402,513	\$414,589
46 ISF Allocation Expenses	\$89,598	\$92,286	\$95,054	\$97,906	\$100,843	\$103,868
<b>47 Subtotal</b>	<b>\$447,226</b>	<b>\$460,642</b>	<b>\$474,462</b>	<b>\$488,696</b>	<b>\$503,356</b>	<b>\$518,457</b>
<b>48 Total O&amp;M Expenses</b>	<b>\$4,334,454</b>	<b>\$4,492,721</b>	<b>\$4,656,890</b>	<b>\$4,827,187</b>	<b>\$5,003,842</b>	<b>\$5,187,098</b>

### 3.5 DEBT SERVICE

Table 3-9 shows the existing annual debt service for Promissory Notes (PN) 3, 6, 7, 8, and 9, split into principal and interest payments. These are loans from the General Fund to the Water Enterprise.

**Table 3-9: Existing Debt Service**

Existing Water Debt Service	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Water Promissory Note #3</b>						
Principal	\$253,147	\$266,099	\$279,713	\$294,024	\$309,066	\$324,879
Interest	\$404,147	\$391,196	\$377,582	\$363,271	\$348,228	\$332,416
<b>Total Payment</b>	<b>\$657,295</b>	<b>\$657,295</b>	<b>\$657,295</b>	<b>\$657,295</b>	<b>\$657,295</b>	<b>\$657,295</b>
<b>Water Promissory Note #6</b>						
Principal	\$151,475	\$159,225	\$167,371	\$175,934	\$184,936	\$194,397
Interest	\$239,207	\$231,457	\$223,311	\$214,748	\$205,747	\$196,285
<b>Total Payment</b>	<b>\$390,682</b>	<b>\$390,682</b>	<b>\$390,682</b>	<b>\$390,682</b>	<b>\$390,682</b>	<b>\$390,682</b>
<b>Water Promissory Note #7</b>						
Principal	\$7,779	\$8,177	\$8,596	\$9,035	\$9,498	\$9,984
Interest	\$12,420	\$12,022	\$11,603	\$11,163	\$10,701	\$10,215
<b>Total Payment</b>	<b>\$20,199</b>	<b>\$20,199</b>	<b>\$20,199</b>	<b>\$20,199</b>	<b>\$20,199</b>	<b>\$20,199</b>
<b>Water Promissory Note #8</b>						
Principal	\$6,807	\$7,155	\$7,521	\$7,906	\$8,310	\$8,736
Interest	\$10,867	\$10,519	\$10,153	\$9,768	\$9,364	\$8,938
<b>Total Payment</b>	<b>\$17,674</b>	<b>\$17,674</b>	<b>\$17,674</b>	<b>\$17,674</b>	<b>\$17,674</b>	<b>\$17,674</b>
<b>Water Promissory Note #9</b>						
Principal	\$3,334	\$3,504	\$3,684	\$3,872	\$4,070	\$4,278
Interest	\$5,323	\$5,152	\$4,973	\$4,784	\$4,586	\$4,378
<b>Total Payment</b>	<b>\$8,657</b>	<b>\$8,657</b>	<b>\$8,657</b>	<b>\$8,657</b>	<b>\$8,657</b>	<b>\$8,657</b>
<b>Total Existing Debt Service</b>	<b>\$1,094,506</b>	<b>\$1,094,506</b>	<b>\$1,094,506</b>	<b>\$1,094,506</b>	<b>\$1,094,506</b>	<b>\$1,094,506</b>

The City assumed it will refinance the loan from the General Fund to the water utility at 3.1 percent interest over 20 years to reduce the annual debt service payments. The interest rate reflects treasury rates in the Spring of 2018 when City Council was considering this option. The original loan interest was 5%. Table 3-10 shows the refinanced debt service (Line 4 and 6) and the difference between the existing and refinanced debt service payment (Line 7).

**Table 3-10: Refinanced Debt Service**

Line	(A) FY 2019	(B) FY 2020	(C) FY 2021	(D) FY 2022	(E) FY 2023	(F) FY 2024
<b>1 Debt Refinancing at 3.11% Interest</b>						
2 All Water Promissory Notes (Excl. PN#6)	\$463,618	\$463,618	\$463,618	\$463,618	\$463,618	\$463,618
3 PN#6 (PN#6 had interest added to the Principal)	\$294,157	\$294,157	\$294,157	\$294,157	\$294,157	\$294,157
<b>4 Total Refinanced Debt Service</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>
5 Current Debt Service	\$1,094,506	\$1,094,506	\$1,094,506	\$1,094,506	\$1,094,506	\$1,094,506
6 Refinance	\$757,775	\$757,775	\$757,775	\$757,775	\$757,775	\$757,775
<b>7 Difference</b>	<b>\$336,731</b>	<b>\$336,731</b>	<b>\$336,731</b>	<b>\$336,731</b>	<b>\$336,731</b>	<b>\$336,731</b>

The City does not plan to incur new debt during the planning period.

### 3.6 CAPITAL PROJECTS

Table 3-11 shows the City’s CIP for the study period, which includes projects from the Water Master Plan by AKM Engineers. The project costs are inflated using the Capital escalation factor shown in Table 3-1 (Line 13). Since the City does not plan to incur new debt, all capital projects will be funded through water rates and reserves.

**Table 3-11: Capital Improvement Plan**

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Capital Projects - Water Master Plan						
Project No. 1	\$0	\$0	\$0	\$0	\$0	\$0
Project No. 2	\$3,085,759	\$0	\$0	\$0	\$0	\$0
Project No. 3	\$0	\$3,178,331	\$0	\$0	\$0	\$0
Project No. 4	\$0	\$0	\$3,273,681	\$0	\$0	\$0
Project No. 5	\$0	\$0	\$0	\$3,371,892	\$0	\$0
Project No. 6	\$0	\$0	\$0	\$0	\$3,473,048	\$0
Project No. 7	\$0	\$0	\$0	\$0	\$0	\$3,577,240
Project No. 8	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total CIP Expenditure</b>	<b>\$3,085,759</b>	<b>\$3,178,331</b>	<b>\$3,273,681</b>	<b>\$3,371,892</b>	<b>\$3,473,048</b>	<b>\$3,577,240</b>

### 3.7 PROPOSED FINANCIAL PLAN

The proposed revenue adjustments ensure adequate revenue to fund operating expenses, capital projects, and reserve requirements over the study period. The financial plan assumes that the revenue adjustments occur in July of every FY except the first revenue adjustment which is January 1 of 2020. Table 3-12 shows the proposed revenue adjustments from FY 2020 to FY 2024. City Council selected the revenue adjustments shown in May 2019.

**Table 3-12: Proposed Revenue Adjustments**

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
	January 1, 2020	July 1, 2020	July 1, 2021	July 1, 2022	July 1, 2023
<b>Water Revenue Adjustment</b>	1.9%	1.9%	1.9%	1.9%	1.9%

Table 3-13 shows the proposed financial plan, which includes the revenue from the revenue adjustments. The net revenue (Line 21) is equal to the total revenues (Line 13) less O&M expenses (Line 20). The net cash flow (Line 29) is equal to the net revenue (Line 21) less debt service (Line 27) and capital project costs (Line 28). The net cash flow is negative from FY 2019 onward, which means that the City is drawing from reserves to minimize customer bill impacts and promote affordable water rates.

**Table 3-13: Proposed Financial Plan**

Line	Cash Flow	(A) FY 2019	(B) FY 2020	(C) FY 2021	(D) FY 2022	(E) FY 2023	(F) FY 2024
1	Revenue from Existing Rates	\$7,510,757	\$7,510,757	\$7,510,757	\$7,510,757	\$7,510,757	\$7,510,757
2	<b>Rev. Adj.</b>						
3	2020		\$71,352	\$142,704	\$142,704	\$142,704	\$142,704
4	2021			\$145,416	\$145,416	\$145,416	\$145,416
5	2022				\$148,179	\$148,179	\$148,179
6	2023					\$150,994	\$150,994
7	2024						\$153,863
8	<b>Total Revenue from Adjustments</b>	<b>\$0</b>	<b>\$71,352</b>	<b>\$288,120</b>	<b>\$436,299</b>	<b>\$587,293</b>	<b>\$741,156</b>
9	<b>Revenue</b>						
10	Total Revenues from Rates	\$7,510,757	\$7,582,109	\$7,798,877	\$7,947,056	\$8,098,050	\$8,251,913
11	Other Operating Revenues	\$202,695	\$203,377	\$204,063	\$204,752	\$205,444	\$206,141
12	Interest Income	\$144,477	\$140,383	\$135,143	\$129,042	\$121,651	\$112,892
13	<b>Total Revenues</b>	<b>\$7,857,929</b>	<b>\$7,925,869</b>	<b>\$8,138,082</b>	<b>\$8,280,849</b>	<b>\$8,425,146</b>	<b>\$8,570,945</b>
14	<b>O&amp;M Expenses</b>						
15	Water Operations Fund (441)						
16	Salary and Benefits	\$707,914	\$728,740	\$750,196	\$772,301	\$795,077	\$818,542
17	Operating (Includes Water Purchases)	\$3,174,066	\$3,297,932	\$3,426,664	\$3,560,454	\$3,699,502	\$3,844,014
18	Capital	\$5,249	\$5,406	\$5,568	\$5,736	\$5,908	\$6,085
19	Other	\$447,226	\$460,642	\$474,462	\$488,696	\$503,356	\$518,457
20	<b>Total O&amp;M Expenses</b>	<b>\$4,334,454</b>	<b>\$4,492,721</b>	<b>\$4,656,890</b>	<b>\$4,827,187</b>	<b>\$5,003,842</b>	<b>\$5,187,098</b>
21	<b>Net Revenue</b>	<b>\$3,523,475</b>	<b>\$3,433,148</b>	<b>\$3,481,192</b>	<b>\$3,453,663</b>	<b>\$3,421,303</b>	<b>\$3,383,846</b>
22	<b>New Debt</b>	\$0	\$0	\$0	\$0	\$0	\$0
23	Debt Proceeds	\$0	\$0	\$0	\$0	\$0	\$0
24	<b>Debt Service (General Fund Loans)</b>						
25	Existing Debt Service	\$757,775	\$757,775	\$757,775	\$757,775	\$757,775	\$757,775
26	Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
27	<b>Total Debt Service</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>	<b>\$757,775</b>
28	<b>Total CIP</b>	<b>\$3,085,759</b>	<b>\$3,178,331</b>	<b>\$3,273,681</b>	<b>\$3,371,892</b>	<b>\$3,473,048</b>	<b>\$3,577,240</b>
29	<b>Net Cash Flows</b>	<b>-\$320,059</b>	<b>-\$502,958</b>	<b>-\$550,264</b>	<b>-\$676,004</b>	<b>-\$809,520</b>	<b>-\$951,168</b>

Figure 3-1 shows the City’s projected financial plan over the five-year planning period. The red line represents revenues at current rates, the green line represents proposed revenues including the revenue adjustments shown in Figure 1-2. The stacked bars show the components of yearly expenses. The green bars represent either the funding or depletion of reserves. If the green bar is above the x-axis, then the City is funding reserves; if the green bar is below the x-axis, then the City is depleting its reserves to cover costs. Depleting reserves, in this case, is acceptable to City Council because over the long term, reserves are still above the City’s target reserves.

