

CITY OF GLENDALE

WATER AND POWER

Water Cost of Service and Rate Study

Draft Report / May 2018

This page is intentionally left blank for double-sided printing.

May 5, 2018

Mr. Steve Zurn
General Manager
City of Glendale Water and Power
141 North Glendale Avenue
Glendale, CA 91206

DRAFT

Subject: Water Cost of Service Rate Study Report

Dear Mr. Zurn:

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to present this water cost of service study to the City of Glendale Water and Power (City or GWP). This study involved a comprehensive review of the City's rate structure and long-range financial plan and the calculation of cost of service-based water rates.

We are confident that the calculated rates are fair and equitable for the City's customers and compliant with Proposition 218 requirements. This report includes an Executive Summary, a detailed presentation of the six-year financial plan, cost of service analysis, and rate derivation.

It was a pleasure working with you, and we wish to express our thanks for the support you and other City staff provided during the study. If you have any questions, please do not hesitate to call me at (626) 583-1894.

Sincerely,

RAFTELIS FINANCIAL CONSULTANTS, INC.



Sudhir Pardiwala, P.E.
Executive Vice President



Hannah Phan
Manager



Nancy Phan
Consultant

TABLE OF CONTENTS

- 1 Executive Summary..... 1
 - 1.1 Background 1
 - 1.2 Financial Plan 1
 - 1.3 Proposed Water Rates 4
 - 1.4 Customer Impacts 6
 - 1.5 Drought Surcharges 7
- 2 Financial Plan 8
 - 2.1 Water System..... 8
 - 2.2 Customer Accounts and Usage Data..... 8
 - 2.3 Revenues..... 11
 - 2.4 Inflationary Assumptions 14
 - 2.5 Water Supply Cost..... 14
 - 2.6 O&M Expenses 16
 - 2.7 Debt Service 17
 - 2.8 Capital Improvement Plan 17
 - 2.9 Reserves 18
 - 2.10 Proposed Financial Plan 18
- 3 Cost of Service Analysis..... 21
 - 3.1 Legal Framework..... 21
 - 3.2 Methodology..... 22
 - 3.3 Revenue Requirement 23
 - 3.4 Functionalization of Expenses..... 24
 - 3.5 System Peaking Factors..... 25
 - 3.6 Customer Peaking Factors 26
 - 3.7 Equivalent Meters and Lines..... 27
 - 3.8 Allocation to Cost Components 29
 - 3.9 Unit Cost Derivation..... 33
- 4 Rate Design 38
 - 4.1 Fixed Charge Calculation..... 38
 - 4.2 Variable Charge Calculation 39

4.3	Proposed Water Rates	42
4.4	Customer Impacts	44
5	Drought Surcharges	46
5.1	Drought Impacts	46
5.2	Assumptions.....	46
5.3	Financial Impacts.....	47
5.4	Drought Surcharge Calculation	49
	Appendix	52

LIST OF TABLES

Table 1-1: Proposed Customer Charges.....	5
Table 1-2: Proposed Variable Charges.....	6
Table 1-3: Single Family Customer Impacts.....	6
Table 1-4: Multi-Family Customer Impacts.....	6
Table 1-5: Commercial Customer Impacts.....	7
Table 1-6: Proposed Drought Surcharges.....	7
Table 2-1: Projected Customer Accounts.....	8
Table 2-2: Projected Water Usage.....	10
Table 2-3: Current Monthly Customer Charges.....	11
Table 2-4: Current Monthly Variable Charges.....	12
Table 2-5: Calculated Water Rate Revenues.....	13
Table 2-6: Projected Revenues.....	14
Table 2-7: Inflationary Assumptions.....	14
Table 2-8: Calculated Water Production Costs.....	16
Table 2-9: Projected O&M Expenses.....	17
Table 2-10: Existing Debt Service.....	17
Table 2-11: Capital Projects.....	18
Table 2-12: Proposed Revenue Adjustments.....	18
Table 2-13: Projected Operating Financial Plan.....	19
Table 2-14: Projected Fund Balances.....	20
Table 3-1: Revenue Requirement.....	24
Table 3-2: System-Wide Peaking Factors.....	26
Table 3-3: Customer Class Peaking Factors.....	27
Table 3-4: Equivalent Meters.....	28
Table 3-5: Equivalent Fire Capacities.....	29
Table 3-6: Equivalent Hydrants.....	29
Table 3-7: Operating Cost Allocation.....	31
Table 3-8: Capital Cost Allocation.....	32
Table 3-9: Derivation of Units of Service.....	33
Table 3-10: Unit Cost Derivation.....	36
Table 3-11: Allocation of Costs to Customer Classes.....	37
City of Glendale Water and Power – Water Report	iii

Table 4-1: Monthly Customer Charge Calculation	38
Table 4-2: Private Fire Line Charge Calculation	39
Table 4-3: Supply Unit Cost by Source	40
Table 4-4: Water Supply Cost Allocation	40
Table 4-5: Water Supply Unit Cost by Customer Class	41
Table 4-6: Peaking Unit Cost Calculation by Customer Class.....	41
Table 4-7: Variable Rate Calculation	42
Table 4-8: Recycled Water Variable Rate Calculation.....	42
Table 4-9: Proposed Customer Charges.....	43
Table 4-10: Proposed Variable Charges	44
Table 4-11: Single Family Customer Impacts, 3/4" Meter	44
Table 4-12: Multi-Family Customer Impacts, 1" Meter	44
Table 4-13: Commercial Customer Impacts, 1: Meter.....	45
Table 5-1: Reductions in Usage at Indicated Targets.....	47
Table 5-2: Projected Water Usage at Target Levels.....	48
Table 5-3: Purchased Water Cost Savings.....	49
Table 5-4: Projected Revenues at Each Target Level	50
Table 5-5: Net Revenue Loss Calculation	51
Table 5-6: Proposed Drought Surcharges	51
Table A-1: Detailed Operating Budget	53

LIST OF FIGURES

Figure 1-1: Projected Financial Plan.....	2
Figure 1-2: Proposed Revenue Adjustments and Debt Coverage.....	3
Figure 1-3: Proposed Capital Financing Plan.....	3
Figure 1-4: Projected Ending Balances.....	4

1 EXECUTIVE SUMMARY

The City of Glendale Water & Power (City or GWP) engaged Raftelis Financial Consultants, Inc. (Raftelis) to develop a comprehensive financial plan and rate study for the City's water utility. This report documents the assumptions, methodologies, analyses, and proposed rates for fiscal years (FY) 2018-2019 to FY 2022-2023 (FY 2019 to FY 2023).

The major objectives of the study include the following:

1. Ensure revenue sufficiency to meet the operating and maintenance (O&M) and capital needs of the City's water utility.
2. Determine rates that are fair and equitable, in accordance with cost of service guidelines used in the industry, and in compliance with Proposition 218 requirements.
3. Minimize the financial impact to the City's water customers while retaining revenue stability and preserving the overall financial health of the utility.

This executive summary provides an overview of the study and its results, including recommendations for updated water rates beginning July 2018¹.

The numbers shown in the tables and equations in this report may be rounded, and therefore may not add up to the precise numbers shown in the report.

1.1 BACKGROUND

The City of Glendale provides reliable and sustainable water and recycled water service to approximately 33,744 customers. A third of GWP's water supply is available through the San Fernando and Verdugo Groundwater Basins, and the remaining water is supplied by the Metropolitan Water District of Southern California (MWD).

Historically, GWP has funded its O&M costs entirely through water rates and charges. However, the majority of the water system is depreciated, therefore a main focus of this water rate study is to develop a sustainable financing strategy that will fund capital projects while minimizing impacts on customers.

1.2 FINANCIAL PLAN

To determine the revenue requirements needed to fund the City's ongoing expenses, Raftelis projected the O&M costs, capital improvement plan (CIP), debt service payments, and reserve requirements for the study period from FY 2018 to FY 2023.

¹ In this report, FY 2019 refers to the year starting on July 1, 2018 and ending June 30, 2019.
City of Glendale Water and Power – Water Report

O&M expenses include salaries and benefits, minor repairs and equipment, water pumping and supply costs, etc. Expected O&M expenses over the study period range from \$46.4 million to \$54.0 million per year. The City plans to spend approximately \$52.5 million on capital projects over the six-year period to replace and repair aging infrastructure. The City does not plan to incur new debt, and all capital projects are funded through water rates and reserves.

Figure 1-1 shows the City’s projected financial plan over the six-year planning period. The red line represents the current revenues at existing rates; the blue line represents the proposed revenues with the revenue adjustments shown in **Figure 1-2**. The light blue bar shows the O&M expenses (less purchased water costs), the blue bar shows the purchased water cost, the orange bar shows the annual debt service from existing debt, the green bar shows the rate funded CIP, and the red bar shows the net income. If the red bar is above the x-axis, then the City is replenishing reserves; if it is below, then the City is drawing from reserves to fund capital expenses.

Figure 1-1: Projected Financial Plan

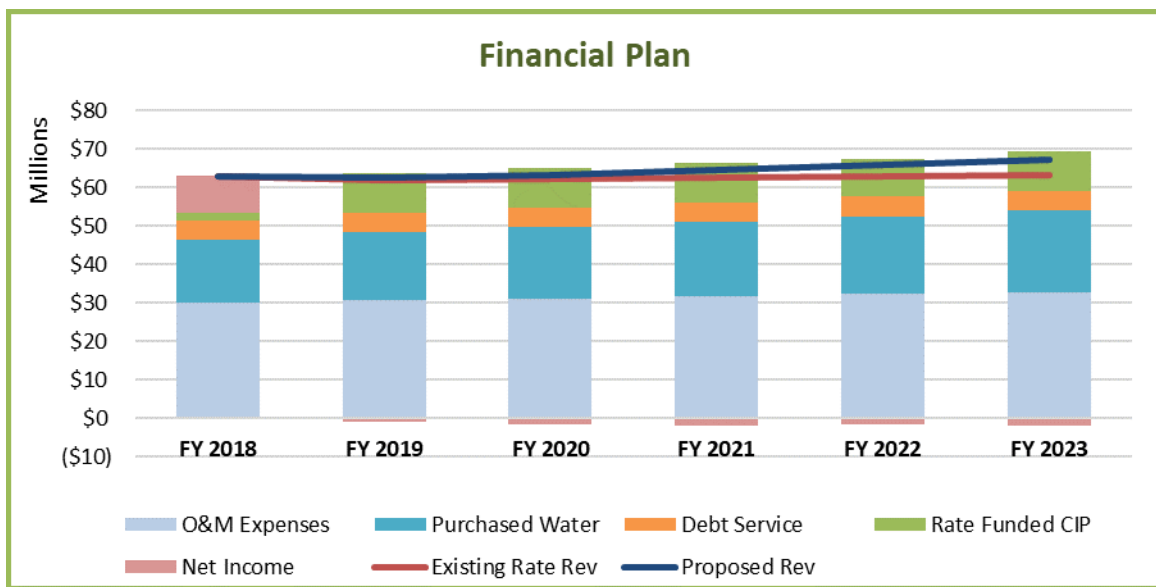


Figure 1-2 shows the proposed revenue adjustments (on the left axis) and calculated debt coverage ratio (on the right axis) for the study period. All revenue adjustments will be effective on July 1st of the corresponding fiscal year.

The main factors that determine the City’s revenue adjustments are O&M expenses and capital project costs. Overall, O&M expenses are expected to increase by approximately 2.8 to 3.9 percent each year. The City plans to spend an average of \$10.1 million per year on capital projects from FY 2019 to FY 2023, all of which are funded through rates.

Figure 1-2: Proposed Revenue Adjustments and Debt Coverage

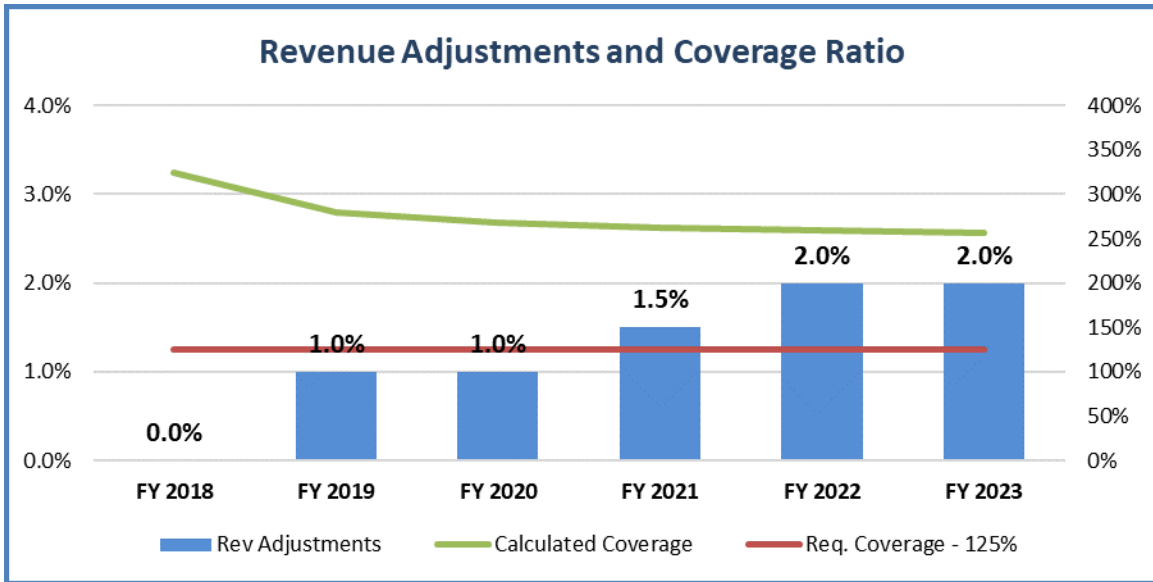


Figure 1-3 shows the total amount of capital projects and their funding sources. The City is expected to spend approximately \$52.5 million on capital projects over six years, all of which will be funded through rates as the City does not plan to incur new debt.