**Figure 3-1: Projected FY 2020 – FY 2024 Financial Plan**

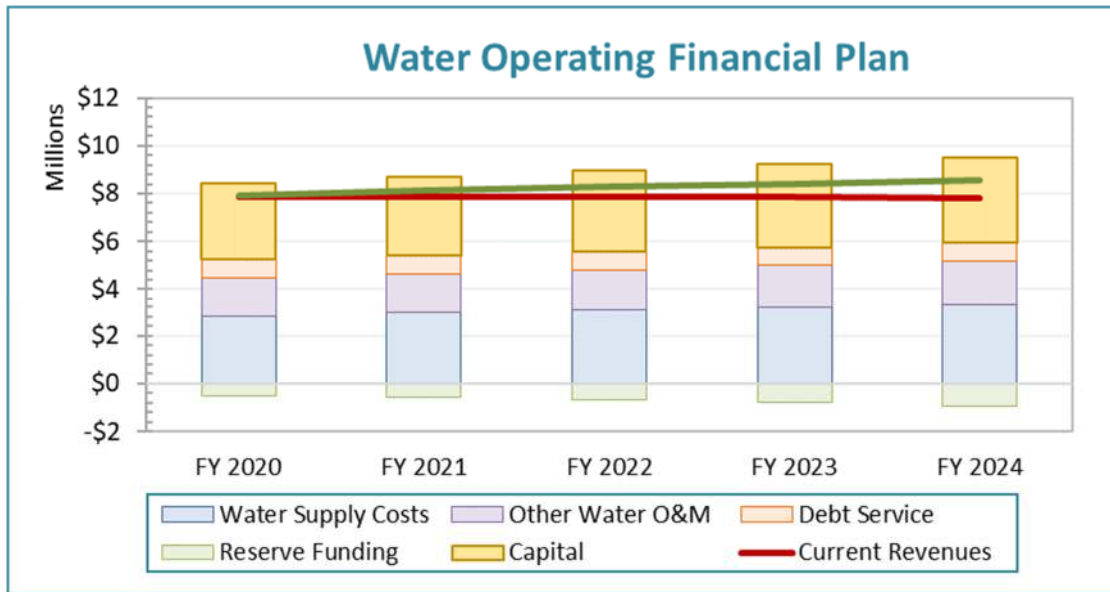


Figure 3-2 shows the proposed revenue adjustments of 1.9% and debt coverage ratio for the study period. The first revenue adjustment is anticipated to be effective in January of 2020. All subsequent revenue adjustments will be effective on July 1<sup>st</sup> of the corresponding fiscal year.

The following factors affect the proposed revenue adjustments (shown on the left axis):

- » **O&M expenses** increased approximately 3.6 percent from FY 2020 onward.
- » **Debt service** decreases due to refinancing of Promissory Notes (PN) 3, 6, 7, 8, and 9 loaned from the General Fund to the Water Enterprise
- » **Capital expenses** average approximately \$3.3 million each year for the study period.

The debt coverage target for the City’s existing debt is 1.25. The calculated debt coverage ratio remains above target for all years of the study (shown on right axis).

Figure 3-2: FY 2020 - FY 2024 Proposed Revenue Adjustments and Debt Coverage

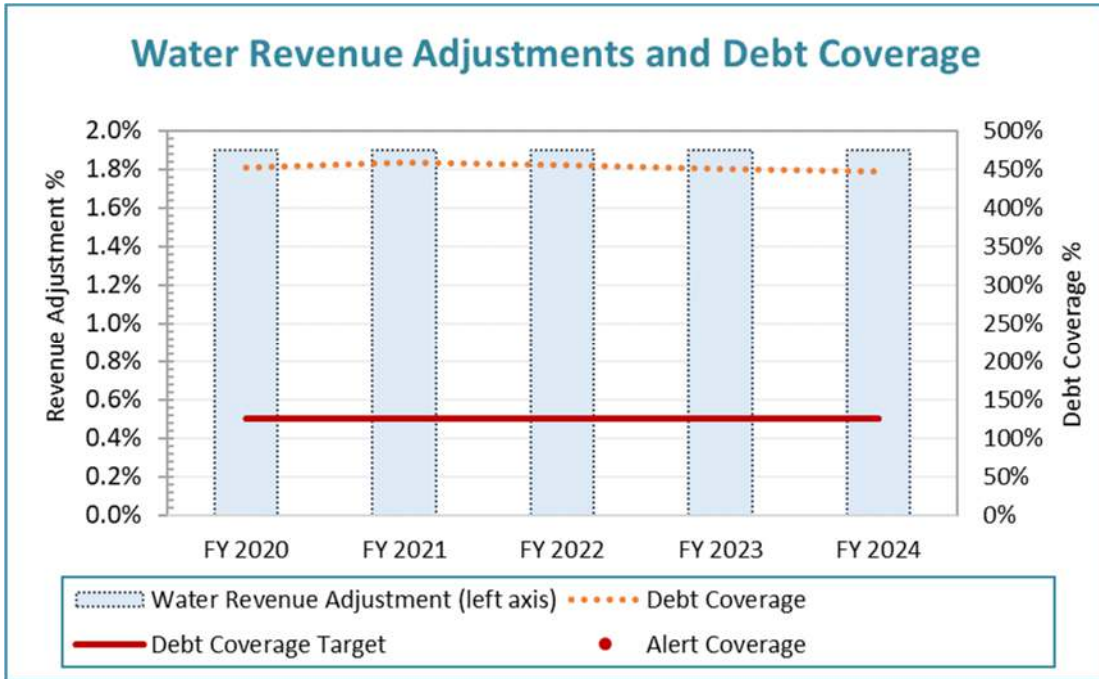
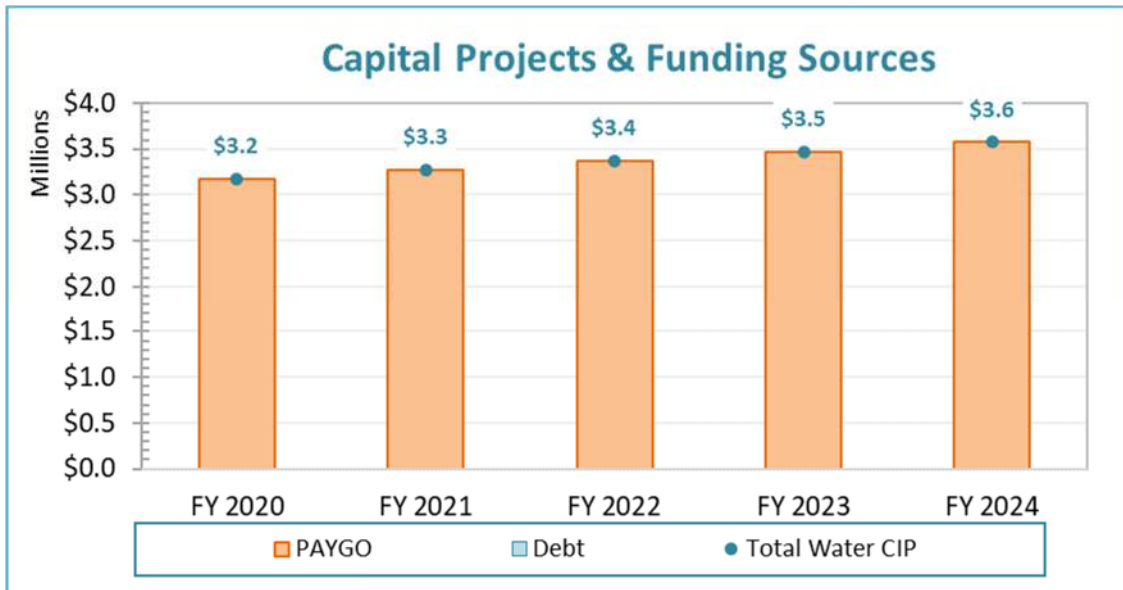


Figure 3-3 shows the total capital project expenses and their funding sources. The City expects to spend approximately \$16.9 million on CIP from FY 2020 to FY 2024, all of which will be funded through rates and reserves (also known as PAYGO).

Figure 3-3: Proposed Capital Financing Plan





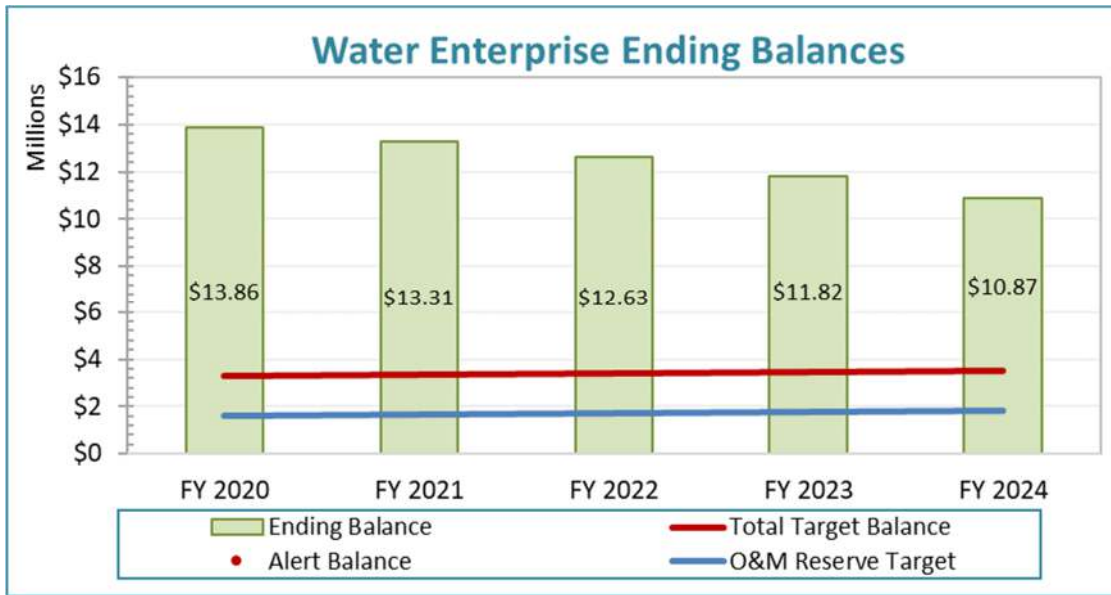
### 3.8 RESERVES

Figure 3-4 shows the City’s total reserve ending balances and reserve targets. The reserves slowly decrease but remain above reserve targets which helps mitigate cash flow risks, unexpected expenses, or asset failure.

The City modified its reserve targets slightly, which lowers the amount of revenue required. The below reserve targets assume the below reserve policy:

- » Operating Reserve: 25 percent of annual O&M expenses
- » Capital Reserve: 7.5 percent of Replacement Cost Less Depreciation (RCLD) asset value

**Figure 3-4: Projected Ending Balances**



## 4 COST OF SERVICE ANALYSIS

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This section describes the cost of service (COS) analysis, which proportionally allocates the City's revenue requirements to each customer class dependent on how that class burdens the system. The results of this analysis are used to determine the proposed water rates.

### 4.1 LEGAL FRAMEWORK<sup>2</sup>

This section of the report describes the legal framework related to water rates to ensure that the calculated cost of service rates provide a fair and equitable allocation of costs to customers.

#### **California Constitution - Article XIII D, Section 6 (Proposition 218)**

Proposition 218, reflected in the California Constitution as Article XIII D, was enacted in 1996 to ensure that rates and fees are reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees, as they relate to public water service are as follows:

1. A property-related charge (such as water rates) 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 property.
5. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing, when the agency considers all written protests against the charge.

As stated in the American Water Works Association's Manual M1 titled *Principles of Water Rates, Fees, and Charges* (M1 Manual), "water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." Proposition 218 requires that water rates cannot be "arbitrary and capricious," meaning that the rate-setting methodology establish a nexus between costs and the rates charged. Raftelis follows industry standard rate setting methodologies set forth by the M1 Manual to ensure this study meets Proposition 218 requirements and creates rates that do not exceed the proportionate cost of providing water services.

#### **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

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<sup>2</sup> Raftelis does not practice law nor does it provide legal advice. The above discussion is to provide a general review of apparent state institutional constraints and is labeled "legal framework" for literary convenience only. The City should consult with its counsel for clarification and/or specific review of any of the above or other matters.

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.”

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.

## 4.2 METHODOLOGY

As stated in the M1 Manual, “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 water 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 should sufficiently fund the City’s O&M, debt service, capital expenses, and reserve funding.

### 2) Cost of Service (COS) Analysis

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. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing, and customer billing and collection.
2. Allocating functionalized costs to cost causation components. Cost causation components include base, maximum day, maximum hour<sup>3</sup>, meter service, customer servicing and conservation costs.
3. Distributing the cost causation components. Distribute cost causation components, using unit costs in proportion to customers’ demands on the water system. This is described in the M1 Manual. The cost causation components are explained later in this section.

### 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.

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<sup>3</sup> Collectively, maximum day and maximum hour costs are known as peaking costs or capacity costs.

#### **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 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.

### **4.3 REVENUE REQUIREMENT**

Table 4-1 shows the derivation of the total revenue required from water rates in line 23. The revenue requirement is calculated using FY 2020 revenues and expenses and is the total amount that FY 2020 rates are designed to collect.

The revenue required from rates shown in Line 23 is calculated by subtracting the revenue offsets (Line 18), or miscellaneous non-rate revenues, and adjustments from the expenses (Line 10), which include O&M expenses, debt service, and rate funded capital projects.

The adjustment for cash balance (Line 20) is equal to the absolute value of the net cash flow in FY 2020 (Table 3-13, Column B, Line 29). The adjustment for mid-year increase (Line 21) annualizes the revenue adjustment effective January 1, 2020 so that rates collect a full year's revenue requirement.

**Table 4-1: Revenue Requirement**

Line	(A) FY 2020	(B) Operating	(C) Capital	(D) Total
1	<b>Revenue Requirements</b>			
2	O&M Expenses			
3	Water Operations Fund (441	\$4,492,721		\$4,492,721
4	Debt Service			
5	Existing Debt Service		\$757,775	\$757,775
6	Proposed Debt Service		\$0	\$0
7	CIP Expenditures			
8	PAYGO Funded		\$3,178,331	\$3,178,331
9	<b>Total - Revenue Requirements</b>	<b>\$4,492,721</b>	<b>\$3,936,106</b>	<b>\$8,428,827</b>
10	<b>Revenue Offsets</b>			
11	Other Operating Revenues			
12	Delinquent Fees	\$126,678		\$126,678
13	COPH Services	\$4,768		\$4,768
14	Misc Refunds and Claims	\$66,225		\$66,225
15	Miscellaneous Revenues	\$5,707		\$5,707
16	Interest Income		\$140,383	\$140,383
17	<b>Total - Revenue Offsets</b>	<b>\$203,377</b>	<b>\$140,383</b>	<b>\$343,760</b>
18	<b>Adjustments</b>			
19	Adjustment for Cash Balance		\$502,958	\$502,958
20	Adjustment for Mid-Year Incre	-\$71,352		-\$71,352
21	<b>Total - Adjustments</b>	<b>-\$71,352</b>	<b>\$502,958</b>	<b>\$431,606</b>
22	<b>Revenue Required from Rates</b>	<b>\$4,360,696</b>	<b>\$3,292,765</b>	<b>\$7,653,461</b>

#### 4.4 FUNCTIONALIZATION OF EXPENSES

After determining the City’s revenue requirements, the next step in a COS analysis is to allocate the operating and capital costs to the following functions:

- » Supply and Treatment – the cost of purchasing water from PHWA and treating it
- » Transmission and Distribution (T&D) –the costs of the T&D system
- » Storage –the costs of reservoirs and water storage
- » Meter Service –the costs of maintaining water meters
- » Customer Billing –the costs of customer service and billing
- » Conservation –the costs of conservation programs
- » General and Administrative –the costs of administrative support and all other costs that cannot be readily functionalized

The functionalization of costs allows for better allocation of costs to the cost causation components, which include:

- » Supply – costs associated with purchasing water

- » Base – costs associated with providing water service under average demand conditions
- » Peaking (Maximum Day and Maximum Hour) – costs associated with meeting peak demand in excess of average demand
- » Meter Service – costs associated with the maintenance of meters
- » Customer Billing – costs associated with billing and customer service
- » Conservation – costs associated with conservation
- » General and Administrative – costs that do not have any direct cost causation

Different components of the water system, such as transmission lines and the distribution system, and the O&M costs associated with this infrastructure is designed to meet the peaking demands (extra capacity demands) of customers. The costs allocated to the extra capacity cost component are those associated with meeting peak customer demand.

Peaking costs (also known as extra capacity costs) are further divided into maximum day and maximum hour demand. The maximum demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum day.

#### 4.5 SYSTEM PEAKING FACTORS

Table 4-2 shows the system-wide peaking factors used to derive the cost component allocation for Base, Maximum Day, and Maximum Hour costs. The Base Delivery (Line 1) use is defined as average daily demand during the year, which is normalized to a factor of 1.00. The City’s maximum day peaking factor (Line 2) is 1.50 and means that daily peak flows can be 1.50 times that of the average daily flows. The maximum hour peaking factor (Line 3) is 2.54 and means that maximum hour flows can be 2.54 times that of the average daily flow. The bi-monthly to monthly factor (Line 4) is used to convert a bi-monthly peaking factor into a monthly peaking factor.

The Maximum Day allocations are calculated using the following equations:

- » Base Delivery:  $67\% = (1.00/1.50) \times 100\%$
- » Maximum Day:  $33\% = (1.50-1.00)/1.50 \times 100\%$

The Maximum Hour allocations are calculated using the following equations:

- » Base Delivery:  $39\% = (1.00/2.54) \times 100\%$
- » Maximum Day:  $20\% = (1.50-1.00)/2.54 \times 100\%$
- » Maximum Hour:  $41\% = (2.54-1.50)/2.54 \times 100\%$

**Table 4-2: System-Wide Peaking Factors**

Line		(A) Peaking Factor	(B) Base	(C) Max Day	(D) Max Hour	(E) Total
1	Base	1.00	100%			100%
2	Max Day	1.50	67%	33%		100%
3	Max Hour	2.54	39%	20%	41%	100%
4	Bi-monthly to Monthly Factor	1.30				

## 4.6 CUSTOMER-SPECIFIC PEAKING FACTORS

System peaking factors allocate system costs to the cost causation components. To assign costs to customers based on their peaking characteristics, it is necessary to identify the peaking factors for the different classes and tiers. The City’s proposed customer classes include SFR, MFR, Commercial, City Property, Irrigation, and City Irrigation.

The SFR class is tiered and all other classes have uniform rates. Peaking factors are calculated by dividing the maximum bi-monthly use by the average bi-monthly use for the entire customer class or tier. To calculate peaking factors for the tiers, it is necessary to first define water use in the tiers.

The monthly SFR tiers are defined as:

- » Tier 1 = 4 hcf = average winter bi-monthly use
- » Tier 2 = 7 hcf = average summer bi-monthly use
- » Tier 3 = water use over 7 hcf

Table 4-3 shows the peaking factors for each customer class and tier, as applicable.

**Table 4-3: Customer Class Peaking Factors**

Customer Class	Average Bi-Monthly Use	Max Bi-Monthly Use	Peaking
Single Family	61,064	63,577	<b>1.04</b>
Multi-Family	25,763	26,821	<b>1.04</b>
Commercial (inc. City Property)	13,801	16,231	<b>1.18</b>
Irrigation (inc. City Irrigation)	22,586	30,149	<b>1.33</b>

## 4.7 EQUIVALENT METERS AND LINES

To allocate meter and capacity related costs appropriately, Raftelis utilizes the concept of hydraulically equivalent meters. Larger meters can potentially impose larger water demands, are more expensive to install, maintain, and replace than smaller meters, and commit a greater capacity in the system.

Equivalent meters are based on meter hydraulic capacity which specify the potential demand on the water system compared to the base meter size. A ratio of hydraulic capacity is calculated by dividing large meter capacities by the base meter capacity. The base meter is the smallest meter, which in this study is the 5/8” or 3/4” meter.

The actual number of meters by size is multiplied by the corresponding meter ratio to calculate the number of equivalent meters. The meter ratio is based on capacity in gallons per minute (gpm) provided in the AWWA M6 Manual, *Water Meters: Selection, Installation, Testing and Maintenance*, for each meter size.

Table 4-4 shows the equivalent meters for the test year, FY 2020. Note that the number of meters (Column D, Line 11) is equal to the total number of accounts in FY 2020 (Table 2-2, Column B, Line 108).