Figure 1-3: Proposed Capital Financing Plan

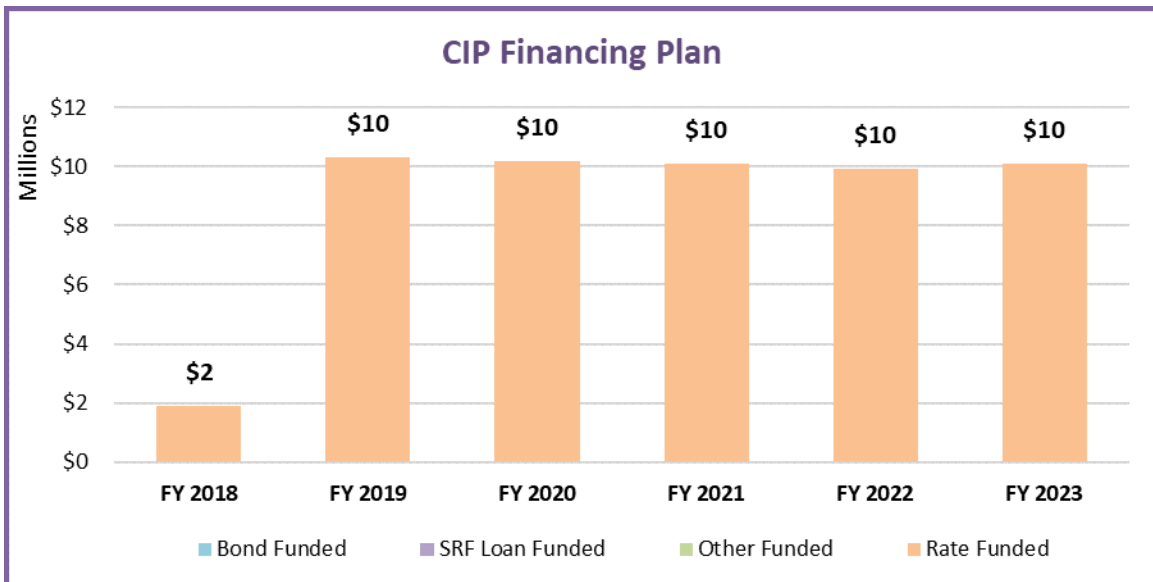
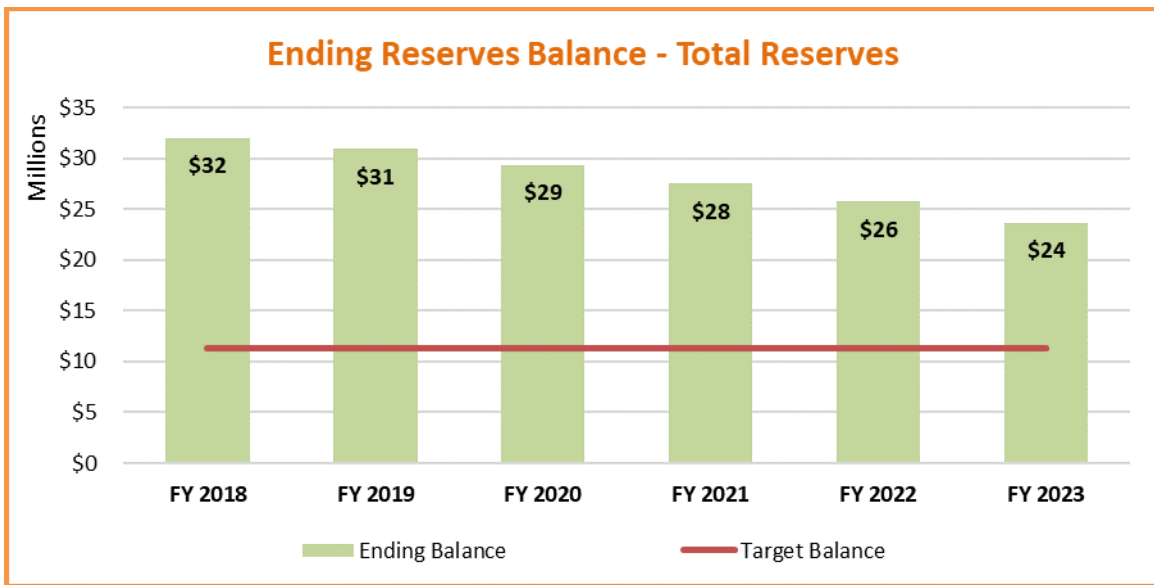


Figure 1-4 shows the City’s fund ending balances. For all years of the study, the City is expected to meet reserve requirements. The reserve requirements help to mitigate cash flow risks, unexpected O&M expenses, or asset failure. The City’s current reserve policy includes:

- » Operating Reserve: \$3.8 million
- » Contingency Reserve: \$6.5 million
- » Rate Stabilization Fund: \$1.0 million

Due to unforeseen reductions in water usage since the water supply shortage of 2015, the City has reduced the amount of water it needs to purchase from MWD. However, to ensure the lowest supply cost possible, prior to the water supply shortage of 2015, the City agreed to purchase at least 17,481 acre-feet (AF) of water from MWD each year, in order to ensure that all of the City’s use was within MWD’s lowest pricing tier. With the unforeseen reductions since the water supply shortage, the City is still required to meet its agreed upon minimum purchase amount for the length of the agreement with MWD. The total reserves shown in this study, which are higher than the target, allows the City to pay its commitment to MWD. There may be a difference of approximately \$11.6 million between projected demands and the minimum purchase amount, at the end of the agreement in FY 2024. Maintaining this reserve will allow the City to meet its obligation without risking the utility’s financial stability.

Figure 1-4: Projected Ending Balances



1.3 PROPOSED WATER RATES

Table 1-1 shows the proposed customer charges for five years; **Table 1-2** shows the proposed variable charges for five years.

Table 1-1: Proposed Customer Charges

	July 2018	July 2019	July 2020	July 2021	July 2022
Monthly Customer Charge					
Meter Size					
5/8"	\$18.14	\$18.33	\$18.61	\$18.99	\$19.37
3/4"	\$25.33	\$25.58	\$25.97	\$26.49	\$27.02
1"	\$39.70	\$40.10	\$40.71	\$41.53	\$42.37
1 1/2"	\$75.61	\$76.37	\$77.52	\$79.08	\$80.67
2"	\$118.72	\$119.91	\$121.71	\$124.15	\$126.64
3"	\$255.22	\$257.77	\$261.64	\$266.88	\$272.22
4"	\$456.37	\$460.93	\$467.85	\$477.21	\$486.76
6"	\$937.68	\$947.06	\$961.27	\$980.50	\$1,000.11
8"	\$1,727.91	\$1,745.19	\$1,771.37	\$1,806.80	\$1,842.94
10"	\$2,733.66	\$2,761.00	\$2,802.42	\$2,858.47	\$2,915.64
12"	\$3,595.73	\$3,631.69	\$3,686.17	\$3,759.90	\$3,835.10
Monthly Private Fire Line Customer Charge					
Line Size					
1"	\$4.17	\$4.22	\$4.29	\$4.38	\$4.47
1 1/2"	\$4.91	\$4.96	\$5.04	\$5.15	\$5.26
2"	\$6.20	\$6.27	\$6.37	\$6.50	\$6.63
3"	\$10.81	\$10.92	\$11.09	\$11.32	\$11.55
4"	\$18.77	\$18.96	\$19.25	\$19.64	\$20.04
6"	\$47.34	\$47.82	\$48.54	\$49.52	\$50.52
8"	\$96.61	\$97.58	\$99.05	\$101.04	\$103.07
10"	\$170.72	\$172.43	\$175.02	\$178.53	\$182.11
12"	\$273.43	\$276.17	\$280.32	\$285.93	\$291.65
Monthly Recycled Water Customer Charge					
Meter Size					
5/8"	\$12.17	\$12.30	\$12.49	\$12.74	\$13.00
3/4"	\$16.37	\$16.54	\$16.79	\$17.13	\$17.48
1"	\$24.77	\$25.02	\$25.40	\$25.91	\$26.43
1 1/2"	\$45.76	\$46.22	\$46.92	\$47.86	\$48.82
2"	\$70.96	\$71.67	\$72.75	\$74.21	\$75.70
3"	\$150.74	\$152.25	\$154.54	\$157.64	\$160.80
4"	\$268.31	\$271.00	\$275.07	\$280.58	\$286.20
6"	\$549.63	\$555.13	\$563.46	\$574.73	\$586.23
8"	\$1,011.51	\$1,021.63	\$1,036.96	\$1,057.70	\$1,078.86
10"	\$1,599.36	\$1,615.36	\$1,639.60	\$1,672.40	\$1,705.85
12"	\$2,103.23	\$2,124.27	\$2,156.14	\$2,199.27	\$2,243.26

Table 1-2: Proposed Variable Charges

	Monthly Tiers	July 2018	July 2019	July 2020	July 2021	July 2022
Monthly Water Variable Charges						
Single Family						
Tier 1	8	\$2.61	\$2.64	\$2.68	\$2.74	\$2.80
Tier 2	15	\$3.84	\$3.88	\$3.94	\$4.02	\$4.11
Tier 3	15+	\$3.99	\$4.03	\$4.10	\$4.19	\$4.28
Multi Family						
Tier 1	6	\$2.61	\$2.64	\$2.68	\$2.74	\$2.80
Tier 2	6+	\$3.84	\$3.88	\$3.94	\$4.02	\$4.11
Commercial		\$3.78	\$3.82	\$3.88	\$3.96	\$4.04
Irrigation		\$3.91	\$3.95	\$4.01	\$4.10	\$4.19
Private Fire Line		\$3.99	\$4.03	\$4.10	\$4.19	\$4.28
Recycled Water - Commercial		\$2.64	\$2.67	\$2.72	\$2.78	\$2.84
Recycled Water - Irrigation		\$2.64	\$2.67	\$2.72	\$2.78	\$2.84

1.4 CUSTOMER IMPACTS

Table 1-3 shows the impacts to Single Family customers with a 3/4” meter.

Table 1-3: Single Family Customer Impacts

	Monthly Usage (hcf)	Bills Impacted - All Meter Sizes	Current Fixed	Current Variable	Total Current Bill	Proposed Fixed	Proposed Variable	Total Proposed Bill	Difference
Very Low	4	33,968	\$29.15	\$10.28	\$39.43	\$25.33	\$10.44	\$35.77	(\$3.67)
Low	10	91,247	\$29.15	\$28.18	\$57.33	\$25.33	\$28.56	\$53.89	(\$3.44)
Average	15	55,661	\$29.15	\$45.45	\$74.60	\$25.33	\$47.76	\$73.09	(\$1.51)
High	25	51,036	\$29.15	\$81.75	\$110.90	\$25.33	\$87.66	\$112.99	\$2.08
Very High	50	23,639	\$29.15	\$192.25	\$221.40	\$25.33	\$187.41	\$212.74	(\$8.66)

Table 1-4 shows the impacts to Multi-Family customers with a 1” meter and four dwelling units.

Table 1-4: Multi-Family Customer Impacts

	Monthly Usage (hcf)	Bills Impacted - All Meter Sizes	Current Fixed	Current Variable	Total Current Bill	Proposed Fixed	Proposed Variable	Total Proposed Bill	Difference
Very Low	8	4,781	\$38.42	\$21.52	\$59.94	\$39.70	\$20.88	\$60.58	\$0.64
Low	16	14,987	\$38.42	\$43.04	\$81.46	\$39.70	\$41.76	\$81.46	(\$0.00)
Average	20	11,067	\$38.42	\$53.80	\$92.22	\$39.70	\$52.20	\$91.90	(\$0.32)
High	40	42,086	\$38.42	\$133.20	\$171.62	\$39.70	\$124.08	\$163.78	(\$7.85)
Very High	100	10,650	\$38.42	\$371.40	\$409.82	\$39.70	\$354.48	\$394.18	(\$15.65)

Table 1-5 shows the impacts to Commercial customers with a 1” meter.

Table 1-5: Commercial Customer Impacts

	Monthly Usage (hcf)	Bills Impacted - All Meter Sizes	Current Fixed	Current Variable	Total Current Bill	Proposed Fixed	Proposed Variable	Total Proposed Bill	Difference
Very Low	5	12,771	\$38.42	\$15.90	\$54.32	\$39.70	\$18.90	\$58.60	\$4.28
Low	25	12,198	\$38.42	\$79.50	\$117.92	\$39.70	\$94.50	\$134.20	\$16.28
Average	47	3,789	\$38.42	\$149.46	\$187.88	\$39.70	\$177.66	\$217.36	\$29.48
High	75	2,312	\$38.42	\$238.50	\$276.92	\$39.70	\$283.50	\$323.20	\$46.28
Very High	100	1,035	\$38.42	\$318.00	\$356.42	\$39.70	\$378.00	\$417.70	\$61.28

1.5 DROUGHT SURCHARGES

As part of the water rate study, Raftelis calculated drought surcharges in case of a reduction in water usage due to drought. The study determined that for every percentage decrease in water usage due to drought, a \$0.015 per hundred cubic feet (hcf) surcharge will be added to the proposed rates for that year. For example, if there is a 10 percent reduction in water use, each water rate will increase by \$0.15 per hcf of water.

Table 1-6 shows the proposed drought surcharges utilizing the methodology mentioned above for four stages of drought, based on the City’s Mandatory Water Conservation Ordinance: 20 percent, 30 percent, 40 percent, and 50 percent reductions.

Table 1-6: Proposed Drought Surcharges

	Stage 1	Stage 2	Stage 3	Stage 4
Curtailment Target	20%	30%	40%	50%
Proposed Drought Surcharge (\$/hcf)	\$0.30	\$0.45	\$0.60	\$0.75

2 FINANCIAL PLAN

This section describes the City’s long-range financial plan, including customer and usage projections, operating and capital expenses, water rate and non-rate revenues, and capital financing options. The financial plan determines the overall revenue adjustments required to maintain the City’s financial sufficiency.

2.1 WATER SYSTEM

The City of Glendale Water & Power is a municipal utility that services 33,744 water connections in the city of Glendale, California and an approximately an additional 2,000 connections overlapping with the Crescenta Valley Water District. Additionally, the City provides recycled water to approximately 80 connections, which constitutes 5 percent of the City’s total water production.

Glendale receives approximately 30 percent of its water supply from groundwater pumped from the San Fernando and Verdugo Groundwater Basins and the remaining supply is purchased from the Metropolitan Water District of Southern California. The City operates a groundwater remediation facility that includes a treatment plant and wells in both the cities of Glendale and Los Angeles. The City also owns half of the LA-Glendale Water Reclamation Plant, which is operated by the Los Angeles Department of Water and Power.

2.2 CUSTOMER ACCOUNTS AND USAGE DATA

The City provided customer account and usage data for FY 2017 and expects an annual 1.0 percent increase in customer accounts in Multi-Family Residential (MFR), Commercial, and Irrigation customers. Other customer classes, such as Single Family Residential (SFR) and Recycled Water are not expected to grow over the study period.

Table 2-1 shows the actual and projected customer accounts and **Table 2-2** shows the actual and projected usage data based on the City’s records.