**Table 4-4: Equivalent Meters**

Line	(A) Meter Size - All Customer Classes	(B) Capacity (gpm)	(C) Proposed AWWA Ratio	Capacity Ratio	(D) Number of Meters	(E) Equivalent Meters
1	5/8"	30	<b>1.00</b>	1.0	55	55
2	3/4"	30	<b>1.00</b>	1.0	5,095	5,095
3	1"	50	<b>1.67</b>	1.7	388	647
4	1 1/2"	100	<b>3.33</b>	3.3	163	543
5	2"	160	<b>5.33</b>	5.3	149	795
6	3"	350	<b>11.67</b>	11.7	27	315
7	4"	630	<b>21.00</b>	21.0	3	63
8	6"	1,000	<b>33.33</b>	33.3	1	33
9	8"	1,600	<b>53.33</b>	53.3	0	0
10	10"	2,300	<b>76.67</b>	76.7	2	153
11	<b>Total</b>				<b>5,883</b>	<b>7,699</b>

Equivalent fire lines, which are used to allocated fire-related costs, are calculated in a similar manner using the fire line demand potential. The fire line demand potential increases exponentially by fire line size (diameter). For example, the fire line ratio for a 2" fire line is calculated using the following equation, based on the Hazen Williams equation for pipe flow:

$$(2'' \text{ fire line})^{2.63} = 6.19$$

For hydrants, the demand potential is equal to the sum of the demand potentials of the outlets on each hydrant. For example, the fire demand potential for a Residential hydrant (1x4", 1x2.5") is calculated using the following equation:

$$(4'' \text{ hydrant})^{2.63} + (2.5'' \text{ hydrant})^{2.63} = 49.45$$

**Table 4-5 shows the equivalent private fire lines, which is calculated by multiplying the fire demand potential by the number of private fire lines.**

Table 4-6 shows the equivalent demand for public fire hydrants, which is calculated by multiplying the fire demand potential by the number of fire hydrants.



**Table 4-5: Equivalent Private Fire Lines**

Line	(A) Fire Line Size - Private Fire	(B) Fire Demand Potential	(C) Number of Lines	(D) Equivalent Lines
1	0.75"	0.47	1	0
2	2"	6.19	1	6
3	3"	17.98	1	18
4	4"	38.32	24	920
5	6"	111.31	10	1,113
6	8"	237.21	4	949
7	10"	426.58	1	427
8	<b>Total</b>		<b>42</b>	<b>3,433</b>

**Table 4-6: Equivalent Demand of Fire Hydrants**

Line	(A) Fire Line Size - Public Hydrants	(B) Fire Demand Potential	(C) Number of Fire Hydrants	(D) Equivalent Demand
1	Residential (1x4", 1x2.5")	49.45	713	35,259
2	Commercial (1x4", 2x2.5")	60.58	237	14,358
3	<b>Total</b>		<b>950</b>	<b>49,617</b>

#### 4.8 ALLOCATION TO COST COMPONENTS

Table 4-7 allocates the O&M expenses to each cost causation component. The functionalized costs (functionalized O&M budget) are allocated according to industry standards based on the nature of the water function and input from City staff. The functionalization of each budget line is shown in the Appendix of this report.

Supply and Treatment costs (Line 1) are allocated based on Maximum Day. T&D costs (Line 2) are allocated to Maximum Hour (Table 4-2, Line 3) because distribution lines are built for maximum hour demand. Storage costs (Line 3) are allocated to Maximum Day (Table 4-2, Line 2) because storage facilities, like storage reservoirs, are built for maximum day demand. Meter service costs (Line 4) are allocated to Meter. Customer billing costs (Line 5) are allocated to Customer Billing. General and administrative costs (Line 6) are allocated to General & Administrative. Conservation costs (Line 7) are allocated to Conservation.

The O&M expense allocation (Line 9) is calculated based on the proportion of costs allocated to each operating cost component.

For example, the resulting allocation for Supply costs follows the equation:

$$D8/L8 = D9$$

Table 4-8 shows the allocation of assets valued using Reproduction Cost Less Depreciation. The costs are allocated in a similar manner to O&M expenses based on function.

The capital expense allocation (Line 10) is calculated based on the proportion of costs allocated to each capital cost component.

**Table 4-7: O&M Expense Allocation**

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	
Line	Functions	FY 2018 Budget	Allocation Basis	Supply	Base	Max Day	Max Hour	Meter Service	Customer Billing	Conservation	Gen & Admin	Total
1	Supply & Treatment	\$2,889,720	Max Day	67%	0%	33%	0%	0%	0%	0%	0%	100%
2	Transmission & Distribution	\$683,137	Max Hour	0%	39%	20%	41%	0%	0%	0%	0%	100%
3	Storage	\$0	Max Day	0%	67%	33%	0%	0%	0%	0%	0%	100%
4	Meter Service	\$3,351	Meter	0%	0%	0%	0%	100%	0%	0%	0%	100%
5	Customer Billing	\$93,288	Customer	0%	0%	0%	0%	0%	100%	0%	0%	100%
6	Gen & Admin	\$634,941	General	0%	0%	0%	0%	0%	0%	0%	100%	100%
7	Conservation	\$75,008	Conservation	0%	0%	0%	0%	0%	0%	100%	0%	100%
8	<b>Total</b>	<b>\$4,379,445</b>		<b>\$1,926,480</b>	<b>\$268,952</b>	<b>\$1,097,716</b>	<b>\$279,710</b>	<b>\$3,351</b>	<b>\$93,288</b>	<b>\$75,008</b>	<b>\$634,941</b>	<b>\$4,379,445</b>
9	<b>O&amp;M Expense Allocation</b>			<b>44.0%</b>	<b>6.1%</b>	<b>25.1%</b>	<b>6.4%</b>	<b>0.1%</b>	<b>2.1%</b>	<b>1.7%</b>	<b>14.5%</b>	<b>100.0%</b>

**Table 4-8: Capital Expense Allocation**

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	
Line	Functions	RCLD	Allocation Basis	Supply	Base	Max Day	Max Hour	Meter Service	Customer Billing	Conservation	Gen & Admin	Total
1	Supply	\$0	Max Day	0%	67%	33%	0%	0%	0%	0%	0%	100%
2	Treatment	\$21,745,012	Max Day	0%	67%	33%	0%	0%	0%	0%	0%	100%
3	Transmission & Distribution	\$18,725,243	Max Hour	0%	39%	20%	41%	0%	0%	0%	0%	100%
4	Storage	\$0	Max Day	0%	67%	33%	0%	0%	0%	0%	0%	100%
5	Meter Service	\$2,939,274	Meter	0%	0%	0%	0%	100%	0%	0%	0%	100%
6	Customer Billing	\$0	Customer	0%	0%	0%	0%	0%	100%	0%	0%	100%
7	Gen & Admin	\$1,050,286	General	0%	0%	0%	0%	0%	0%	0%	100%	100%
8	Conservation	\$0	Conservation	0%	0%	0%	0%	0%	0%	100%	0%	100%
9	<b>Total</b>	<b>\$44,459,815</b>		<b>\$0</b>	<b>\$21,868,818</b>	<b>\$10,934,409</b>	<b>\$7,667,029</b>	<b>\$2,939,274</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,050,286</b>	<b>\$44,459,815</b>
10	<b>Capital Expense Allocation</b>				<b>49.2%</b>	<b>24.6%</b>	<b>17.2%</b>	<b>6.6%</b>			<b>2.4%</b>	<b>100.0%</b>

## 4.9 UNIT COST DERIVATION

This section derives the units of service. These are required to calculate the unit cost for each cost causation component. Table 4-9 shows the derivation of the units of service.

The annual usage in hundred cubic feet (hcf) (Column C) is equal to that shown in Table 2-4 for FY 2020. The average daily use (Column D) is equal to the annual use divided by 365 days. The bi-monthly peaking factors (Column E) are equal to those shown in Table 4-3.

The Maximum Day capacity factor (Column F) is equal to the bi-monthly peaking factor for each class and tier (Column B) multiplied by the system-wide Maximum Day peaking factor (Table 4-2, Column A, Line 2) multiplied by the bi-monthly to monthly factor (Table 4-2, Column A, Line 4). The total Maximum Day capacity (Column G) is equal to the Maximum Day capacity factor (Column F) multiplied by the average daily use (Column D). Extra Maximum Day capacity is equal to the total capacity (Column G) less the average daily use (Column D).

The Maximum Hour capacity factor (Column I) is calculated by dividing the system-wide Maximum Hour peaking factor by the system-wide Maximum Day peaking factor (Table 4-2, Column A, Lines 3-4) multiplied by the Maximum Day capacity factor (Column F). The total Maximum Hour capacity (Column J) is equal to the Maximum Hour capacity factor (Column I) multiplied by the average daily use (Column D). The Maximum Hour extra capacity is equal to the total Maximum Hour capacity (Column J) less the total Maximum Day capacity (Column G).

The number of equivalent meters for each class (Column L) is equal to the number of meters for each customer class multiplied by the meter capacity ratios (Table 4-4, Column C). The number of monthly bills (Column M) is equal to the number of meters for each customer class (Table 2-2).

**Table 4-9: Units of Service Derivation**

Line	(A) Customer Class	(B) Bi-monthly Tiers	(C) Annual Use (hcf)	(D) Average Daily Use (hcf)	(E) Bi-monthly Peaking Factor	(F) (G) (H) Maximum Day Requirements			(I) (J) (K) Maximum Hour Requirements			(L) Number of Equivalent Meters	(M) Number of Monthly Bills
						Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)	Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)		
1	<b>Single Family Residential</b>		<b>327,609</b>	<b>898</b>	<b>1.04</b>	<b>2.03</b>	<b>1,820</b>	<b>923</b>	<b>3.43</b>	<b>3,082</b>	<b>1,262</b>	<b>4,479</b>	<b>4,319</b>
2	Tier 1	8	26,525	73	1.01	1.97	143	70	3.34	242	99		
3	Tier 2	14	15,302	42	1.06	2.07	87	45	3.50	147	60		
4	Tier 3	14+	285,782	783	1.10	2.15	1,679	896	3.63	2,844	1,164		
5	<b>Single Family Residential CARE</b>		<b>81,593</b>	<b>224</b>	<b>1.04</b>	<b>2.03</b>	<b>453</b>	<b>230</b>	<b>3.43</b>	<b>768</b>	<b>314</b>	<b>922</b>	<b>913</b>
6	Tier 1	8	6,606	18	1.01	1.97	36	18	3.34	60	25		
7	Tier 2	14	3,811	10	1.06	2.07	22	11	3.50	37	15		
8	Tier 3	14+	71,176	195	1.10	2.15	418	223	3.63	708	290		
9	<b>Multi-Family Residential</b>		<b>177,007</b>	<b>485</b>	<b>1.04</b>	<b>2.03</b>	<b>983</b>	<b>499</b>	<b>3.43</b>	<b>1,665</b>	<b>682</b>	<b>720</b>	<b>263</b>
10	<b>Multi-Family Residential CARE</b>		<b>4,656</b>	<b>13</b>	<b>1.04</b>	<b>2.03</b>	<b>26</b>	<b>13</b>	<b>3.43</b>	<b>44</b>	<b>18</b>	<b>13</b>	<b>9</b>
11	<b>Commercial</b>		<b>88,654</b>	<b>243</b>	<b>1.18</b>	<b>2.30</b>	<b>559</b>	<b>316</b>	<b>3.90</b>	<b>946</b>	<b>387</b>	<b>666</b>	<b>156</b>
12	<b>City Property</b>		<b>2,437</b>	<b>7</b>	<b>1.18</b>	<b>2.30</b>	<b>15</b>	<b>9</b>	<b>3.90</b>	<b>26</b>	<b>11</b>	<b>56</b>	<b>18</b>
13	<b>Irrigation</b>		<b>107,316</b>	<b>294</b>	<b>1.33</b>	<b>2.59</b>	<b>763</b>	<b>469</b>	<b>4.39</b>	<b>1,291</b>	<b>529</b>	<b>595</b>	<b>151</b>
14	<b>City Irrigation</b>		<b>26,302</b>	<b>72</b>	<b>1.33</b>	<b>2.59</b>	<b>187</b>	<b>115</b>	<b>4.39</b>	<b>316</b>	<b>130</b>	<b>249</b>	<b>54</b>
15	<b>Fire Protection</b>							<b>722</b>			<b>5,053</b>		
16	<b>Total</b>		<b>815,575</b>	<b>2,234</b>			<b>4,918</b>	<b>3,405</b>		<b>8,327</b>	<b>8,463</b>	<b>7,699</b>	<b>5,883</b>

Table 4-10 shows the allocation of revenue offsets to cost causation components. Revenue offsets decrease the costs allocated to each cost component, thereby decreasing rates. Interest income (Line 6) is allocated partially to the CARE offset component to provide a 7.5 percent discount to SFR and MFR CARE customers. City Staff advised that legal counsel previously recommended the use of interest revenue as a non-rate revenue offset. Non-rate revenue can be used at the City's discretion. The remaining interest income is allocated to the Base cost component. All other revenue offsets (Lines 2-5) are allocated based on the O&M expense allocation (Table 4-7, Line 9).

Table 4-11 shows the amount of revenue offsets allocated to each cost component. The revenue offsets are equal to that shown in the revenue requirement determination (Table 4-1, Column D, Lines 11-18). The total amount is multiplied by the allocations in Table 4-10, lines 2 through 6, to determine the revenue offset amounts for each cost component.

Table 4-12 shows the unit cost derivation for all cost components. The revenue offsets (Table 4-1, Line 18) are separated from the operating and capital revenue requirements in Table 4-12 to show the discount of the CARE program. Therefore, the operating revenue requirement (Column K, Line 1) is equal to the sum of the operating revenue requirement (Table 4-1, Column B, Line 23) and the operating revenue offset (Table 4-1, Column B, Line 18). The capital revenue requirement (Column K, Line 2) is calculated similarly using the capital revenue requirement (Table 4-1, Column C).

The operating expenses or revenue requirement (Line 1) is allocated based on the O&M expense allocation (Table 4-7, Line 9) for each cost component. The capital expenses or revenue requirement (Line 2) is allocated based on the capital expense allocation (Table 4-8, Line 10). The revenue offsets are equal to that shown in Table 4-11.

The total cost of service (Line 4 in Table 4-12) is equal to the sum of the operating expenses, capital expenses, and revenue offsets for each cost component. Then the General costs are allocated proportionally to all cost components except the CARE offset. For example, to calculate the General cost reallocation to the Supply component, the following equation is used in Table 4-12:

$$I4 \times B4 / (K4 - J4 - I4) = B5$$

The total adjusted cost of service (Line 6) is equal to the sum of the total cost of service (Line 4) and the General Cost reallocation (Line 5) for each cost component.

Each cost component's cost of service is divided by the units of service (Line 7) to determine the unit cost (Line 9). The units of service for Supply, Base, and Conservation is equal to total water usage (Table 4-9, Column C, Line 16). The units of service for Maximum Day and Maximum Hour are equal to the extra capacity for Maximum Day and Maximum Hour in hcf/day (Table 4-9, Column H and K, Line 16), respectively. The units of service for Meter Service are equal to the number of equivalent meters (Table 4-9, Column L, Line 16) multiplied by 12 months. The units of service for Customer Billing are equal to the number of bills (Table 4-9, Column M, Line 16) multiplied by 12 months.

**Table 4-10: Revenue Offset Allocation**

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	
Line	Revenue Offsets	Allocation Bases	Supply	Base	Max Day	Max Hour	Meter Service	Customer Billing	Conservat ion	Gen & Admin	CARE Offset	Total
1	<b>Other Operating Revenues</b>											
2	Delinquent Fees	Resulting O&M	44%	6%	25%	6%	0%	2%	2%	14%	0%	100%
3	COPH Services	Resulting O&M	44%	6%	25%	6%	0%	2%	2%	14%	0%	100%
4	Misc Refunds and Claims	Resulting O&M	44%	6%	25%	6%	0%	2%	2%	14%	0%	100%
5	Miscellaneous Revenues	Resulting O&M	44%	6%	25%	6%	0%	2%	2%	14%	0%	100%
6	Interest Income	Care Rate	0%	55%	0%	0%	0%	0%	0%	0%	45%	100%

**Table 4-11: Revenue Offsets to Cost Components**

(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	
Line	Revenue Offsets	Allocation Bases	Supply	Base	Max Day	Max Hour	Meter Service	Customer Billing	Conservati on	Gen & Admin	CARE Offset	Total
1	<b>Other Operating Revenues</b>											
2	Delinquent Fees	Resulting O&M	\$55,724	\$7,780	\$31,752	\$8,091	\$97	\$2,698	\$2,170	\$18,366	\$0	\$126,678
3	COPH Services	Resulting O&M	\$2,097	\$293	\$1,195	\$305	\$4	\$102	\$82	\$691	\$0	\$4,768
4	Misc Refunds and Claims	Resulting O&M	\$29,132	\$4,067	\$16,599	\$4,230	\$51	\$1,411	\$1,134	\$9,601	\$0	\$66,225
5	Miscellaneous Revenues	Resulting O&M	\$2,510	\$350	\$1,430	\$364	\$4	\$122	\$98	\$827	\$0	\$5,707
6	Interest Income	Care Rate	\$0	\$77,323	\$0	\$0	\$0	\$0	\$0	\$0	\$63,060	\$140,383
7	<b>Total</b>		<b>\$89,464</b>	<b>\$89,813</b>	<b>\$50,977</b>	<b>\$12,989</b>	<b>\$156</b>	<b>\$4,332</b>	<b>\$3,483</b>	<b>\$29,486</b>	<b>\$63,060</b>	<b>\$343,760</b>

**Table 4-12: Unit Cost Derivation**

Line	(A) Cost of Service Allocation	Allocation Bases	(B) Supply	(C) Base	(D) Max Day	(E) Max Hour	(F) Meter Service	(G) Customer Billing	(H) Conservati on	(I) Gen & Admin	(J) CARE Offset	(K) Total
1	Operating Expenses	O&M	\$2,007,696	\$280,290	\$1,143,993	\$291,502	\$3,493	\$97,221	\$78,170	\$661,708	\$0	\$4,564,073
2	Capital Expenses	Capital	\$0	\$1,688,691	\$844,345	\$592,041	\$226,968	\$0	\$0	\$81,102	\$0	\$3,433,148
3	Revenue Offset		-\$89,464	-\$89,813	-\$50,977	-\$12,989	-\$156	-\$4,332	-\$3,483	-\$29,486	-\$63,060	-\$343,760
4	<b>Total Cost of Service</b>		<b>\$1,918,232</b>	<b>\$1,879,168</b>	<b>\$1,937,362</b>	<b>\$870,553</b>	<b>\$230,305</b>	<b>\$92,889</b>	<b>\$74,687</b>	<b>\$713,324</b>	<b>-\$63,060</b>	<b>\$7,653,461</b>
5	Allocation of General Cost		\$195,385	\$191,406	\$197,334	\$88,672	\$23,458	\$9,461	\$7,607	-\$713,324	\$0	\$0
6	<b>Total Adjusted Cost of Service</b>		<b>\$2,113,618</b>	<b>\$2,070,574</b>	<b>\$2,134,695</b>	<b>\$959,225</b>	<b>\$253,763</b>	<b>\$102,350</b>	<b>\$82,294</b>	<b>\$0</b>	<b>-\$63,060</b>	<b>\$7,653,461</b>
			28%	27%	28%	13%	3%	1%	1%	0%	-1%	100%
7	<b>Unit of Service</b>		<b>815,575</b>	<b>815,575</b>	<b>3,405</b>	<b>8,463</b>	<b>92,392</b>	<b>70,596</b>	<b>815,575</b>	<b>815,575</b>		
8			hcf	hcf	hcf/day	hcf/day	equivalent	bills/yr	hcf	hcf		
9	<b>Unit Cost of Service</b>		<b>\$2.59</b>	<b>\$2.54</b>	<b>\$626.88</b>	<b>\$113.34</b>	<b>\$2.75</b>	<b>\$1.45</b>	<b>\$0.10</b>	<b>\$0.00</b>		
10			hcf	hcf	hcf/day	hcf/day	equivalent meter/mo	bills/mo	hcf	hcf		



Table 4-13 shows the calculation of the cost associated with the capacity for public and private fire protection. Based on the M1 Manual, fire service protection costs (i.e. the capacity needed to fight fires) can be estimated by applying the Maximum Day and Maximum Hour unit costs to a typical fire. We assumed a three-hour fire requiring 3,000 gpm, based on the City’s Water Master Plan. First, we converted the Maximum Day and Maximum Hour unit costs (Table 4-12, Column D and E, Line 9) to dollars per 1,000 gallons as shown in line 1 of Table 4-13.

The Maximum Day units of service (Column A, Line 4) is calculated using the following equation:

$$3,000 \text{ gpm} \times 60 \text{ minutes} \times 3 \text{ hours} / 1,000 \text{ gallons}$$

The Maximum Hour units of service (Column B, Line 4) is calculated using the following equation:

$$[3,000 \text{ gpm} * 60 \text{ minutes} * 24 \text{ hours}] / [1,000 \text{ gallons-B4 (or 540)}]$$

**The allocated cost of service (Line 5) is calculated by multiplying the unit cost (Line 1) by the units of service (Line 4). The allocated cost of service (Line 5) is further allocated to public fire and private fire service in lines 6 and 7 in proportion to the potential demand from public and private fire service. The share allocated to public fire (Line 6) is equal to the share of fire hydrant capacity (**

Table 4-6, Column D, Line 3) compared to private fire capacity (Table 4-5, Column D, Line 8).