Table 2-1: Projected Customer Accounts

Accounts Data	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 SFR							
2 5/8"	3,710	3,710	3,710	3,710	3,710	3,710	3,710
3 3/4"	13,738	13,738	13,738	13,738	13,738	13,738	13,738
4 1"	5,155	5,155	5,155	5,155	5,155	5,155	5,155
5 1 1/2"	289	289	289	289	289	289	289
6 2"	82	82	82	82	82	82	82
7 Subtotal SFR	22,974	22,974	22,974	22,974	22,974	22,974	22,974

Accounts Data	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
8 MFR							
9 5/8"	373	373	377	380	384	388	392
10 3/4"	2,782	2,782	2,810	2,838	2,866	2,895	2,924
11 1"	2,105	2,105	2,126	2,147	2,169	2,190	2,212
12 1 1/2"	1,238	1,238	1,250	1,263	1,276	1,288	1,301
13 2"	904	904	913	922	931	941	950
14 3"	51	51	52	52	53	53	54
15 4"	38	38	38	39	39	40	40
16 6"	6	6	6	6	6	6	6
17 8"	1	1	1	1	1	1	1
18 Subtotal MFR	7,498	7,498	7,573	7,649	7,725	7,802	7,880
19 Commercial							
20 5/8"	658	658	665	671	678	685	692
21 3/4"	997	997	1,007	1,017	1,027	1,037	1,048
22 1"	594	594	600	606	612	618	624
23 1 1/2"	465	465	470	474	479	484	489
24 2"	761	761	769	776	784	792	800
25 3"	83	83	84	85	86	86	87
26 4"	60	60	61	61	62	62	63
27 6"	38	38	38	39	39	40	40
28 8"	17	17	17	17	18	18	18
29 Subtotal Commercial	3,673	3,673	3,710	3,747	3,784	3,822	3,860
30 Irrigation							
31 5/8"	27	27	27	28	28	28	28
32 3/4"	81	81	82	83	83	84	85
33 1"	124	124	125	126	128	129	130
34 1 1/2"	50	50	51	51	52	52	53
35 2"	103	103	104	105	106	107	108
36 3"	10	10	10	10	10	10	11
37 4"	3	3	3	3	3	3	3
38 6"	2	2	2	2	2	2	2
39 8"	0	0	0	0	0	0	0
40 Subtotal Irrigation	400	400	404	408	412	416	420
41 Recycled Water - Commercial							
42 5/8"	0	0	0	0	0	0	0
43 3/4"	1	1	1	1	1	1	1
44 1"	4	4	4	4	4	4	4
45 1 1/2"	5	5	5	5	5	5	5
46 2"	26	26	26	26	26	26	26
47 3"	6	6	6	6	6	6	6
48 4"	4	4	4	4	4	4	4
49 6"	4	4	4	4	4	4	4
50 8"	2	2	2	2	2	2	2
51 10"	0	0	0	0	0	0	0
52 12"	1	1	1	1	1	1	1
53 Subtotal Recycled Water - Commercial	53	53	53	53	53	53	53

Accounts Data	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
54 Recycled Water - Irrigation							
55 5/8"	0	0	0	0	0	0	0
56 3/4"	0	0	0	0	0	0	0
57 1"	2	2	2	2	2	2	2
58 1 1/2"	2	2	2	2	2	2	2
59 2"	19	19	19	19	19	19	19
60 3"	2	2	2	2	2	2	2
61 4"	6	6	6	6	6	6	6
62 6"	2	2	2	2	2	2	2
63 8"	2	2	2	2	2	2	2
64 Subtotal Recycled Water - Irrigation	35	35	35	35	35	35	35
65 Private Fire Line							
66 1"	1	1	1	1	1	1	1
67 1 1/2"	0	0	0	0	0	0	0
68 2"	53	53	53	53	53	53	53
69 3"	2	2	2	2	2	2	2
70 4"	822	822	822	822	822	822	822
71 6"	259	259	259	259	259	259	259
72 8"	106	106	106	106	106	106	106
73 10"	2	2	2	2	2	2	2
74 12"	2	2	2	2	2	2	2
75 Subtotal Private Fire Line	1,247	1,247	1,247	1,247	1,247	1,247	1,247

Table 2-2: Projected Water Usage

Usage Data (hcf)	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 Single Family						
2 Tier 1	1,496,464	1,526,393	1,526,393	1,526,393	1,526,393	1,526,393
3 Tier 2	963,760	1,011,948	1,011,948	1,011,948	1,011,948	1,011,948
4 Tier 3	848,839	905,171	905,171	905,171	905,171	905,171
5 Tier 4	461,873	471,110	471,110	471,110	471,110	471,110
6 Subtotal Single Family	3,770,935	3,914,622	3,914,622	3,914,622	3,914,622	3,914,622
7 Multi Family						
8 Tier 1	2,760,668	2,815,881	2,844,040	2,872,480	2,901,205	2,930,217
9 Tier 2	1,202,543	1,226,594	1,238,860	1,251,249	1,263,761	1,276,399
10 Subtotal Multi Family	3,963,211	4,042,475	4,082,900	4,123,729	4,164,966	4,206,616
11 Commercial	1,976,300	2,015,825	2,035,984	2,056,344	2,076,907	2,097,676
12 Irrigation	186,318	190,045	191,945	193,865	195,803	197,761
13 Private Fire Line	720	720	720	720	720	720
14 Recycled Water - Commercial	476,078	476,078	476,078	476,078	476,078	476,078
15 Recycled Water - Irrigation	260,384	260,384	260,384	260,384	260,384	260,384
16 TOTAL WATER USAGE (HCF)	10,633,946	10,900,149	10,962,633	11,025,741	11,089,480	11,153,857
17 Total Potable Water (hcf)	9,897,484	10,163,687	10,226,171	10,289,279	10,353,018	10,417,395
18 Total Recycled Water (hcf)	736,462	736,462	736,462	736,462	736,462	736,462
19 TOTAL WATER USAGE (AF)	24,412	25,023	25,167	25,312	25,458	25,606
20 Total Potable Water (AF)	22,721	23,333	23,476	23,621	23,767	23,915
21 Total Recycled Water (AF)	1,691	1,691	1,691	1,691	1,691	1,691

2.3 REVENUES

Table 2-3 shows the City’s current monthly customer charges. **Table 2-4** shows the current variable charges. The City bill customers bi-monthly, however, the charges and data are shown in monthly units. The current rate structure showing the monthly fixed charge for water customers, recycled water customers, and private fire lines; a tiered variable charge per hcf of water for SFR and MFR customers; and a uniform variable charge per hcf of water for all other customers.

Table 2-3: Current Monthly Customer Charges

	Meter Size	Monthly Customer Charge	Monthly Recycled Water Customer Charge	Monthly Private Fire Line Customer Charge
1	5/8"	\$22.98	\$19.53	
2	3/4"	\$29.15	\$24.78	
3	1"	\$38.42	\$32.66	\$8.95
4	1 1/2"	\$63.12	\$53.65	\$9.90
5	2"	\$75.47	\$64.15	\$11.55
6	3"	\$260.75	\$221.64	\$17.44
7	4"	\$507.79	\$431.62	\$27.61
8	6"	\$940.11	\$799.09	\$64.11
9	8"	\$2,175.31	\$1,849.01	\$127.06
10	10"	\$3,410.51	\$2,898.93	\$221.74
11	12"	\$3,410.51	\$2,898.93	\$352.97

Table 2-4: Current Monthly Variable Charges

Customer Class	Tier	Monthly Variable Charge
1	Single Family	
2	Tier 1	0-6 hcf \$2.57
3	Tier 2	6.1 - 12 hcf \$3.19
4	Tier 3	12.1 - 25 hcf \$3.63
5	Tier 4	over 25 hcf \$4.42
6	Multi Family	
7	Tier 1	0 - 5 hcf per unit \$2.69
8	Tier 2	over 5 hcf per unit \$3.97
9	Commercial	\$3.18
10	Irrigation	\$3.30
11	Private Fire Line	\$3.18
12	Recycled Water - Commercial	\$2.70
13	Recycled Water - Irrigation	\$2.81

To calculate the water rate revenues, the current water rates are multiplied by the meter and usage data for each year of the study. **Table 2-5** shows the calculated water rate revenues using the customer account and meter size data in **Table 2-1** and the usage data in **Table 2-2**.

The monthly customer charge revenues are calculated by multiplying the monthly charge per meter size by the number of accounts with that meter size for the full year. For example, the revenues for a potable SFR 5/8” meter in FY 2018 is calculated using the following equation:

$$\$22.98 \text{ per } 5/8'' \text{ meter per month} \times 3,710 \text{ meters} \times 12 \text{ months} = \$1,023,070$$

The variable rate revenues are calculated by multiplying the amount of usage in each customer class and tier (if applicable) with the variable charge per hcf of water. To calculate the variable revenues from the Commercial class in FY 2018, the following equation is used:

$$\$3.18 \text{ per hcf of water} \times 1,976,300 \text{ hcf} \cong \$6,284,632$$

Table 2-5: Calculated Water Rate Revenues

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 Fixed Revenue						
2 Single Family	\$8,498,446	\$8,498,446	\$8,498,446	\$8,498,446	\$8,498,446	\$8,498,446
3 Multi Family	\$4,287,823	\$4,330,702	\$4,374,009	\$4,417,749	\$4,461,926	\$4,506,546
4 Commercial	\$3,343,229	\$3,376,662	\$3,410,428	\$3,444,532	\$3,478,978	\$3,513,768
5 Irrigation	\$296,234	\$299,197	\$302,189	\$305,210	\$308,263	\$311,345
6 Private Fire Line	\$654,884	\$654,884	\$654,884	\$654,884	\$654,884	\$654,884
7 Recycled Water - Commercial	\$179,294	\$179,294	\$179,294	\$179,294	\$179,294	\$179,294
8 Recycled Water - Irrigation	\$116,648	\$116,648	\$116,648	\$116,648	\$116,648	\$116,648
9 Total Fixed Revenue	\$17,376,559	\$17,455,832	\$17,535,898	\$17,616,764	\$17,698,439	\$17,780,931
10 Variable Revenue						
11 Single Family	\$12,043,068	\$12,519,021	\$12,519,021	\$12,519,021	\$12,519,021	\$12,519,021
12 Multi Family	\$12,200,292	\$12,444,298	\$12,568,741	\$12,694,428	\$12,821,373	\$12,949,586
13 Commercial	\$6,284,632	\$6,410,325	\$6,474,428	\$6,539,173	\$6,604,564	\$6,670,610
14 Irrigation	\$614,850	\$627,147	\$633,419	\$639,753	\$646,151	\$652,612
15 Private Fire Line	\$2,290	\$2,290	\$2,290	\$2,290	\$2,290	\$2,290
16 Recycled Water - Commercial	\$1,285,411	\$1,285,411	\$1,285,411	\$1,285,411	\$1,285,411	\$1,285,411
17 Recycled Water - Irrigation	\$731,679	\$731,679	\$731,679	\$731,679	\$731,679	\$731,679
18 Total Variable Revenue	\$33,162,222	\$34,020,171	\$34,214,988	\$34,411,754	\$34,610,488	\$34,811,209
19 TOTAL CALCULATED RATE REVENUE	\$50,538,781	\$51,476,003	\$51,750,886	\$52,028,518	\$52,308,927	\$52,592,139
20 Total Potable Water (hcf)	\$48,225,749	\$49,162,971	\$49,437,854	\$49,715,486	\$49,995,895	\$50,279,107
21 Total Recycled Water (hcf)	\$2,196,384	\$2,196,384	\$2,196,384	\$2,196,384	\$2,196,384	\$2,196,384

Table 2-6 shows the City’s projected revenues for the study period. The rate revenues are shown in Lines 1-7. The rate revenues for FY 2018 are derived from the City’s budget; the calculated rate revenues shown in **Table 2-5** are used for every year thereafter. For example, in FY 2019, the SFR rate revenue (Line 1) is equal to the sum of calculated monthly customer charge and variable charge revenues:

$$\$8,498,446 \text{ (monthly customer charge)} + \$12,519,021 \text{ (variable charge)} = \$21,017,467 \text{ (Line 1)}$$

Table 2-6: Projected Revenues

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
1 Single family revenue	\$20,771,996	\$21,017,467	\$21,017,467	\$21,017,467	\$21,017,467	\$21,017,467
2 Multi-family revenue	\$16,530,993	\$16,775,000	\$16,942,750	\$17,112,177	\$17,283,299	\$17,456,132
3 Commercial revenue	\$9,661,294	\$9,786,987	\$9,884,856	\$9,983,705	\$10,083,542	\$10,184,378
4 Irrigation revenue	\$914,047	\$926,344	\$935,607	\$944,964	\$954,413	\$963,957
5 Water private fire	\$657,174	\$657,174	\$657,174	\$657,174	\$657,174	\$657,174
6 Commercial recycled water	\$1,464,705	\$1,464,705	\$1,464,705	\$1,464,705	\$1,464,705	\$1,464,705
7 Irrigation recycled water	\$848,327	\$848,327	\$848,327	\$848,327	\$848,327	\$848,327
8 Depreciation-plant	\$6,232,000	\$6,232,000	\$6,232,000	\$6,232,000	\$6,232,000	\$6,232,000
9 Depreciation-vehicles	\$328,000	\$328,000	\$328,000	\$328,000	\$328,000	\$328,000
10 Collectible jobs - A & G	\$0	\$0	\$0	\$0	\$0	\$0
11 GWP municipal billing	\$600,358	\$600,358	\$600,358	\$600,358	\$600,358	\$600,358
12 Interest & inv. revenue	\$225,822	\$311,769	\$298,443	\$281,506	\$263,654	\$244,464
13 Miscellaneous revenue	\$2,273,826	\$2,273,826	\$2,273,826	\$2,273,826	\$2,273,826	\$2,273,826
14 Proprietary grants	\$1,700,000	\$0	\$0	\$0	\$0	\$0
15 Rental income	\$67,001	\$67,001	\$67,001	\$67,001	\$67,001	\$67,001
16 Water other sales	\$411,166	\$411,166	\$411,166	\$411,166	\$411,166	\$411,166
17 Backflow charges	\$307,388	\$307,388	\$307,388	\$307,388	\$307,388	\$307,388
18 TOTAL REVENUES	\$62,994,097	\$62,007,511	\$62,269,068	\$62,529,763	\$62,792,320	\$63,056,343

2.4 INFLATIONARY ASSUMPTIONS

Table 2-7 shows the inflationary assumptions used to project future O&M expenses. City staff provided input to reasonably estimate the annual inflationary assumptions. These assumptions are used to calculate the water supply cost and project all budgeted O&M expenses for future years.