**Table 4-13: Fire Cost Allocation**

Line No.	Fire Protection Cost Allocation	(A) Max Day	(B) Max Hour	(C) Total
1	Unit Cost of Service	\$838.08	\$151.53	
2	Unit	\$ / 1,000 gal	\$ / 1,000 gal	
3	Fire Protection Service			
4	Units of Service (1,000 gallons)	540	3,780	
5	<b>Allocated Cost of Service</b>	<b>\$452,565</b>	<b>\$572,771</b>	<b>\$1,025,335</b>
6	Public Fire Protection	\$423,280	\$535,707	\$958,987
7	<b>Private Fire Service</b>	<b>\$29,285</b>	<b>\$37,063</b>	<b>\$66,348</b>

Table 4-14 shows the adjusted, final unit cost derivation after *reallocating fire costs* and peaking costs. The cost of service (Line 1) is equal to that previously calculated (Table 4-12, Line 6). Private fire protection costs (Line 2), which were determined in Table 4-13, is allocated to the Private Fire cost component in column I. The public fire protection costs (Line 3) are allocated to Meter Service as shown in column F. Fifty-one percent of peaking costs are allocated to Meter Service (Line 4) to maintain a fixed revenue recovery of approximately 30 percent.

The adjusted unit cost by Cost Component (Line 8) is calculated by dividing the adjusted cost of service (Line 5) by the units of service (Line 6). The private fire units of service are equal to the equivalent lines (Table 4-5, Column D, Line 8) multiplied by 12 months.



**Table 4-14: Adjusted Unit Cost by Cost Component Derivation**

Line	(A) Cost of Service Allocation	(B) Supply	(C) Base	(D) Max Day	(E) Max Hour	(F) Meter Service	(G) Customer Billing	(H) Conservatio n	(I) Private Fire	(J) CARE Offset	(K) Total
1	Cost of Service	\$2,113,618	\$2,070,574	\$2,134,695	\$959,225	\$253,763	\$102,350	\$82,294	\$0	-\$63,060	<b>\$7,653,461</b>
2	Private Fire Protection	0	0	-\$29,285	-\$37,063	0	0	0	\$66,348	\$0	0
3	Allocation of Public Fire to Meter Service (F	0	0	-\$423,279	-\$535,706	\$958,985	0	0	\$0	\$0	0
4	Allocation of Peaking to Meter	\$0	\$0	-\$770,416	-\$176,997	\$947,413	\$0	\$0	\$0	\$0	0
5	<b>Total Adjusted Cost of Service</b>	<b>\$2,113,618</b>	<b>\$2,070,574</b>	<b>\$911,715</b>	<b>\$209,459</b>	<b>\$2,160,161</b>	<b>\$102,350</b>	<b>\$82,294</b>	<b>\$66,348</b>	<b>-\$63,060</b>	<b>\$7,653,461</b>
6	<b>Unit of Service</b>	815,575	815,575	2,683	3,410	92,392	70,596	815,575	41,194		
7		hcf	hcf	hcf/day	hcf/day	equivalent meter/yr	billings/yr	hcf	equivalent lines/yr		
8	<b>Unit Cost of Service</b>	<b>\$2.59</b>	<b>\$2.54</b>	<b>\$339.77</b>	<b>\$61.43</b>	<b>\$23.380</b>	<b>\$1.45</b>	<b>\$0.10</b>	<b>\$1.61</b>		
9		hcf	hcf	hcf/day	hcf/day	equivalent meter/mo	billings/mo	hcf	per equivalent line/mo		

Table 4-15 shows the cost of service for each customer class and tier. The units of service for each customer class and tier (Table 4-9) are multiplied by the adjusted unit cost (Table 4-14) for each cost component to yield the cost to serve each class shown in Table 4-15.

Supply, Base, and Conservation costs are allocated to each customer class and tier using the annual water use (Table 4-9, Column C). Maximum Day costs are allocated using the extra Maximum Day capacity (Table 4-9, Column H). Maximum Hour costs are allocated using the extra Maximum Hour capacity (Table 4-9, Column K). Meter Service costs are allocated based on annual equivalent meters (Table 4-9, Column L). Customer Billing costs are allocated based on annual bills (Table 4-9, Column M).

Private Fire costs are allocated fully to private fire lines. The CARE Offset is allocated to SFR CARE and MFR CARE customers based on a 7.5 percent discount on all costs.

**Table 4-15: Cost of Service by Customer Class**

Line	(A) Customer Class	(B) Supply	(C) Base	(D) Max Day	(E) Max Hour	(F) Meter Service	(G) Customer Billing	(H) Conservation	(I) Fire	(J) CARE Offset	(K) Total
1	<b>Single Family Residential</b>	<b>\$849,020</b>	<b>\$831,730</b>	<b>\$343,740</b>	<b>\$81,319</b>	<b>\$1,256,649</b>	<b>\$75,141</b>	<b>\$33,057</b>			<b>\$3,470,657</b>
2	Tier 1	\$68,741	\$67,341	\$23,938	\$6,096			\$2,676			\$168,793
3	Tier 2	\$39,657	\$38,849	\$15,199	\$3,691			\$1,544			\$98,939
4	Tier 3	\$740,623	\$725,540	\$304,603	\$71,532			\$28,836			\$1,871,135
5	<b>Single Family Residential CARE</b>	<b>\$211,454</b>	<b>\$207,148</b>	<b>\$85,611</b>	<b>\$20,253</b>	<b>\$258,587</b>	<b>\$15,884</b>	<b>\$8,233</b>		<b>-\$60,538</b>	<b>\$746,632</b>
6	Tier 1	\$17,120	\$16,772	\$5,962	\$1,518			\$667		-\$3,153	\$38,886
7	Tier 2	\$9,877	\$9,676	\$3,785	\$919			\$385		-\$1,848	\$22,793
8	Tier 3	\$184,457	\$180,700	\$75,863	\$17,815			\$7,182		-\$34,951	\$431,067
9	<b>Multi-Family Residential</b>	<b>\$458,725</b>	<b>\$449,384</b>	<b>\$169,386</b>	<b>\$41,889</b>	<b>\$202,100</b>	<b>\$4,576</b>	<b>\$17,861</b>			<b>\$1,343,920</b>
10	<b>Multi-Family Residential CARE</b>	<b>\$12,067</b>	<b>\$11,821</b>	<b>\$4,456</b>	<b>\$1,102</b>	<b>\$3,554</b>	<b>\$157</b>	<b>\$470</b>		<b>-\$2,522</b>	<b>\$31,104</b>
11	<b>Commercial</b>	<b>\$229,753</b>	<b>\$225,075</b>	<b>\$107,367</b>	<b>\$23,804</b>	<b>\$186,763</b>	<b>\$2,714</b>	<b>\$8,946</b>			<b>\$784,422</b>
12	<b>City Property</b>	<b>\$6,317</b>	<b>\$6,188</b>	<b>\$2,952</b>	<b>\$654</b>	<b>\$15,712</b>	<b>\$313</b>	<b>\$246</b>			<b>\$32,382</b>
13	<b>Irrigation</b>	<b>\$278,118</b>	<b>\$272,454</b>	<b>\$159,189</b>	<b>\$32,478</b>	<b>\$166,842</b>	<b>\$2,627</b>	<b>\$10,829</b>			<b>\$922,536</b>
14	<b>City Irrigation</b>	<b>\$68,163</b>	<b>\$66,775</b>	<b>\$39,015</b>	<b>\$7,960</b>	<b>\$69,954</b>	<b>\$939</b>	<b>\$2,654</b>			<b>\$255,461</b>
15	<b>Private Fire Protection</b>								<b>\$66,348</b>		<b>\$66,348</b>
16	<b>Total</b>	<b>\$2,113,618</b>	<b>\$2,070,574</b>	<b>\$911,715</b>	<b>\$209,459</b>	<b>\$2,160,161</b>	<b>\$102,350</b>	<b>\$82,294</b>	<b>\$66,348</b>	<b>-\$63,060</b>	<b>\$7,653,461</b>

# 5 RATE DERIVATION

The last step in the study is the rate design and derivation. In this step, there is flexibility to design rates that will meet City objectives such as revenue stability and minimization of customer impacts. Proposition 218 does not specify a type of rate structure so long as the rates justify the cost of serving customers. All rates are rounded up to the nearest cent.

## 5.1 FIXED CHARGE CALCULATION

Table 5-1 shows the calculation of monthly fixed charges using the unit costs shown in Table 4-15 and the capacity ratios shown in Table 4-4. The Meter Service cost for all meters greater than 5/8", shown in column C, is calculated by multiplying the 5/8" Meter Service unit cost, shown in line 1, Column C, by the corresponding meter ratio for each meter size shown in Column B. All meters are charged the same Customer Billing costs (Column D) because billing and customer service costs do not vary with meter capacity. The proposed monthly fixed charge (Column E) is equal to the sum of Meter and Customer costs in column C and D. The proposed CARE charge (Column F) is equal to the proposed monthly charge with a 7.5 percent discount.

**Table 5-1: Proposed Monthly Fixed Charge**

Line	(A) Meter Size	(B) Meter Ratio	(C) Meter Service	(D) Customer Billing	(E) Proposed Monthly Fixed Charge	(F) Proposed Monthly Charge (CARE)
1	5/8"	1.00	\$23.39	\$1.45	\$24.84	\$22.98
2	3/4"	1.00	\$23.39	\$1.45	\$24.84	\$22.98
3	1"	1.67	\$38.97	\$1.45	\$40.42	\$37.39
4	1 1/2"	3.33	\$77.94	\$1.45	\$79.39	\$73.44
5	2"	5.33	\$124.70	\$1.45	\$126.15	\$116.69
6	3"	11.67	\$272.78	\$1.45	\$274.23	\$253.67
7	4"	21.00	\$490.99	\$1.45	\$492.44	\$455.51
8	6"	33.33	\$779.35	\$1.45	\$780.80	\$722.24
9	8"	53.33	\$1,246.96	\$1.45	\$1,248.41	\$1,154.78
10	10"	76.67	\$1,792.50	\$1.45	\$1,793.95	\$1,659.41

## 5.2 VOLUMETRIC CHARGE CALCULATION

Table 5-2 shows the unit cost calculation for each of the City’s water sources. The City purchases water from PHWA, which purchases water from UWCD and CMWD. The City provided the proportion of water purchased (Line 1) and the estimated cost for each water source (Line 3).

The water use (Column C, Line 2) is calculated based on the proportion of water purchased (Line 1) and is equal to total annual use (Table 4-9, Column C, Line 16). At the time of this study, the City purchased approximately 75% of its water from United Water. This will vary from year to year. The

water cost (Column C, Line 4) is allocated based on the proportion of water cost (Line 3) and is equal to the total Supply costs (Table 4-15, Column B, Line 16). At the time of this Study, line 3 was calculated based on the proportion of total water costs from United Water Conservation District (UWCD) and Callegus Municipal Water District (CMWD). This may vary from year to year, but is a reasonable basis on which to develop rates. The unit cost (Line 5) is calculated by dividing the water cost (Line 4) by the water use (Line 2) for each source.

The SFR proportion of water use (Line 6) is equal to the SFR and SFR CARE proportion of use compared to all usage. The water use by source for SFR customers (Line 7) is equal to the water use (Line 2) multiplied by the SFR proportion of water use (Line 6). This is used to derive SFR rates in Table 5-3.

**Table 5-2: Supply Unit Cost by Source**

Line	(A) UWCD	(B) CMWD	(C) Total
1 Proportion of Water Purchased	75%	25%	100%
2 Water Use	612,470	203,105	815,575
3 Proportion of Water Cost	56%	44%	100%
4 Water Cost	\$1,183,628	\$929,994	\$2,113,622
5 Unit Cost	\$1.93	\$4.58	\$2.59
6 SFR Proportion of Water Use	50.17%		
7 Water Use by Source for SFR	307,297	101,905	409,202

Table 5-3 shows the allocation of each source of water for all SFR and SFR CARE tiers. Tier 1 receives the cheapest source of water, which is UWCD water, until it is depleted, then Tier 2 and finally Tier 3 is allocated economical water until it is depleted. UWCD water, which is cheaper, has enough supply to cover Tier 1 and Tier 2. Tier 3 usage is met using UWCD water and all CMWD water as shown in line 4. The unit cost for each line in Column D is calculated by multiplying the unit cost per source from Table 5-2, Line 5 by the amount of water use for each source (Columns B and C) for each tier. Since Tier 1 receives all of its water from UWCD, the unit cost for Tier 1 is equal to the cost of this source. Tier 3 water is the weighted average of the costs from each source. Note that the average cost of water is shown in line 5. This is the supply cost for non SFR customers.

**Table 5-3: SFR Supply Allocation**

Line	(A) Use (hcf)	(B) UWCD	(C) CMWD	(D) Unit Cost	
1	<b>SFR Supply Allocation</b>				
2	Tier 1	33,131	33,131	0	<b>\$1.93</b>
3	Tier 2	19,113	19,113	0	<b>\$1.93</b>
4	Tier 3	356,958	255,053	101,905	<b>\$2.69</b>
5	Total	409,202	307,297	101,905	<b>\$2.59</b>

Table 5-4 shows the peaking unit cost for each customer class and tier. Peaking costs are equal to the sum of Maximum Day and Maximum Hour costs taken from Table 4-15, Columns D and E, for each class and tier. Peaking costs are divided by water use for each class and tier (Column C) to determine the peaking unit cost shown in Column D.

**Table 5-4: Peaking Unit Cost Derivation**

Line	(A) Customer Class	(B) Peaking Costs	(C) Use (hcf)	(D) Unit Cost
1	Single Family Residential			\$1.30
2	Tier 1	\$30,034	26,525	<b>\$1.13</b>
3	Tier 2	\$18,890	15,302	<b>\$1.23</b>
4	Tier 3	\$376,136	285,782	<b>\$1.32</b>
5	Single Family Residential CARE			
6	Tier 1	\$7,480	6,606	<b>\$1.13</b>
7	Tier 2	\$4,705	3,811	<b>\$1.23</b>
8	Tier 3	\$93,679	71,176	<b>\$1.32</b>
9	Multi-Family Residential	\$211,275	177,007	<b>\$1.19</b>
10	Multi-Family Residential CARE	\$5,558	4,656	<b>\$1.19</b>
11	Commercial	\$131,172	88,654	<b>\$1.48</b>
12	City Property	\$3,606	2,437	<b>\$1.48</b>
13	Irrigation	\$191,667	107,316	<b>\$1.79</b>
14	City Irrigation	\$46,975	26,302	<b>\$1.79</b>

Table 5-5 shows the volumetric charge calculation for all classes and tiers. The Supply cost (Column D) for SFR and SFR CARE, is equal to the SFR Supply unit cost calculation (Table 5-3, Column D) The remaining customers have a Supply cost equal to that shown in Table 4-14 and the bottom of Table 5-3. Base Delivery and Conservation costs are equal to those derived in Table 4-14. Peaking costs are derived in Table 5-4. Offsets are applied to SFR and MFR CARE customers and provide a 7.5 percent discount for CARE customers by using non-rate revenue.



**Table 5-5: Volumetric Charge Calculation**

Line	(A) Customer Class	(B) Monthly Tier Breakpoint	(C) Usage (hcf)	(D) Supply	(E) Base Delivery	(F) Peaking	(G) Conservation	(H) Offset	(I) Total Rate
1	Single Family Residential								
2	Tier 1	4	26,525	\$1.93	\$2.54	\$1.14	\$0.10	\$0.00	<b>\$5.71</b>
3	Tier 2	7	15,302	\$1.93	\$2.54	\$1.23	\$0.10	\$0.00	<b>\$5.81</b>
4	Tier 3	7+	285,782	\$2.69	\$2.54	\$1.32	\$0.10	\$0.00	<b>\$6.65</b>
5	Single Family Residential CARE								
6	Tier 1	4	6,606	\$1.93	\$2.54	\$1.13	\$0.10	-\$0.43	<b>\$5.28</b>
7	Tier 2	7	3,811	\$1.93	\$2.54	\$1.23	\$0.10	-\$0.44	<b>\$5.37</b>
8	Tier 3	7+	71,176	\$2.69	\$2.54	\$1.32	\$0.10	-\$0.50	<b>\$6.15</b>
9	Multi-Family Residential		177,007	\$2.59	\$2.54	\$1.19	\$0.10	\$0.00	<b>\$6.43</b>
10	Multi-Family Residential CARE		4,656	\$2.59	\$2.54	\$1.19	\$0.10	-\$0.48	<b>\$5.94</b>
11	Commercial		88,654	\$2.59	\$2.54	\$1.48	\$0.10	\$0.00	<b>\$6.71</b>
12	City Property		2,437	\$2.59	\$2.54	\$1.48	\$0.10	\$0.00	<b>\$6.71</b>
13	Irrigation		107,316	\$2.59	\$2.54	\$1.79	\$0.10	\$0.00	<b>\$7.02</b>
14	City Irrigation		26,302	\$2.59	\$2.54	\$1.79	\$0.10	\$0.00	<b>\$7.02</b>

### 5.3 PRIVATE FIRE CHARGE CALCULATION

Table 5-6 shows the Private Fire rate derivation. The proposed monthly charge is equal to the Private Fire unit cost (Table 4-14, Column I, Line 8) multiplied by the potential fire demand ratio shown in column B (and also shown in Table 4-5).

**Table 5-6: Private Fire Charge Calculation**

Line	(A) Fire Line Size	(B) Potential Fire Demand	(C) Proposed Monthly Charge
1	0.75"	0.47	<b>\$0.76</b>
2	2"	6.19	<b>\$9.98</b>
3	3"	17.98	<b>\$28.97</b>
4	4"	38.32	<b>\$61.72</b>
5	6"	111.31	<b>\$179.29</b>
6	8"	237.21	<b>\$382.06</b>
7	10"	426.58	<b>\$687.07</b>

## 5.4 PROPOSED WATER RATES

### Table 5-7 and

Table 5-8 show the proposed 5 -year monthly fixed charges for non-CARE and CARE customers, respectively. Table 5-9 shows the proposed volumetric charges for all customers. Table 5-10 shows the proposed private fire charges.

**Table 5-7: Proposed Monthly Fixed Charges (Non-CARE)**

Fixed Monthly Meter Charge					
Meter Size	January 2020	July 2020	July 2021	July 2022	July 2023
5/8"	\$24.84	\$25.31	\$25.79	\$26.28	\$26.78
3/4"	\$24.84	\$25.31	\$25.79	\$26.28	\$26.78
1"	\$40.42	\$41.19	\$41.97	\$42.77	\$43.58
1 1/2"	\$79.39	\$80.90	\$82.44	\$84.00	\$85.60
2"	\$126.15	\$128.55	\$130.99	\$133.48	\$136.01
3"	\$274.23	\$279.44	\$284.75	\$290.16	\$295.67
4"	\$492.44	\$501.80	\$511.33	\$521.05	\$530.95
6"	\$780.80	\$795.64	\$810.75	\$826.16	\$841.85
8"	\$1,248.41	\$1,272.13	\$1,296.30	\$1,320.93	\$1,346.03
10"	\$1,793.95	\$1,828.04	\$1,862.77	\$1,898.16	\$1,934.23

**Table 5-8: Proposed Monthly Fixed Charge (CARE)**

CARE - Fixed Monthly Meter Charge					
Meter Size	January 2020	July 2020	July 2021	July 2022	July 2023
5/8"	\$22.98	\$23.42	\$23.86	\$24.31	\$24.78
3/4"	\$22.98	\$23.42	\$23.86	\$24.31	\$24.78
1"	\$37.39	\$38.10	\$38.82	\$39.56	\$40.31
1 1/2"	\$73.44	\$74.84	\$76.26	\$77.71	\$79.18
2"	\$116.69	\$118.91	\$121.17	\$123.47	\$125.81
3"	\$253.67	\$258.49	\$263.40	\$268.41	\$273.51
4"	\$455.51	\$464.16	\$472.98	\$481.97	\$491.13
6"	\$722.24	\$735.96	\$749.95	\$764.19	\$778.71
8"	\$1,154.78	\$1,176.72	\$1,199.08	\$1,221.86	\$1,245.08
10"	\$1,659.41	\$1,690.94	\$1,723.07	\$1,755.80	\$1,789.17

**Table 5-9: Proposed Volumetric Charges**

Customer Class	Volumetric Rate (\$/hcf)				
	January 2020	July 2020	July 2021	July 2022	July 2023
Single Family Residential					
Tier 1 (0 - 4 hcf monthly)	\$5.71	\$5.82	\$5.93	\$6.04	\$6.16
Tier 2 (4 - 7 hcf)	\$5.81	\$5.92	\$6.03	\$6.15	\$6.26
Tier 3 (>7 hcf)	\$6.65	\$6.78	\$6.91	\$7.04	\$7.17
Single Family Residential CARE					
Tier 1 (0 - 4 hcf monthly)	\$5.28	\$5.38	\$5.48	\$5.58	\$5.69
Tier 2 (4 - 7 hcf)	\$5.37	\$5.47	\$5.58	\$5.68	\$5.79
Tier 3 (>7 hcf)	\$6.15	\$6.26	\$6.38	\$6.50	\$6.63
Multi-Family Residential	\$6.43	\$6.55	\$6.67	\$6.80	\$6.93
Multi-Family Residential CARE	\$5.94	\$6.06	\$6.17	\$6.29	\$6.41
Commercial	\$6.71	\$6.84	\$6.97	\$7.10	\$7.24
City Property	\$6.71	\$6.84	\$6.97	\$7.10	\$7.24
Irrigation	\$7.02	\$7.15	\$7.29	\$7.43	\$7.57
City Irrigation	\$7.02	\$7.15	\$7.29	\$7.43	\$7.57