Table 2-7: Inflationary Assumptions

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 Inflation Factors						
2 General	0.0%	2.1%	2.1%	2.1%	2.1%	2.1%
3 Salaries	0.0%	2.1%	2.1%	2.1%	2.1%	2.1%
4 Benefits	0.0%	4.0%	4.0%	4.0%	4.0%	4.0%
5 Water Purchase	0.0%	3.5%	3.5%	3.5%	3.5%	3.5%
6 Utilities	0.0%	0.5%	0.5%	1.0%	1.0%	1.0%
7 Energy	0.0%	0.5%	0.5%	1.0%	1.0%	1.0%
8 Chemicals	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 Capital	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

2.5 WATER SUPPLY COST

Table 2-8 shows the estimated annual water production from each source of water and the water supply cost. The potable and recycled water demand (Lines 1-2) are equal to that shown in **Table 2-2** (Lines 20-21). The water loss is estimated at approximately 3.5 percent each year. Taking water loss into account, the City must produce the amounts shown in Lines 4-5.

The City can pump 7,569 AF from the San Fernando Groundwater Basin each year and 882 AF from the Verdugo Groundwater Basin. The remaining water produced must be met through purchased water from MWD.

The cost for purchased water from MWD is calculated in Lines 12-19 of **Table 2-8**. The O&M cost (Line 13) is derived from the City's budget and inflated using the General inflationary factor shown in **Table 2-7** (Line 2). The MWD O&M cost, Capacity Cost, and Readiness-to-Serve (RTS) charges (Lines 14-16 of **Table 2-8**) are fixed charges; these charges are inflated for future years using the Water Purchase inflationary factor shown in **Table 2-7** (Line 5). The Treated Tier 1 Rate and Water Stewardship Rate (Lines 17-18) are charged based on AF of water purchased; these rates are also inflated in future years using the Water Purchase inflationary factor. The cost of purchased water from MWD in FY 2019 is calculated using the following equations:

- » Fixed charges = \$3,256 + \$261,089 + \$1,121,359 = \$1,385,704
- » Variable charges = (\$977 + \$55) per AF x 15,728 AF = \$16,229,516
- » Total charges = \$1,385,704 + \$16,229,516 = \$17,615,220

The production costs for San Fernando groundwater is calculated in Lines 20-23. The O&M cost (Line 21) is derived from the City's budget and inflated by the General inflationary assumption. The Los Angeles Department of Water and Power (LADWP) fee is inflated by the General inflationary assumption and is charged for every AF produced over 4,900. The cost of water from the San Fernando Groundwater Basin in FY 2019 is calculated using the following equation:

$$\$574,826 + \$735 \text{ per AF} \times (7,569 \text{ AF} - 4,900 \text{ AF}) = \$2,536,330$$

Water from the Verdugo Groundwater Basin requires an O&M cost, which is shown in Line 25.

Recycled water costs include O&M costs, which are budgeted by the City and inflated by the General inflationary assumption, and a variable wastewater treatment charge per AF of water. The recycled water costs in FY 2019 are calculated using the following equation:

$$\$760,946 + (\$102 \text{ per AF} \times 1,752 \text{ AF}) = \$939,825$$

Table 2-8: Calculated Water Production Costs

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 Potable Water Demand (AF)	22,721	23,333	23,476	23,621	23,767	23,915
2 Recycled Water Demand (AF)	1,691	1,691	1,691	1,691	1,691	1,691
3 Water Loss	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
4 Potable Water Production (AF)	23,546	24,179	24,328	24,478	24,629	24,782
5 Recycled Water Production (AF)	1,752	1,752	1,752	1,752	1,752	1,752
6 Water Supply Source (AF)						
7 MWD	15,095	15,728	15,877	16,027	16,178	16,331
8 San Fernando	7,569	7,569	7,569	7,569	7,569	7,569
9 Verdugo	882	882	882	882	882	882
10 Recycled	1,752	1,752	1,752	1,752	1,752	1,752
11 TOTAL	25,298	25,931	26,080	26,230	26,381	26,534
12 Water Production Costs						
13 MWD						
14 O&M	\$3,189	\$3,256	\$3,324	\$3,394	\$3,465	\$3,538
15 MWD Capacity Cost	\$245,154	\$261,089	\$278,060	\$296,134	\$315,382	\$335,882
16 MWD RTS Charge	\$1,052,919	\$1,121,359	\$1,194,247	\$1,271,874	\$1,354,545	\$1,442,591
17 MWD Treated Tier 1 Rate (\$/AF)	\$944	\$977	\$1,011	\$1,046	\$1,083	\$1,121
18 MWD Water Stewardship (\$/AF)	\$54	\$55	\$57	\$59	\$61	\$64
19 MWD Sub-Total	\$16,350,570	\$17,615,220	\$18,431,935	\$19,287,129	\$20,182,651	\$21,120,441
20 San Fernando						
21 O&M	\$563,003	\$574,826	\$586,897	\$599,222	\$611,806	\$624,654
22 LADWP Fee > 4,900 AF (\$/AF)	\$720	\$735	\$750	\$766	\$782	\$799
23 San Fernando Sub-Total	\$2,484,162	\$2,536,330	\$2,589,593	\$2,643,974	\$2,699,498	\$2,756,187
24 Verdugo						
25 O&M	\$61,504	\$62,795	\$64,114	\$65,460	\$66,835	\$68,239
26 Verdugo Sub-Total	\$61,504	\$62,795	\$64,114	\$65,460	\$66,835	\$68,239
27 Recycled						
28 O&M	\$745,295	\$760,946	\$776,926	\$793,241	\$809,899	\$826,907
29 Wastewater Treatment Costs (\$/AF)	\$100	\$102	\$104	\$106	\$109	\$111
30 Recycled Sub-Total	\$920,495	\$939,825	\$959,562	\$979,713	\$1,000,286	\$1,021,293
31 TOTAL WATER PRODUCTION COSTS	\$19,816,731	\$21,154,171	\$22,045,203	\$22,976,276	\$23,949,271	\$24,966,159

2.6 O&M EXPENSES

Table 2-9 shows the City’s budgeted and projected O&M expenses for the study period, which are inflated using the assumptions shown in **Table 2-7**. This table summarizes O&M costs for all water departments and includes the cost of purchased water (Line 10). The purchased water cost in FY 2018 is derived from the City’s budget; the purchased water cost is equal to the MWD costs shown in **Table 2-8** (Line 19) for all years thereafter. A detailed O&M expense budget is shown in the Appendix of this report.

Table 2-9: Projected O&M Expenses

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
1 GWP Adm - Conservation & Utility Modernization	\$1,060,750	\$1,086,655	\$1,113,248	\$1,140,552	\$1,168,585	\$1,197,371
2 GWP Adm - Customer Services	\$2,111,256	\$2,162,654	\$2,215,414	\$2,269,575	\$2,325,180	\$2,382,269
3 GWP Adm - Environmental & Safety	\$188,819	\$193,105	\$197,494	\$201,989	\$206,592	\$211,306
4 GWP Adm - UOC & Warehouse	\$287,253	\$293,812	\$300,539	\$307,513	\$314,666	\$322,002
5 GWP Adm - Utility Finance	\$121,760	\$125,207	\$128,761	\$132,428	\$136,210	\$140,111
6 GWP Administration	\$12,350,898	\$12,474,179	\$12,600,122	\$12,728,840	\$12,860,339	\$12,994,681
7 GWP Water - Engineering	\$5,682,624	\$5,847,780	\$5,950,719	\$6,072,420	\$6,196,995	\$6,324,520
8 GWP Water Distribution	\$3,403,106	\$3,492,967	\$3,585,504	\$3,681,277	\$3,779,912	\$3,881,502
9 GWP Water Operation	\$3,157,264	\$3,232,910	\$3,310,526	\$3,390,237	\$3,472,034	\$3,555,977
10 Purchased water	\$16,377,036	\$17,615,220	\$18,431,935	\$19,287,129	\$20,182,651	\$21,120,441
11 GWP Water Quality	\$1,498,626	\$1,537,084	\$1,576,628	\$1,617,293	\$1,659,115	\$1,702,129
12 GWP Yard Administration	\$144,599	\$148,522	\$152,564	\$156,727	\$161,015	\$165,434
13 TOTAL O&M EXPENSES	\$46,383,990	\$48,210,096	\$49,563,455	\$50,985,980	\$52,463,293	\$53,997,743

2.7 DEBT SERVICE

The City has two existing bonds issued in 2008 and 2012 for its water utility. **Table 2-10** shows the annual debt service for each debt.

Table 2-10: Existing Debt Service

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 2008 Bonds	\$3,454,706	\$3,449,906	\$3,428,906	\$3,410,406	\$3,405,594	\$3,402,194
2 2012 Bonds	\$1,664,131	\$1,667,531	\$1,690,131	\$1,706,381	\$1,715,631	\$1,718,131
3 TOTAL EXISTING DEBT SERVICE	\$5,118,838	\$5,117,438	\$5,119,038	\$5,116,788	\$5,121,225	\$5,120,325

The City does not plan to incur any additional debt over the study period.

2.8 CAPITAL IMPROVEMENT PLAN

Table 2-11 shows the City’s six-year water CIP. Pipeline projects (Line 1) consist of the pipeline management program, fire flow improvements, and capacity improvements. Capital projects related to facilities and plants (Line 2) include upgrades to power, tanks, pumps, wells, and reservoirs. Annual replacement and refurbishment (R&R) (Line 3) consists of capital projects to replace aging infrastructure, including service lines, hydrants, meters, etc. Additional CIP (Line 4) accounts for miscellaneous capital expenditures.

City staff provided capital project costs in future dollars from FY 2018 to FY 2023. As the City does not plan to incur new debt, all capital project costs shown are funded through rates and reserves.

Table 2-11: Capital Projects

Capital Improvement Projects	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 Pipelines	\$0	\$5,900,000	\$5,000,000	\$5,300,000	\$5,700,000	\$5,700,000
2 Facilities and Plants	\$0	\$1,100,000	\$1,800,000	\$1,300,000	\$800,000	\$800,000
3 Annual R&R	\$1,900,000	\$2,300,000	\$2,400,000	\$2,500,000	\$2,400,000	\$2,600,000
4 Additional CIP	\$0	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
5 TOTAL CIP	\$1,900,000	\$10,300,000	\$10,200,000	\$10,100,000	\$9,900,000	\$10,100,000

2.9 RESERVES

The City’s reserve policy requires the water enterprise to carry the following reserves:

- » Operating Reserve: \$3.8 million
- » Contingency Reserve: \$6.5 million
- » Rate Stabilization Fund: \$1.0 million

Raftelis has retained these reserve targets in the study.

2.10 PROPOSED FINANCIAL PLAN

The following revenue adjustments ensure adequate revenue to fund operating expenses, debt service, capital projects, and reserve requirements over the study period. The financial planning model assumes the revenue adjustments occur in July of every fiscal year. **Table 2-12** shows the proposed revenue adjustments from FY 2019 to FY 2023.

Table 2-12: Proposed Revenue Adjustments

Year	Revenue Adjustment
FY 2019	1.0%
FY 2020	1.0%
FY 2021	1.5%
FY 2022	2.0%
FY 2023	2.0%

Table 2-13 shows the operating cash flow detail for the study period, including the proposed revenue adjustments shown in **Table 2-12**.

The table shows the net cash flow and net operating revenue (Lines 27-28). The net operating revenue, which is the total revenues (Line 18) less expenses (Lines 21 and 24), for all years of the study is positive which shows that the City is currently meeting its operating expenses. The net cash flow (Line 28), which includes rate funded capital costs (Line 26) and is negative in years FY 2019 and beyond, shows that the City is drawing from its reserves from FY 2019 to FY 2023 to fund its capital projects.

The calculated debt coverage ratio (Line 30) is expected to meet the required debt coverage of 125 percent for all years of the study. The debt coverage ratio is calculated by dividing the operating revenue (Line 27) by annual debt service (Line 24).

Table 2-13: Projected Operating Financial Plan

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 Revenue at Existing Rates	\$50,848,536	\$51,476,003	\$51,750,886	\$52,028,518	\$52,308,927	\$52,592,139
2 Additional Revenue Needs						
3 Fiscal Year Revenue Effective						
4 FY 2019 1.0% July		\$514,760	\$517,509	\$520,285	\$523,089	\$525,921
5 FY 2020 1.0% July			\$522,684	\$525,488	\$528,320	\$531,181
6 FY 2021 1.5% July				\$796,114	\$800,405	\$804,739
7 FY 2022 2.0% July					\$1,083,215	\$1,089,080
8 FY 2023 2.0% July						\$1,110,861
9 Total Additional Rate Revenue	\$0	\$514,760	\$1,040,193	\$1,841,888	\$2,935,029	\$4,061,781
10 Total Rate Revenue	\$50,848,536	\$51,990,763	\$52,791,079	\$53,870,406	\$55,243,956	\$56,653,921
11 Other Revenue (incl. Depreciation)	\$7,160,358	\$7,160,358	\$7,160,358	\$7,160,358	\$7,160,358	\$7,160,358
12 Interest & inv. revenue	\$225,822	\$311,769	\$298,443	\$281,506	\$263,654	\$244,464
13 Miscellaneous revenue	\$2,273,826	\$2,273,826	\$2,273,826	\$2,273,826	\$2,273,826	\$2,273,826
14 Proprietary grants	\$1,700,000	\$0	\$0	\$0	\$0	\$0
15 Rental income	\$67,001	\$67,001	\$67,001	\$67,001	\$67,001	\$67,001
16 Water other sales	\$411,166	\$411,166	\$411,166	\$411,166	\$411,166	\$411,166
17 Backflow charges	\$307,388	\$307,388	\$307,388	\$307,388	\$307,388	\$307,388
18 Total Revenue	\$62,994,097	\$62,522,271	\$63,309,261	\$64,371,651	\$65,727,349	\$67,118,124
19 O&M Expenses (incl. Depreciation)	\$30,006,955	\$30,594,876	\$31,131,520	\$31,698,851	\$32,280,642	\$32,877,302
20 Purchased Water	\$16,377,036	\$17,615,220	\$18,431,935	\$19,287,129	\$20,182,651	\$21,120,441
21 Total O&M Expenses	\$46,383,990	\$48,210,096	\$49,563,455	\$50,985,980	\$52,463,293	\$53,997,743
22 Existing Debt Service	\$5,118,838	\$5,117,438	\$5,119,038	\$5,116,788	\$5,121,225	\$5,120,325
23 Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
24 Total Debt Service	\$5,118,838	\$5,117,438	\$5,119,038	\$5,116,788	\$5,121,225	\$5,120,325
25 Rate Funded CIP	\$1,900,000	\$10,300,000	\$10,200,000	\$10,100,000	\$9,900,000	\$10,100,000
26 Total Capital Expenses	\$1,900,000	\$10,300,000	\$10,200,000	\$10,100,000	\$9,900,000	\$10,100,000
27 Net Operating Cash Flow	\$11,491,269	\$9,194,738	\$8,626,768	\$8,268,883	\$8,142,831	\$8,000,056
28 Net Cash Flow	\$9,591,269	(\$1,105,262)	(\$1,573,232)	(\$1,831,117)	(\$1,757,169)	(\$2,099,944)
29 Calculated Debt Coverage	324%	280%	269%	262%	259%	256%
30 Required Debt Coverage	125%	125%	125%	125%	125%	125%

Table 2-14 shows the projected ending balances for the City's funds over the study period. Although the City is drawing from reserves every year to fund capital projects, the fund balances remain above target for all years of the study. Interest income (Lines 9, 14, 19) is calculated using a reserve interest rate of 1.0 percent each year for FY 2019 and beyond.

Due to unforeseen reductions in water usage since the water supply shortage of 2015, the City has reduced the amount of water it needs to purchase from MWD. However, to ensure the lowest supply cost possible, prior to the water supply shortage of 2015, the City agreed to purchase at least 17,481 acre-feet (AF) of water from MWD each year, in order to ensure that all of the City’s use was within MWD’s lowest pricing tier. With the unforeseen reductions since the water supply shortage, the City is still required to meet its agreed upon minimum purchase amount for the length of the agreement with MWD. The total reserves shown in this study, which are higher than the target, allows the City to pay its commitment to MWD. There may be a difference of approximately \$11.6 million between projected demands and the minimum purchase amount, at the end of the agreement in FY 2024. Maintaining this reserve will allow the City to meet its obligation without risking the utility’s financial stability.

Table 2-14: Projected Fund Balances

Reserves Balance	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
1 Operating Reserve						
2 Beginning Balance	\$14,947,842	\$24,539,111	\$23,433,849	\$21,860,617	\$20,029,500	\$18,272,331
3 Net Operating Cash Flow	\$11,491,269	\$9,194,738	\$8,626,768	\$8,268,883	\$8,142,831	\$8,000,056
4 Bonds Proceeds	\$0	\$0	\$0	\$0	\$0	\$0
5 SRF Loan Proceeds	\$0	\$0	\$0	\$0	\$0	\$0
6 Other Financing Sources	\$0	\$0	\$0	\$0	\$0	\$0
7 Total CIP	(\$1,900,000)	(\$10,300,000)	(\$10,200,000)	(\$10,100,000)	(\$9,900,000)	(\$10,100,000)
8 Ending Balance	\$24,539,111	\$23,433,849	\$21,860,617	\$20,029,500	\$18,272,331	\$16,172,387
9 Interest Income	\$225,822	\$236,769	\$223,443	\$206,506	\$188,654	\$169,464
10 Target Reserve	\$3,800,000	\$3,800,000	\$3,800,000	\$3,800,000	\$3,800,000	\$3,800,000
11 Contingency Reserve						
12 Beginning Balance	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000
13 Ending Balance	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000
14 Interest Income	\$0	\$65,000	\$65,000	\$65,000	\$65,000	\$65,000
15 Target Reserve	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000	\$6,500,000
16 Rate Stabilization Fund						
17 Beginning Balance	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
18 Ending Balance	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
19 Interest Income	\$0	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
20 Target Reserve	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
21 TOTAL RESERVES BALANCE	\$32,039,111	\$30,933,849	\$29,360,617	\$27,529,500	\$25,772,331	\$23,672,387
22 TOTAL TARGET	\$11,300,000	\$11,300,000	\$11,300,000	\$11,300,000	\$11,300,000	\$11,300,000

3 COST OF SERVICE ANALYSIS

This section describes the cost of service analysis, which proportionally allocates the City’s revenue requirements to cost causation components. The results of this analysis are used to determine the proposed water rates.

3.1 LEGAL FRAMEWORK²

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:

² 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.

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

Article X, Section 2 of the State Constitution institutes the need to preserve the State’s water supplies and to discourage the wasteful or unreasonable use of water by encouraging conservation. As such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation.

In addition, Section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water.

3.2 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 hour³, 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 Collectively, maximum day and maximum hour costs are known as peaking costs or capacity costs.

3) Rate Design and Calculations

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

4) Rate Adoption

Rate adoption is the last step of the rate-making process to comply with Proposition 218. Raftelis documented the rate study results in this 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.

3.3 REVENUE REQUIREMENT

Table 3-1 shows the revenue requirement derivation resulting in the total revenue required from rates. The totals of the Operating and Capital columns are the total operating and capital revenue requirements, respectively, that will later be allocated to the cost components.

The revenue requirement is calculated using FY 2019 expenses, which includes O&M expenses, purchased water costs, debt service, and rate funded capital project costs. The revenue requirement is calculated by subtracting revenue offsets (or miscellaneous, non-rate revenues) and adjustments from the expenses. The Adjustment for Cash Balance (Line 18) is the amount to be drawn from reserves and is equal to the negative Net Cash Flow number (**Table 2-13**, Line 28) for FY 2019. This adjustment is made to match rate revenues with total expenses. The Adjustment for Mid-Year Increase (Line 19) is equal to zero because the proposed revenue adjustments are effective for a full fiscal year, starting in July.

Table 3-1: Revenue Requirement

	FY 2019		
	Operating	Capital	Total
1 Revenue Requirements			
2 O&M Expenses (incl. Depreciation)	\$30,594,876		\$30,594,876
3 Purchased Water	\$17,615,220		\$17,615,220
4 Existing Debt Service		\$5,117,438	\$5,117,438
5 Proposed Debt Service		\$0	\$0
6 Rate Funded CIP		\$10,300,000	\$10,300,000
7 Total Revenue Requirements	\$48,210,096	\$15,417,438	\$63,627,533
8 Less: Revenue Offsets			
9 Other Revenue (incl. Depreciation)	\$7,160,358		\$7,160,358
10 Interest & inv. revenue	\$311,769		\$311,769
11 Miscellaneous revenue	\$2,273,826		\$2,273,826
12 Proprietary grants		\$0	\$0
13 Rental income	\$67,001		\$67,001
14 Water other sales	\$411,166		\$411,166
15 Backflow charges	\$307,388		\$307,388
16 Total Revenue Offsets	\$10,531,508	\$0	\$10,531,508
17 Less: Adjustments			
18 Adjustment for Cash Balance		\$1,105,262	\$1,105,262
19 Adjustment for Mid-Year Increase	\$0		\$0
20 Total Adjustments	\$0	\$1,105,262	\$1,105,262
21 Revenue Requirement from Rates	\$37,678,588	\$14,312,175	\$51,990,763

3.4 FUNCTIONALIZATION OF EXPENSES

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

- » Supply – represents the cost of pumping groundwater and purchasing imported water
- » Transmission & Distribution (T&D) – represents the cost of the T&D system
- » Fire – represents the costs of providing public and private fire service
- » Pumping – represents the cost of pumping water to customers
- » Recycled Water – represents the costs of the recycled water system
- » Meter – represents the costs of purchasing and maintaining water meters
- » Customer – represents the costs of billing and customer service
- » Administrative/General – represents the costs of administrative support and all other costs which 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 pumping groundwater and purchasing imported water
- » Base Delivery – costs associated with providing service under average conditions
- » Peaking (Maximum Day and Maximum Hour) – costs associated with meeting peak demand in excess of the average rate of use
- » Fire – costs associated with providing public and private fire protection capacity
- » Pumping – costs associated with pumping water to customers
- » Recycled Water – costs associated with the recycled water system
- » Meter – costs associated with the maintenance and capital costs of meters and services
- » Customer – costs associated with billing and customer service
- » General – costs that do not have any direct cost causation

Peaking costs are further divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the day with maximum usage.

Different components of the water system, such as transmission lines and distribution facilities, and the costs associated with those components are designed to meet the peaking demands of customers. Therefore, the extra capacity costs of these different components include the costs associated with meeting peak customer demand.

3.5 SYSTEM PEAKING FACTORS

Table 3-2 shows the system-wide peaking factors used to derive the cost component allocation for Base Delivery, Peaking, and Fire costs. The Base Delivery use is considered average daily demand during the year, which is normalized to equal a factor of 1.00. The City's maximum day peaking factor represents that the maximum day demand is equal to 1.34 times that of the average day. Similarly, the City's maximum hour factor represents that the maximum hour demand on the maximum day and is equal to 2.30 times that of the average hourly demand in the year. The system-wide peaking factors of 1.34 and 2.30 were provided by City staff.

The Maximum Day allocations are calculated using the following equations:

- » Base Delivery: $75\% = (1.00/1.34) \times 100\%$
- » Maximum Day: $25\% = (1.34-1.00)/1.34 \times 100\%$

The Maximum Hour allocations are calculated using the following equations:

- » Base Delivery: $43\% = (1.00/2.30) \times 100\%$
- » Maximum Day: $15\% = (1.34-1.00)/2.30 \times 100\%$
- » Maximum Hour: $42\% = (2.30-1.34)/2.30 \times 100\%$

Since parts of the water system are designed to handle fire flows, cost allocations are provided to include fire flow. Based on the size of the City and type of customer characteristics, 15 percent of the costs are allocated to fire flow based on Insurance Services Office (ISO) standards.

The Maximum Day with Fire allocations are calculated using the following equations:

- » Base Delivery: 67% = $(1.00/1.34) \times 100\% - 7.5\%$ (half of Fire allocation)
- » Maximum Day: 18% = $(1.34-1.00)/1.34 \times 100\% - 7.5\%$ (half of Fire allocation)
- » Fire: 15%

The Maximum Hour with Fire allocations are calculated using the following equations:

- » Base Delivery: 38% = $(1.00/2.30) \times 100\% - 5\%$ (third of Fire allocation)
- » Maximum Day: 10% = $(1.34-1.00)/2.30 \times 100\% - 5\%$ (third of Fire allocation)
- » Maximum Hour: 37% = $(2.30-1.34)/2.30 \times 100\% - 5\%$ (third of Fire allocation)
- » Fire: 15%

Table 3-2: System-Wide Peaking Factors

	Factor	Base Delivery	Max Day	Max Hour	Fire	Total
Base	1.00	100%	0%	0%	0%	100%
Max Day w/o Fire	1.34	75%	25%	0%	0%	100%
Max Hour w/o Fire	2.30	43%	15%	42%	0%	100%
Average of Max Day and Hour w/o Fire		59%	20%	21%	0%	100%
Max Day w/ Fire		67%	18%	0%	15%	100%
Max Hour w/ Fire		38%	10%	37%	15%	100%
Average of Max Day and Hour w/ Fire		53%	14%	18%	15%	100%

3.6 CUSTOMER PEAKING FACTORS

System peaking factors allow the allocation of system costs to the cost causation parameters. To assign these costs to customers based on their use of the system, it is necessary to identify the peaking factors for the different classes and tiers. Typical customer classes include Residential, Commercial, Industrial, and Irrigation. The City does not have industrial classes, and therefore only the remaining three classes are analyzed. Additionally, there is limited use in private fire lines. Peaking factors for private fire lines were developed in the study.

The Residential class is tiered and all other classes have uniform rates. Peaking factors are calculated by dividing the maximum monthly usage by the average monthly usage for the entire customer class or tier. To define peaking factors for the tiers, it is necessary to first define the tiers. Indoor use by all Residential customers has similar characteristics; therefore, the peaking factor for indoor use is calculated first.

The average indoor use by SFR customers is 8 hcf based on the SFR density of 3.13 people per SFR unit and 58.6 gallons per capita per day (gpcd), which is the estimated average per capita water use from the

Water Research Foundation’s *Residential End Uses of Water Executive Report (Version 2)*. The calculated number is rounded up to the next whole number.

Similarly, the first tier for MFR customers is 6 hcf based on an average density of 2.41 people per MFR unit and 58.6 gpcd. There is little MFR use above their first tier because they have very little irrigation demand or separate irrigation meters.

The second tier is set at 15 hcf based on average demand for SFR customers. The peaking for SFR and MFR in excess of Tier 1 usage is about the same and therefore both are assigned the same peaking factor. The third tier is any usage above the second tier. There is no MFR usage in the third tier.

The remaining customer classes have uniform rates and their peaking factors are similarly determined by dividing the maximum monthly usage for the entire class by the average monthly usage.

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

Table 3-3: Customer Class Peaking Factors

Customer	Max Monthly	Average Monthly	Peaking Factor
Residential			
Tier 1	412,780	386,507	1.07
Tier 2	184,279	137,514	1.34
Tier 3 (for SFR)	123,243	72,393	1.70
Commercial	187,497	153,416	1.22
Irrigation	25,686	16,976	1.51
Private Fire Line	92	54	1.70

3.7 EQUIVALENT METERS AND LINES

To allocate meter-related costs appropriately, Raftelis utilizes the concept of equivalent meters. Larger meters impose larger 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 and are calculated to represent 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” 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 3-4** shows the equivalent meters for the test year, FY 2019.

Table 3-4: Equivalent Meters

Meter Size	Capacity (gpm)	AWWA Ratio	Number of Meters	Equivalent Meters
5/8"	20	1.00	4,779	4,779
3/4"	30	1.50	17,638	26,456
1"	50	2.50	8,012	20,031
1 1/2"	100	5.00	2,067	10,333
2"	160	8.00	1,913	15,301
3"	350	17.50	153	2,685
4"	630	31.50	112	3,528
6"	1,300	65.00	52	3,410
8"	2,400	120.00	22	2,662
10"	3,800	190.00	0	0
12"	5,000	250.00	1	250
TOTAL			34,749	89,435

Equivalent fire lines, which are used to allocate fire-related costs, are calculated in a similar method using fire line capacity ratios. The fire line ratio increases exponentially by fire line size with the 6" fire line used as the base, or equal to 1. For example, the fire line ratio for a 4" fire line is calculated using the following equation:

$$(4\text{-inch fire line}/6)^{2.63} = 0.3443$$

For hydrants, the capacity is equal to the sum of the capacities of the outlets on each hydrant. **Table 3-5** and **Table 3-6** show the equivalent fire lines and equivalent hydrants capacities, respectively. The numbers shown in the last columns of **Table 3-5** and **Table 3-6** are shown to the nearest whole number and therefore may not exactly match the totals shown on the last line.