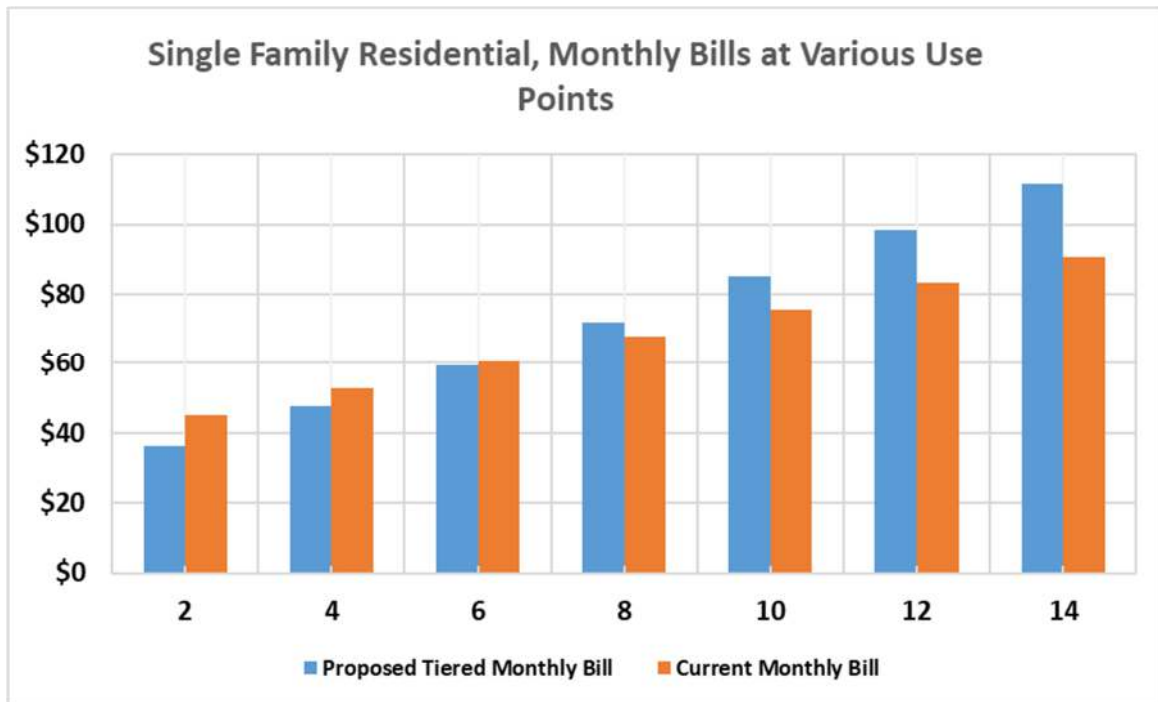
**Table 5-10: Proposed Monthly Private Fire Charges**

Fireline Size	Private Fire Protection Charges				
	January 2020	July 2020	July 2021	July 2022	July 2023
3/4"	\$0.76	\$0.77	\$0.79	\$0.80	\$0.82
2"	\$9.98	\$10.17	\$10.36	\$10.56	\$10.76
3"	\$28.97	\$29.52	\$30.08	\$30.65	\$31.24
4"	\$61.72	\$62.89	\$64.09	\$65.31	\$66.55
6"	\$179.29	\$182.70	\$186.17	\$189.70	\$193.31
8"	\$382.06	\$389.32	\$396.72	\$404.25	\$411.93
10"	\$687.07	\$700.12	\$713.43	\$726.98	\$740.79

## 5.5 BILL IMPACTS

Figure 1-5 shows the impacts of the proposed rates on a hypothetical Single-Family Residential customer with a 3/4" meter at different usage levels. Note that the average Single-Family Residential customer uses 6 hcf per month and the average bill will decrease from \$60.42 to \$59.30.

**Figure 5-1: Single Family Residential Monthly Bills at Various Use Points (hcf)**



Multi-family customers vary greatly in their water use and the number of dwelling units for each account. We have attempted to show the bill impacts for several Multi-family customers in Table 1-6 based on observed number of dwelling units, meter size and average monthly use. The current bill is a function of the dwelling units; however, the proposed bill is a function of meter size and water use only.

**Table 5-11: Sample Multi-Family Customers' Bill Impacts**

Customer Class	No. of Dwelling Units	Meter Size	Monthly Usage (hcf)	Proposed Tiered Monthly Bill	Current Monthly Bill	Difference (%)	Difference (\$)
<b>Multi-Family</b>							
	4	3/4"	32	\$230.47	\$272.08	-15.3%	-\$41.61
	6	2"	163	\$1,173.60	\$845.12	38.9%	\$328.48
	60	3"	205	\$1,591.57	\$3,036.20	-47.6%	-\$1,444.63
	91	3"	639	\$4,380.49	\$5,851.62	-25.1%	-\$1,471.13
	120	2"	1,623	\$10,555.65	\$10,681.80	-1.2%	-\$126.15
	201	6"	775	\$5,761.00	\$10,506.62	-45.2%	-\$4,745.62

# APPENDIX

**Table A-0-1: Operating Budget Functionalization**

O&M Expenses	FY 2020 Budget	Supply	Treatment	Trans & Dist	Storage	Meter Service	Cust Bill	Gen & Admin	Conservation	Total
<b>Salary and Benefits</b>										
Full Time	\$378,143	5%	0%	65%	0%	0%	12%	8%	10%	100%
Overtime	\$23,221	5%	0%	65%	0%	0%	12%	8%	10%	100%
Standby	\$24,923	5%	0%	65%	0%	0%	12%	8%	10%	100%
Cafeteria Earnings	\$19,212	5%	0%	65%	0%	0%	12%	8%	10%	100%
Longevity Pay	\$4,695	5%	0%	65%	0%	0%	12%	8%	10%	100%
Car Allowance	\$464	5%	0%	65%	0%	0%	12%	8%	10%	100%
Bilingual Premium	\$749	5%	0%	65%	0%	0%	12%	8%	10%	100%
Annual Leave Buyout	\$12,411	5%	0%	65%	0%	0%	12%	8%	10%	100%
Compensatory Leave Buyout	\$298	5%	0%	65%	0%	0%	12%	8%	10%	100%
Taxes FICA-Employer	\$28,291	5%	0%	65%	0%	0%	12%	8%	10%	100%
Taxes Medicare-Employer	\$6,531	5%	0%	65%	0%	0%	12%	8%	10%	100%
PERS	\$150,009	5%	0%	65%	0%	0%	12%	8%	10%	100%
POB PERS Debt Svc Alloc	\$26,960	5%	0%	65%	0%	0%	12%	8%	10%	100%
LTD/Life Insurance	\$2,639	5%	0%	65%	0%	0%	12%	8%	10%	100%
City Contr Def Comp-401K	\$1,736	5%	0%	65%	0%	0%	12%	8%	10%	100%
City Contr Def Comp-457	\$0	5%	0%	65%	0%	0%	12%	8%	10%	100%
Medical Insurance	\$37,160	5%	0%	65%	0%	0%	12%	8%	10%	100%
Dental Insurance	\$3,459	5%	0%	65%	0%	0%	12%	8%	10%	100%
Vision Insurance	\$595	5%	0%	65%	0%	0%	12%	8%	10%	100%
<b>Operating (Includes Water Purchases)</b>										
Cont Svcs-Miscellaneous	\$196,481	0%	0%	75%	0%	0%	0%	25%	0%	100%
Car Wash Services	\$0	0%	0%	0%	0%	0%	0%	100%	0%	100%
Utilities	\$19,924	0%	0%	0%	0%	0%	5%	95%	0%	100%
Cell Phones	\$3,068	0%	0%	0%	0%	0%	0%	100%	0%	100%
Unemployment Insurance	\$0	0%	0%	0%	0%	0%	0%	100%	0%	100%
Conference/Travel	\$4,377	0%	0%	0%	0%	0%	0%	100%	0%	100%
Office Supplies	\$2,298	0%	0%	0%	0%	0%	35%	65%	0%	100%
Printing/Publications	\$5,454	0%	0%	0%	0%	0%	90%	10%	0%	100%

O&M Expenses	FY 2020 Budget	Supply	Treatment	Trans & Dist	Storage	Meter Service	Cust Bill	Gen & Admin	Conservation	Total
General System Maint	\$89,073	0%	0%	75%	0%	0%	0%	25%	0%	100%
Safety Supplies	\$1,200	0%	0%	0%	0%	0%	0%	100%	0%	100%
Irrigation Maint Repair	\$0	0%	0%	100%	0%	0%	0%	0%	0%	100%
Dues/Memberships	\$10,171	0%	0%	0%	0%	0%	0%	100%	0%	100%
Water Analysis	\$15,272	100%	0%	0%	0%	0%	0%	0%	0%	100%
Water PHWA Fixed Charges	\$1,192,950	100%	0%	0%	0%	0%	0%	0%	0%	100%
Water PHWA Variable Chrgs	\$1,645,423	100%	0%	0%	0%	0%	0%	0%	0%	100%
Water Meters	\$3,351	0%	0%	0%	0%	100%	0%	0%	0%	100%
Reserve Expense	\$0	0%	0%	0%	0%	0%	0%	100%	0%	100%
WATER CONSERVATION	\$2,858	0%	0%	0%	0%	0%	0%	0%	100%	100%
<b>Capital</b>										
Office Equipment	\$0	0%	0%	0%	0%	0%	0%	100%	0%	100%
Structures/Improvements	\$0	0%	0%	100%	0%	0%	0%	0%	0%	100%
Vehicles	\$5,406	0%	0%	0%	0%	0%	0%	100%	0%	100%
<b>Other</b>										
Cost Allocation	\$368,357	0%	0%	0%	0%	0%	0%	100%	0%	100%
ISF Allocation Expenses	\$92,286	0%	0%	0%	0%	0%	0%	100%	0%	100%
<b>Total Allocation</b>		<b>\$2,889,720</b>	<b>\$0</b>	<b>\$683,137</b>	<b>\$0</b>	<b>\$3,351</b>	<b>\$93,288</b>	<b>\$634,941</b>	<b>\$75,008</b>	<b>\$4,379,445</b>