Table 3-5: Equivalent Fire Capacities

Line Size	Fire Ratio	Number of Lines	Equivalent Lines
1"	0.0090	1	0
1 1/2"	0.0261	0	0
2"	0.0556	53	3
3"	0.1615	2	0
4"	0.3443	822	283
6"	1.0000	259	259
8"	2.1310	106	226
10"	3.8323	2	8
12"	6.1903	2	12
TOTAL		1,247	791

Table 3-6: Equivalent Hydrants

Hydrant Size	Fire Ratio	Number of Hydrants	Equivalent Lines
2.5"	0.1000	27	3
2.5" x 2.5"	0.2000	5	1
2.5" x 2.5" x 4"	0.5443	12	7
2.5" x 4"	0.4443	2,574	1,144
2.5" x 4" x 4"	0.7885	541	427
TOTAL		3,159	1,580

3.8 ALLOCATION TO COST COMPONENTS

Table 3-7 allocates the O&M expenses to each cost causation component. The functionalized costs, which are represented by each expense line item of the City’s budget, are allocated according to industry standards based on the nature of the water function and input from City staff.

Conservation costs are assigned to Meters as larger meters that use more water are better targets for conservation. Customer services are assigned to Meters and Customers for meter reading and customer service. Environmental and Safety, Finance and Administration functions apply to the utility as a whole and are assigned to General. Warehouse and Yard Administration costs are assigned to the average of maximum hour and maximum day with fire, which is defined in **Table 3-2**. Engineering costs are mainly allocated to pumping, with the remainder of costs allocated in the same manner as the capital cost allocation (described below) as engineering costs are for the capital improvement program. Purchased water costs are allocated fully to the Supply cost component. Water operations costs are allocated based on the average of maximum day and maximum hour without fire, which is defined in **Table 3-2**, less the cost of purchase water assigned first to the Supply component because they relate to the

transmission and distribution system which are allocated to maximum day and maximum hour, respectively. The remaining costs are allocated as an average of the maximum day and maximum hour costs assigned to transmission and distribution. Water quality costs are based on average use and assigned to Base Delivery.

Capital costs are allocated in the same manner as capital assets in **Table 3-8**. The assets are functionalized in the same manner as the operating costs. For example, assets associated with storage, such as reservoirs are allocated to Maximum Day with Fire and assets with distribution lines are allocated to Maximum Hour with Fire based on industry standards.

After the functionalized costs are allocated to each cost causation component, the dollar amounts for each budget line item is multiplied by the allocation percentage in each cost component. To determine the final percentage allocation for Operating costs, the total dollar amount allocated to each cost causation component is divided by the total O&M expense budget. For example, all Supply costs equal \$20,214,345 and all O&M expenses total \$48,210,096 in FY 2019. The resulting allocation for Supply costs follows the equation:

$$\$20,214,345 \text{ in Supply costs} / \$48,210,096 \text{ in total O\&M costs} \cong 42\%$$

The remaining cost causation component allocation percentages are calculated in the same manner. The resulting Operating costs allocations to each cost causation component is shown in the Line 26 of **Table 3-7**. The Operating cost allocation is adjusted to factor in recycled water costs in Lines 27-28. The Recycled Water costs are included in the total O&M expenses and are equal to that shown in Line 30 of **Table 2-8**. The adjusted Operating allocation is calculated by multiplying the original Operating allocation in Line 26 by the remaining percentage available. For example, the adjusted Supply cost allocation is calculated using the following equation:

$$42\% \text{ original Supply allocation} \times (100\% - 2\% \text{ Recycled Water allocation}) \cong 41\% \text{ adjusted Supply allocation}$$

Similarly, the Capital costs are allocated to each cost causation component using the same methodology. **Table 3-8** shows the resulting allocations for the Capital costs in Line 27. General costs are spread proportionally on the capital allocation percentage shown in Line 27 resulting in the capital allocation percentages shown in Line 28.

For example, the Base Delivery allocation in line 28 is calculated using the following equation:

$$46\% \text{ original Base Delivery allocation} + 16\% \text{ General cost allocation} \times 46\% / (100\% - 16\%) \cong 55\%$$

Please note that totals in tables shown may not match exactly by adding the numbers in a row or column due to rounding.

Table 3-7: Operating Cost Allocation

O&M Allocation	Supply	Base Delivery	Max Day	Max Hour	Fire	Pumping	Recycled Water	Meter	Customer	General	TOTAL
1 GWP Adm - Conservation & Utility Modernization								100%			100%
2 GWP Adm - Customer Services								50%	50%		100%
3 GWP Adm - Environmental & Safety										100%	100%
4 GWP Adm - UOC & Warehouse		53%	14%	18%	15%						100%
5 GWP Adm - Utility Finance										100%	100%
6 GWP Administration										100%	100%
7 GWP Water - Engineering		19%	5%	5%	4%	60%				6%	100%
8 GWP Water Distribution		53%	14%	18%	15%						100%
9 GWP Water Operation	80%	12%	4%	4%							100%
10 Purchased water	100%										100%
11 GWP Water Quality		100%									100%
12 GWP Yard Administration		53%	14%	18%	15%						100%

O&M Allocation	Supply	Base Delivery	Max Day	Max Hour	Fire	Pumping	Recycled Water	Meter	Customer	General	TOTAL
13 GWP Adm - Conservation & Utility Modernization	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,086,655	\$0	\$0	\$1,086,655
14 GWP Adm - Customer Services	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,081,327	\$1,081,327	\$0	\$2,162,654
15 GWP Adm - Environmental & Safety	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$193,105	\$193,105
16 GWP Adm - UOC & Warehouse	\$0	\$155,059	\$40,773	\$53,908	\$44,072	\$0	\$0	\$0	\$0	\$0	\$293,812
17 GWP Adm - Utility Finance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$125,207	\$125,207
18 GWP Administration	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$12,474,179	\$12,474,179
19 GWP Water - Engineering	\$0	\$1,122,221	\$283,873	\$319,977	\$232,903	\$3,500,000	\$0	\$0	\$0	\$379,606	\$5,847,780
20 GWP Water Distribution	\$0	\$1,843,408	\$484,728	\$640,886	\$523,945	\$0	\$0	\$0	\$0	\$0	\$3,492,967
21 GWP Water Operation	\$2,599,125	\$374,091	\$127,563	\$132,131	\$0	\$0	\$0	\$0	\$0	\$0	\$3,232,910
22 Purchased water	\$17,615,220	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$17,615,220
23 GWP Water Quality	\$0	\$1,537,084	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,537,084
24 GWP Yard Administration	\$0	\$78,382	\$20,611	\$27,251	\$22,278	\$0	\$0	\$0	\$0	\$0	\$148,522
25 TOTAL O&M EXPENSES	\$20,214,345	\$5,110,245	\$957,548	\$1,174,154	\$823,199	\$3,500,000	\$0	\$2,167,982	\$1,081,327	\$13,172,097	\$48,210,096
26 % O&M Allocation	42%	11%	2%	2%	2%	7%	0%	4%	2%	27%	100%
27 Recycled Water Costs							\$939,825				\$48,210,096
28 Adjusted % O&M Allocation	41%	10%	2%	2%	2%	7%	2%	4%	2%	27%	100%

Table 3-8: Capital Cost Allocation

Capital Allocation	Supply	Base Delivery	Max Day	Max Hour	Fire	Pumping	Recycled Water	Meter	Customer	General	TOTAL
1 Land										100%	100%
2 Wells		100%									100%
3 Reservoirs		67%	18%	0%	15%						100%
4 Distribution lines		38%	10%	37%	15%						100%
5 Transmission mains		75%	25%	0%							100%
6 Buildings										100%	100%
7 Pumps/pump stations		75%	25%	0%							100%
8 Treatment Plant		75%	25%	0%							100%
9 Meters								100%			100%
10 Hydrants					100%						100%
11 Recycled Water							100%				100%
12 General										100%	100%

Capital Allocation	Supply	Base Delivery	Max Day	Max Hour	Fire	Pumping	Recycled Water	Meter	Customer	General	TOTAL
14 Land	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,146,694	\$6,146,694
15 Wells	\$0	\$21,144,478	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$21,144,478
16 Reservoirs	\$0	\$62,144,252	\$16,611,509	\$0	\$13,898,076	\$0	\$0	\$0	\$0	\$0	\$92,653,837
17 Distribution lines	\$0	\$56,453,892	\$14,416,230	\$53,838,759	\$22,007,449	\$0	\$0	\$0	\$0	\$0	\$146,716,330
18 Transmission mains	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19 Buildings	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,691,497	\$7,691,497
20 Pumps/pump stations	\$0	\$30,157,443	\$10,283,573	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$40,441,016
21 Treatment Plant	\$0	\$18,922,864	\$6,452,624	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$25,375,488
22 Meters	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,547,886	\$0	\$0	\$1,547,886
23 Hydrants	\$0	\$0	\$0	\$0	\$3,282,373	\$0	\$0	\$0	\$0	\$0	\$3,282,373
24 Recycled Water	\$0	\$0	\$0	\$0	\$0	\$0	\$14,209,803	\$0	\$0	\$0	\$14,209,803
25 General	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,033,630	\$50,033,630
26 TOTAL ASSETS	\$0	\$188,822,929	\$47,763,936	\$53,838,759	\$39,187,898	\$0	\$14,209,803	\$1,547,886	\$0	\$63,871,821	\$409,243,031
27 % Capital Allocation	0%	46%	12%	13%	10%	0%	3%	0%	0%	16%	100%
28 % Capital Allocation (w/o General)		55%	14%	16%	11%	0%	4%	0%	0%		

3.9 UNIT COST DERIVATION

After the revenue requirements are allocated to the cost causation components, the corresponding units of service are required to calculate the unit cost for each cost causation component. **Table 3-9** shows the derivation of the units of service. The annual use in hcf is equal to that shown in **Table 2-2** for FY 2019. The average daily use is equal to the annual use divided by 365 days.

The Maximum Day total capacity is equal to the average daily use multiplied by the corresponding capacity factor which is based on the actual usage characteristics of that class or tier by comparing the maximum usage in a billing period with the average usage in that billing period. The Maximum Day extra capacity is equal to the Maximum Day total capacity less average daily use.

The Maximum Hour total capacity is equal to the average daily use multiplied by the corresponding Maximum Hour peaking factor. In the absence of customer specific maximum hour peaking factors, this is calculated for each customer class and tier by multiplying the customer class and tier specific peaking factor by the ratio of the system-wide Maximum Hour peaking factor to the system-wide Maximum Day peaking factor (2.30 divided by 1.34, shown in **Table 3-2**). The Maximum Hour extra capacity is equal to the Maximum Hour total capacity less the Maximum Day total capacity.

The number of equivalent meters is equal to that shown in **Table 3-4**. Since the final rates are billed per month, the number of bills is equal to the number of total accounts multiplied by 12 bills per year.

Table 3-9: Derivation of Units of Service

	Monthly Tiers (hcf)	Annual Use (hcf)	Average Daily Use (hcf/day)	Maximum Day Requirements			Maximum Hour Requirements			No. of Meters (Equiv.)	No. of Bills (No.)
				Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)	Capacity Factor	Total Capacity (hcf/day)	Extra Capacity (hcf/day)		
Single Family										39,306	275,688
Tier 1	8	1,979,885	5,424	1.07	5,793	369	1.83	9,936	4,143		
Tier 2	15	941,714	2,580	1.34	3,457	877	2.30	5,930	2,473		
Tier 3	15+	993,023	2,721	1.70	4,632	1,911	2.92	7,944	3,312		
Multi Family										26,088	90,876
Tier 1	6	3,066,176	8,400	1.07	8,971	571	1.83	15,387	6,416		
Tier 2	6+	976,299	2,675	1.34	3,584	910	2.30	6,148	2,563		
Commercial		2,015,825	5,523	1.22	6,750	1,227	2.10	11,577	4,827	20,103	44,517
Irrigation		190,045	521	1.51	788	267	2.60	1,351	563	1,951	4,848
Private Fire Line		720	2	1.70	3	1	2.92	6	2	791	14,964
Recycled Water - Commercial		476,078	1,304							1,226	636
Recycled Water - Irrigation		260,384	713							761	420
TOTAL		10,900,149	29,863			6,133		24,300		90,226	431,949
Total Potable Water		10,163,687	27,846			6,133		24,300		48,934	155,205
Total Recycled Water		736,462	2,018							1,987	1,056

The derivation of unit costs for each cost causation component is shown in **Table 3-10**. The Operating revenue requirement (last column of Line 1) is equal to the Operating revenue requirement in **Table 3-1** (Line 21); the Capital revenue requirement (last column of Line 2) is equal to the Capital revenue

requirement in **Table 3-1** (Line 21). The Operating revenue requirement is allocated based on the adjusted Operating allocation (**Table 3-7**, Line 28). Since the City computes capital costs separately, the Capital revenue requirement is allocated fully to the Capital rate component and allocated separately later in this section.

General operating costs are allocated using the following methodology: the City incurs supply related costs associated with interactions with water providers to address water supply issues; therefore, based on discussions with City staff, 10 percent is allocated to Supply costs and the remaining General costs are allocated in the same proportion as shown in Line 28, **Table 3-7**, excluding Pumping costs which were identified previously under the Engineering function. The total cost of service, after reallocating the General costs, is shown in Line 5.

The Recycled Water system is responsible for a portion of the Capital costs. Since Recycled Water customers do not pay a Capital charge, the portion of costs that is related to Recycled Water must be reallocated to the Recycled Water cost component. The Capital costs related to Recycled Water are reallocated in Line 6 of Table 3-10 **Table 3-10** using the Recycled Water percentage of the Capital cost allocation (**Table 3-8**, Line 27).

To ensure that public fire protection costs are spread appropriately, the public fire protection cost is reallocated to the Meter component; the costs are proportional to the total capacity of public hydrants. **Table 3-5** and **Table 3-6** show the total capacity of public hydrants and private fire lines (791 equivalent private capacity units and 1,580 equivalent public capacity units) to be 2,372 equivalent fire lines. The proportion of the equivalent capacity units that are related to public hydrants is approximately 67 percent. Therefore, approximately 67 percent of Fire related costs are reallocated to Meter to account for public fire hydrant costs.

A portion of the fixed Peaking and Base Delivery costs is allocated to Meter to ensure revenue stability and minimize customer impacts by maintaining the City's fixed to variable revenue percentage close to the current percentage of 33.9 percent. Larger meters put greater demand on the system, therefore assigning some of the Peaking costs to the fixed portion is reasonable and helps to provide revenue stability. Larger meters also consume more water therefore assigning a portion of the Base Delivery costs is reasonable to provide revenue stability especially because of the dynamics of water supplies. By allocating 45 percent of Peaking and Base Delivery costs to Meter, the proposed fixed revenue recovery is 33.3 percent.

The total adjusted cost of service is shown in Line 10. The cost of service is then divided by the units of service derived in **Table 3-9** to determine the unit cost. The Supply, Base Delivery, and Pumping costs are divided by total potable water usage. The Maximum Day and Maximum Hour costs are divided by the extra capacity for each respective cost component. The Fire costs are divided by the number of equivalent fire lines shown in **Table 3-5**. Recycled Water costs are divided by total recycled water usage. Meter costs are divided by the number of equivalent meters shown in **Table 3-4**. Customer costs are divided by the number of annual bills.

Based on discussion with City staff, the Capital costs are divided into two components based on a hybrid methodology: a commodity portion and a fixed portion. The commodity portion of total Capital costs is calculated using the Capital cost allocation without General costs for Base Delivery in **Table 3-8**, which is equal to approximately 55 percent. The remaining 45 percent of Capital costs are allocated to the fixed portion. The commodity portion is divided by the total potable water usage. The fixed portion is divided by the number of equivalent meters less Private Fire Line. Recycled Water customers are exempt from Capital costs using the hybrid methodology because the Recycled Water portion of Capital costs have already been allocated in Line 6 of **Table 3-10**.

The final step in the cost of service analysis is to allocate costs to each customer class and tier based on the unit costs, which is shown in **Table 3-11**. The unit cost for each cost component is multiplied by each customer class' units of service, which are shown in **Table 3-9**. For example, Supply costs are allocated to each customer class and tier based on each customer class and tier's potable water usage. Maximum Day costs are allocated to each class and tier based on the maximum day extra capacity shown in **Table 3-9**; Maximum Hour costs are allocated based on maximum hour extra capacity for each class and tier. Meter costs are multiplied by the number of equivalent meters per customer class. Customer costs are multiplied by the number of annual bills per customer class.

Table 3-10: Unit Cost Derivation

	Supply	Base Delivery	Max Day	Max Hour	Fire	Pumping	Recycled Water	Meter	Customer	Capital	General	TOTAL
1 Operating Revenue Requirement	\$15,490,534	\$3,916,052	\$733,782	\$899,770	\$630,829	\$2,682,099	\$734,520	\$1,668,404	\$828,636		\$10,093,961	\$37,678,588
2 Capital Revenue Requirement										\$14,312,175		\$14,312,175
3 Total Cost of Service	\$15,490,534	\$3,916,052	\$733,782	\$899,770	\$630,829	\$2,682,099	\$734,520	\$1,668,404	\$828,636	\$14,312,175	\$10,093,961	\$51,990,763
4 Allocation of General Cost	\$1,009,396	\$3,779,819	\$708,255	\$868,469	\$608,883		\$708,967	\$1,610,363	\$799,809		(\$10,093,961)	\$0
5 Total Cost of Service (no General Costs)	\$16,499,930	\$7,695,871	\$1,442,037	\$1,768,239	\$1,239,712	\$2,682,099	\$1,443,488	\$3,278,767	\$1,628,445	\$14,312,175	\$0	\$51,990,763
6 Allocation of Capital Costs to RW							\$496,950			(\$496,950)		\$0
7 Allocation of Public Fire Protection Cost					(\$826,122)			\$826,122				\$0
8 Allocation of Peaking Cost to Meter			(\$648,917)	(\$795,708)				\$1,444,624				\$0
9 Allocation of Base Delivery Cost to Meter		(\$3,463,142)						\$3,463,142				\$0
10 Total Adjusted Cost of Service	\$16,499,930	\$4,232,729	\$793,121	\$972,531	\$413,590	\$2,682,099	\$1,940,437	\$9,012,655	\$1,628,445	\$13,815,226	\$0	\$51,990,763
11 Unit of Service	10,163,687	10,163,687	6,133	24,300	791 equiv.	10,163,687	736,462	89,435 equiv.	431,949	Capital Charge		
12 Unit	hcf	hcf	hcf/day	hcf/day	meter/yr	hcf	hcf	meter/yr	bills/yr	Commodity Portion		
13 Unit Cost	\$1.62	\$0.42	\$129.32	\$40.02	\$43.56 equiv.	\$0.26	\$2.63	\$8.40 equiv.	\$3.77	\$0.74 per hcf		
14 Unit	hcf	hcf	hcf/day	hcf/day	meter/mo	hcf	hcf	meter/mo	bills/mo	\$5.97 per equiv. meter		

Table 3-11: Allocation of Costs to Customer Classes⁴

	Supply	Base Delivery	Max Day	Max Hour	Fire	Pumping	Recycled Water	Meter	Customer	Capital	TOTAL
Single Family								\$3,960,958	\$1,039,343	\$2,814,640	\$7,814,941
Tier 1	\$3,214,184	\$824,535	\$47,681	\$165,807		\$522,472				\$1,471,347	\$6,246,027
Tier 2	\$1,528,797	\$392,182	\$113,462	\$98,957		\$248,509				\$699,833	\$3,081,740
Tier 3	\$1,612,094	\$413,551	\$247,125	\$132,564		\$262,049				\$737,963	\$3,405,346
Multi Family								\$2,629,013	\$342,601	\$1,868,165	\$4,839,779
Tier 1	\$4,977,690	\$1,276,927	\$73,842	\$256,779		\$809,134				\$2,278,622	\$9,672,995
Tier 2	\$1,584,943	\$406,586	\$117,629	\$102,592		\$257,636				\$725,535	\$3,194,920
Commercial	\$3,272,531	\$839,503	\$158,656	\$193,187		\$531,957		\$2,025,856	\$167,828	\$2,937,621	\$10,127,140
Irrigation	\$308,522	\$79,145	\$34,546	\$22,549		\$50,151		\$196,642	\$18,277	\$280,964	\$990,796
Private Fire Line	\$1,169	\$300	\$180	\$96	\$413,590	\$190			\$56,414	\$535	\$472,473
Recycled Water - Commercial							\$1,254,375	\$123,498	\$2,398		\$1,380,271
Recycled Water - Irrigation							\$686,062	\$76,689	\$1,583		\$764,334
TOTAL	\$16,499,930	\$4,232,729	\$793,121	\$972,531	\$413,590	\$2,682,099	\$1,940,437	\$9,012,655	\$1,628,445	\$13,815,226	\$51,990,763

⁴ All unit costs in **Table 3-10** are multiplied by the units of service in **Table 3-9** for each customer class and tier (when applicable) to determine the cost of service for each customer class and tier.

4 RATE DESIGN

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

4.1 FIXED CHARGE CALCULATION

Table 4-1 shows the calculation of customer charges for potable and recycled water customers using the unit costs shown in **Table 3-10**. The meter ratio is from **Table 3-4**. The meter cost is equal to the Meter unit cost multiplied by the corresponding meter ratio for each meter size. All meters are charged the same Customer cost because billing and customer service costs do not vary with meter capacity. The Capital cost is equal to the fixed portion of the Capital cost multiplied by the corresponding meter ratio for each meter size.

The Recycled Water customer charge is equal to the Meter and Customer costs combined for that meter size. The Potable Water customer charge is equal to the Meter, Customer, and Capital costs combined for that meter size.

Table 4-1: Monthly Customer Charge Calculation

Meter Size	Meter Ratio	Meter Cost	Customer Cost	Total Charge (RW)	Capital Cost	Total Charge (Pot.)	Current Charge	Difference	Number of Potable Meters	Number of RW Meters
5/8"	1.00	\$8.40	\$3.77	\$12.17	\$5.97	\$18.14	\$22.98	-21%	4,779	0
3/4"	1.50	\$12.60	\$3.77	\$16.37	\$8.96	\$25.33	\$29.15	-13%	17,637	1
1"	2.50	\$20.99	\$3.77	\$24.77	\$14.93	\$39.70	\$38.42	3%	8,006	6
1 1/2"	5.00	\$41.99	\$3.77	\$45.76	\$29.85	\$75.61	\$63.12	20%	2,060	7
2"	8.00	\$67.18	\$3.77	\$70.96	\$47.76	\$118.72	\$75.47	57%	1,868	45
3"	17.50	\$146.96	\$3.77	\$150.74	\$104.48	\$255.22	\$260.75	-2%	145	8
4"	31.50	\$264.53	\$3.77	\$268.31	\$188.06	\$456.37	\$507.79	-10%	102	10
6"	65.00	\$545.86	\$3.77	\$549.63	\$388.05	\$937.68	\$940.11	0%	46	6
8"	120.00	\$1,007.74	\$3.77	\$1,011.51	\$716.40	\$1,727.91	\$2,175.31	-21%	18	4
10"	190.00	\$1,595.58	\$3.77	\$1,599.36	\$1,134.30	\$2,733.66	\$3,410.51	-20%	0	0
12"	250.00	\$2,099.45	\$3.77	\$2,103.23	\$1,492.50	\$3,595.73	\$3,410.51	5%	0	1

Table 4-2 shows the calculation of private fire line charges using unit costs derived in **Table 3-10**. The fire line capacity ratios are shown in **Table 3-5**. The Capacity cost is equal to the Fire unit cost multiplied by the fire line capacity ratio for each corresponding private fire line. Similar to the meter charge, all private fire lines are charged the same Customer cost. The total private fire line charge for each fire line size is equal to the Capacity and Customer costs combined.

Table 4-2: Private Fire Line Charge Calculation

Line Size	Capacity Ratio	Capacity Cost	Customer Cost	Total Charge	Current Charge	Difference	No. of Fire Lines
1"	0.0090	\$0.39	\$3.77	\$4.17	\$8.95	-53%	1
1 1/2"	0.0261	\$1.14	\$3.77	\$4.91	\$9.90	-50%	0
2"	0.0556	\$2.42	\$3.77	\$6.20	\$11.55	-46%	53
3"	0.1615	\$7.04	\$3.77	\$10.81	\$17.44	-38%	2
4"	0.3443	\$15.00	\$3.77	\$18.77	\$27.61	-32%	822
6"	1.0000	\$43.56	\$3.77	\$47.34	\$64.11	-26%	259
8"	2.1310	\$92.83	\$3.77	\$96.61	\$127.06	-24%	106
10"	3.8323	\$166.94	\$3.77	\$170.72	\$221.74	-23%	2
12"	6.1903	\$269.66	\$3.77	\$273.43	\$352.97	-23%	2

4.2 VARIABLE CHARGE CALCULATION

Table 4-3 shows the unit cost calculation for each of the City’s sources of water. The City receives water from three sources: the Verdugo Groundwater Basin, the San Fernando Groundwater Basin, and MWD. The total potable water demand is allocated proportionally to each water source based on the proportion of water production from each source less water loss. The production amount for each source is shown in **Table 2-8** in Lines 7-9 and the water loss percentage is in Line 3. For example, to calculate the proportional water demand from Verdugo, the following equation is used:

$$882 \text{ AF of production} \times (435.6 \text{ hcf / AF}) \times (1 - 3.5\% \text{ water loss}) = 370,752 \text{ hcf}$$

The total cost of water is equal to the total Supply cost shown in **Table 3-10**. The total Supply cost is divided proportionally among the three customer classes based on their production costs shown in **Table 2-8**. The total production cost of water from all three sources is equal to:

$$\$62,795 \text{ from Verdugo} + \$2,536,330 \text{ from San Fernando} + \$17,615,220 \text{ from MWD} = \$20,214,345$$

Therefore, the proportion of Supply costs allocated to each source is:

- » Verdugo = $\$62,795 / \$20,214,345 = 0.3\%$
- » San Fernando = $\$2,536,330 / \$20,214,345 = 12.5\%$
- » MWD = $\$17,615,220 / \$20,214,345 = 87.1\%$

These percentages are multiplied by the total Supply cost shown in the last line of **Table 3-11** to determine the Supply cost for each source of water. The unit cost is calculated by dividing the Supply cost by the supply availability for each source.

Table 4-3: Supply Unit Cost by Source

	Verdugo	San Fernando	MWD	TOTAL
Water Demand (hcf)	370,752	3,181,659	6,611,275	10,163,687
Total Costs	\$51,257	\$2,070,276	\$14,378,398	\$16,499,930
Unit Cost (\$/hcf)	\$0.14	\$0.65	\$2.17	\$1.62

The variable rates are designed to allow Tier 1 water, which represents essential indoor use, priority for the cheapest sources of water (Verdugo, then San Fernando, then MWD). This is based on Section 106 of the Water Code, which declares that the highest priority use of water is for domestic purposes.

Table 4-4 shows the allocation of each source of supply to all tiers and customer classes. Since Residential Tier 1 receives priority for low-cost water, Verdugo and San Fernando water is allocated fully to Tier 1 and supplemented with purchased MWD water. The remaining Tier 1, Tier 2, Tier 3, and other customer class water usage receives MWD water. **Table 4-5** shows the resulting water supply unit cost for each customer class and tier.

Table 4-4: Water Supply Cost Allocation

	Verdugo	San Fernando	MWD	TOTAL	Unit Cost
Tier 1 Priority					
Residential Tier 1	370,752	3,181,659	1,493,649	5,046,060	\$1.06
Single Family	145,469	1,248,364	586,052	1,979,885	\$1.06
Multi Family	225,283	1,933,296	907,597	3,066,176	\$1.06
Remaining Supply	0	0	5,117,627	5,117,627	\$2.17
Single Family Tiers 2-3	0	0	1,934,737	1,934,737	\$2.17
Multi Family Tier 2	0	0	976,299	976,299	\$2.17
Commercial	0	0	2,015,825	2,015,825	\$2.17
Irrigation	0	0	190,045	190,045	\$2.17
TOTAL	0	0	5,117,627	5,117,627	\$2.17

Table 4-5: Water Supply Unit Cost by Customer Class

Proposed Structure	Monthly		Verdugo	San Fernando	MWD	TOTAL	Unit Cost
	Tiers (hcf)	Usage (hcf)					
Single Family							
Tier 1	8	1,979,885	145,469	1,248,364	586,052	1,979,885	\$1.06
Tier 2	15	941,714	0	0	941,714	941,714	\$2.17
Tier 3	15+	993,023	0	0	993,023	993,023	\$2.17
Multi Family							
Tier 1	6	3,066,176	225,283	1,933,296	907,597	3,066,176	\$1.06
Tier 2	6+	976,299	0	0	976,299	976,299	\$2.17
Commercial		2,015,825	0	0	2,015,825	2,015,825	\$2.17
Irrigation		190,045	0	0	190,045	190,045	\$2.17
Private Fire Line		720	0	0	720	720	\$2.17

Table 4-6 shows the peaking unit cost calculation for each customer class and tier. The peaking cost is equal to the total Maximum Day and Maximum Hour costs for each customer class and tier shown in **Table 3-11**. The peaking costs are divided by the usage in each class or tier to determine the peaking unit cost.

Table 4-6: Peaking Unit Cost Calculation by Customer Class

Proposed Structure	Monthly Tiers (hcf)	Peaking Costs	Usage (hcf)	Unit Cost
Single Family				
Tier 1	8	\$213,488	1,979,885	\$0.11
Tier 2	15	\$212,419	941,714	\$0.23
Tier 3	15+	\$379,689	993,023	\$0.38
Multi Family				
Tier 1	6	\$330,621	3,066,176	\$0.11
Tier 2	6+	\$220,220	976,299	\$0.23
Commercial		\$351,843	2,015,825	\$0.17
Irrigation		\$57,095	190,045	\$0.30
Private Fire Line		\$276	720	\$0.38

Table 4-7 shows the variable rate calculation. The Base Delivery, Pumping, and Capital costs are derived in **Table 3-10**. The Supply cost is shown in **Table 4-5** and the Peaking cost is shown in **Table 4-6**. The total variable rate is the sum of the Supply, Base Delivery, Peaking, Pumping, and Capital costs.

Table 4-7: Variable Rate Calculation

Customer Class	Monthly Tiers (hcf)	Usage (hcf)	Supply Cost	Base Delivery	Peaking Cost	Pumping Cost	Capital Cost	Total Rate (\$/hcf)	Current Rate	Difference
Single Family										
Tier 1	8	1,979,885	\$1.06	\$0.42	\$0.11	\$0.26	\$0.74	\$2.61		
Tier 2	15	941,714	\$2.17	\$0.42	\$0.23	\$0.26	\$0.74	\$3.84		
Tier 3	15+	993,023	\$2.17	\$0.42	\$0.38	\$0.26	\$0.74	\$3.99		
Multi Family										
Tier 1	6	3,066,176	\$1.06	\$0.42	\$0.11	\$0.26	\$0.74	\$2.61	\$2.69	-3.0%
Tier 2	6+	976,299	\$2.17	\$0.42	\$0.23	\$0.26	\$0.74	\$3.84	\$3.97	-3.3%
Commercial		2,015,825	\$2.17	\$0.42	\$0.17	\$0.26	\$0.74	\$3.78	\$3.18	18.9%
Irrigation		190,045	\$2.17	\$0.42	\$0.30	\$0.26	\$0.74	\$3.91	\$3.30	18.5%
Private Fire Line		720	\$2.17	\$0.42	\$0.38	\$0.26	\$0.74	\$3.99	\$3.18	25.5%

Table 4-8 shows the recycled water variable rate calculation. The recycled water variable rate is calculated by dividing the Recycled Water cost for each Recycled water customer class by the usage in each class.

Table 4-8: Recycled Water Variable Rate Calculation

	Usage (hcf)	Total COS	Total Rate (\$/hcf)	Current Rate	Difference
Recycled Water - Commercial	476,078	\$1,254,375	\$2.64	\$2.70	-2.2%
Recycled Water - Irrigation	260,384	\$686,062	\$2.64	\$2.81	-6.0%

4.3 PROPOSED WATER RATES

Table 4-9 shows the proposed fixed charges for five years. The monthly recycled water charges were calculated and shown on **Table 4-1**. **Table 4-10** shows the proposed variable rates for each customer class and tier. The rates for July 2019 and beyond are inflated by the revenue adjustments shown in **Table 2-12**.

Table 4-9: Proposed Customer Charges

	July 2018	July 2019	July 2020	July 2021	July 2022
Monthly Customer Charge					
Meter Size					
5/8"	\$18.14	\$18.33	\$18.61	\$18.99	\$19.37
3/4"	\$25.33	\$25.58	\$25.97	\$26.49	\$27.02
1"	\$39.70	\$40.10	\$40.71	\$41.53	\$42.37
1 1/2"	\$75.61	\$76.37	\$77.52	\$79.08	\$80.67
2"	\$118.72	\$119.91	\$121.71	\$124.15	\$126.64
3"	\$255.22	\$257.77	\$261.64	\$266.88	\$272.22
4"	\$456.37	\$460.93	\$467.85	\$477.21	\$486.76
6"	\$937.68	\$947.06	\$961.27	\$980.50	\$1,000.11
8"	\$1,727.91	\$1,745.19	\$1,771.37	\$1,806.80	\$1,842.94
10"	\$2,733.66	\$2,761.00	\$2,802.42	\$2,858.47	\$2,915.64
12"	\$3,595.73	\$3,631.69	\$3,686.17	\$3,759.90	\$3,835.10
Monthly Private Fire Line Customer Charge					
Line Size					
1"	\$4.17	\$4.22	\$4.29	\$4.38	\$4.47
1 1/2"	\$4.91	\$4.96	\$5.04	\$5.15	\$5.26
2"	\$6.20	\$6.27	\$6.37	\$6.50	\$6.63
3"	\$10.81	\$10.92	\$11.09	\$11.32	\$11.55
4"	\$18.77	\$18.96	\$19.25	\$19.64	\$20.04
6"	\$47.34	\$47.82	\$48.54	\$49.52	\$50.52
8"	\$96.61	\$97.58	\$99.05	\$101.04	\$103.07
10"	\$170.72	\$172.43	\$175.02	\$178.53	\$182.11
12"	\$273.43	\$276.17	\$280.32	\$285.93	\$291.65
Monthly Recycled Water Customer Charge					
Meter Size					
5/8"	\$12.17	\$12.30	\$12.49	\$12.74	\$13.00
3/4"	\$16.37	\$16.54	\$16.79	\$17.13	\$17.48
1"	\$24.77	\$25.02	\$25.40	\$25.91	\$26.43
1 1/2"	\$45.76	\$46.22	\$46.92	\$47.86	\$48.82
2"	\$70.96	\$71.67	\$72.75	\$74.21	\$75.70
3"	\$150.74	\$152.25	\$154.54	\$157.64	\$160.80
4"	\$268.31	\$271.00	\$275.07	\$280.58	\$286.20
6"	\$549.63	\$555.13	\$563.46	\$574.73	\$586.23
8"	\$1,011.51	\$1,021.63	\$1,036.96	\$1,057.70	\$1,078.86
10"	\$1,599.36	\$1,615.36	\$1,639.60	\$1,672.40	\$1,705.85
12"	\$2,103.23	\$2,124.27	\$2,156.14	\$2,199.27	\$2,243.26

Table 4-10: Proposed Variable Charges

	Monthly Tiers	July 2018	July 2019	July 2020	July 2021	July 2022
Monthly Water Variable Charges						
Single Family						
Tier 1	8	\$2.61	\$2.64	\$2.68	\$2.74	\$2.80
Tier 2	15	\$3.84	\$3.88	\$3.94	\$4.02	\$4.11
Tier 3	15+	\$3.99	\$4.03	\$4.10	\$4.19	\$4.28
Multi Family						
Tier 1	6	\$2.61	\$2.64	\$2.68	\$2.74	\$2.80
Tier 2	6+	\$3.84	\$3.88	\$3.94	\$4.02	\$4.11
Commercial		\$3.78	\$3.82	\$3.88	\$3.96	\$4.04
Irrigation		\$3.91	\$3.95	\$4.01	\$4.10	\$4.19
Private Fire Line		\$3.99	\$4.03	\$4.10	\$4.19	\$4.28
Recycled Water - Commercial		\$2.64	\$2.67	\$2.72	\$2.78	\$2.84
Recycled Water - Irrigation		\$2.64	\$2.67	\$2.72	\$2.78	\$2.84

4.4 CUSTOMER IMPACTS

Table 4-11 shows the impacts at various levels of usage for Single Family customers with a 3/4" meter.

Table 4-11: Single Family Customer Impacts, 3/4" Meter

	Monthly Usage (hcf)	Bills Impacted - All Meter Sizes	Current Fixed	Current Variable	Total Current Bill	Proposed Fixed	Proposed Variable	Total Proposed Bill	Difference
Very Low	4	33,968	\$29.15	\$10.28	\$39.43	\$25.33	\$10.44	\$35.77	(\$3.67)
Low	10	91,247	\$29.15	\$28.18	\$57.33	\$25.33	\$28.56	\$53.89	(\$3.44)
Average	15	55,661	\$29.15	\$45.45	\$74.60	\$25.33	\$47.76	\$73.09	(\$1.51)
High	25	51,036	\$29.15	\$81.75	\$110.90	\$25.33	\$87.66	\$112.99	\$2.08
Very High	50	23,639	\$29.15	\$192.25	\$221.40	\$25.33	\$187.41	\$212.74	(\$8.66)

Table 4-12 shows the impacts at various levels of usage for Multi-Family customers with a 1" meter and four dwelling units.

Table 4-12: Multi-Family Customer Impacts, 1" Meter

	Monthly Usage (hcf)	Bills Impacted - All Meter Sizes	Current Fixed	Current Variable	Total Current Bill	Proposed Fixed	Proposed Variable	Total Proposed Bill	Difference
Very Low	8	4,781	\$38.42	\$21.52	\$59.94	\$39.70	\$20.88	\$60.58	\$0.64
Low	16	14,987	\$38.42	\$43.04	\$81.46	\$39.70	\$41.76	\$81.46	(\$0.00)
Average	20	11,067	\$38.42	\$53.80	\$92.22	\$39.70	\$52.20	\$91.90	(\$0.32)
High	40	42,086	\$38.42	\$133.20	\$171.62	\$39.70	\$124.08	\$163.78	(\$7.85)
Very High	100	10,650	\$38.42	\$371.40	\$409.82	\$39.70	\$354.48	\$394.18	(\$15.65)

Table 4-13 shows the impacts at various levels of usage for Commercial customers with a 1” meter.

Table 4-13: Commercial Customer Impacts, 1: Meter

	Monthly Usage (hcf)	Bills Impacted - All Meter Sizes	Current Fixed	Current Variable	Total Current Bill	Proposed Fixed	Proposed Variable	Total Proposed Bill	Difference
Very Low	5	12,771	\$38.42	\$15.90	\$54.32	\$39.70	\$18.90	\$58.60	\$4.28
Low	25	12,198	\$38.42	\$79.50	\$117.92	\$39.70	\$94.50	\$134.20	\$16.28
Average	47	3,789	\$38.42	\$149.46	\$187.88	\$39.70	\$177.66	\$217.36	\$29.48
High	75	2,312	\$38.42	\$238.50	\$276.92	\$39.70	\$283.50	\$323.20	\$46.28
Very High	100	1,035	\$38.42	\$318.00	\$356.42	\$39.70	\$378.00	\$417.70	\$61.28

5 DROUGHT SURCHARGES

This section of the report documents the development of drought surcharges to be implemented during water shortages, mandatory conservation measures, or other water supply emergency situations and provides an overview of each sample level of reduction, corresponding revenue impacts, and drought surcharge calculations.

The surcharges calculated in this section are separate charges independent from the variable charges derived in the previous section. During times of declared shortage, the enacted drought surcharges represent a third charge in addition to the customer and variable charges.

5.1 DROUGHT IMPACTS

Active conservation measures and water supply shortages can have significant impacts on the City's financial stability, staffing, and planning. Depending on water supply sources, fixed and variable costs, and other revenue sources, water sales reductions can have a major financial impact on a utility. Raftelis recommends that the City utilize drought surcharges proactively as part of a cohesive and fiscally sound response to drought, water supply interruptions from natural disasters, or other emergencies. Temporary surcharges are a mechanism to maintain revenue stability and debt coverage requirements in the short term.

The City relies on groundwater from the Verdugo and San Fernando Groundwater Basins and imported water from MWD for its water supply needs. In periods of reduced demand, the City can continue to use its full capacity from the groundwater basins and purchase less imported water. However, the fixed costs of the system do not change as a result of reduced demand, and the rate revenue will reduce, causing a net loss to the water utility.

The City's Mandatory Water Conservation Ordinance shows Stages 1, 2, 3, and 4 for the drought surcharges, which correspond to 20 percent, 30 percent, 40 percent, and 50 percent reduction.

5.2 ASSUMPTIONS

To determine the revenue losses and the increase in rates, usage reductions in each class and tier are estimated for sample target levels of reduction. Reductions are higher in upper tiers as customers reduce irrigation and other non-essential usage, which results in a disproportionately higher reduction in water sales revenues. Commercial use will not drop as much as the overall residential use since commercial customers have less discretion to cut back usage. To estimate the surcharge required, Raftelis developed four scenarios to show the relationship between the target levels of reduction and the increase in rates required. **Table 5-1** shows the water sales reductions in each tier at the target level indicated.

Table 5-1: Reductions in Usage at Indicated Targets

Customer Class	Monthly Tier	1% Reduction	10% Reduction	20% Reduction	30% Reduction
Single Family					
Tier 1	8	0%	-5%	-7%	-10%
Tier 2	15	0%	-10%	-20%	-30%
Tier 3	15+	-5%	-20%	-35%	-60%
Multi Family					
Tier 1	6	0%	-4%	-7%	-12%
Tier 2	6+	-3%	-25%	-30%	-60%
Commercial		0%	-5%	-10%	-15%
Irrigation		-1%	-10%	-20%	-30%
Private Fire Line		0%	0%	0%	0%

5.3 FINANCIAL IMPACTS

To determine the charge at each level of reduction, the following steps are necessary:

1. Determine the lost revenue at each level of reduction.
2. Account for variable expense savings to offset a portion of the revenue loss.
3. Divide the net revenue loss at each level by the respective estimated sales at each level.

Table 5-2 shows the estimated water usage in each customer class and tier based on the reduction amounts in **Table 5-1**. The net reduction achieved is shown on the last line. While target reduction is not met, the rate increase required will be calculated based on the actual reduction achieved to ensure adequate revenues for the utility. For example, the actual use reduction at the 1 percent target level is 0.7 percent.

Table 5-2: Projected Water Usage at Target Levels

Customer Class	Monthly Tier	Usage (hcf)	1% Reduction	10% Reduction	20% Reduction	30% Reduction
Single Family						
Tier 1	8	1,979,885	1,979,885	1,880,890	1,841,293	1,781,896
Tier 2	15	941,714	941,714	847,543	753,371	659,200
Tier 3	15+	993,023	943,372	794,419	645,465	397,209
Multi Family						
Tier 1	6	3,066,176	3,066,176	2,943,529	2,851,543	2,698,235
Tier 2	6+	976,299	951,892	732,224	683,409	390,520
Commercial		2,015,825	2,015,825	1,915,034	1,814,243	1,713,452
Irrigation		190,045	188,144	171,040	152,036	133,031
Private Fire Line		720	720	720	720	720
Total Water Usage		10,163,687	10,087,728	9,285,399	8,742,081	7,774,263
Actual Reduction in Usage			-0.7%	-8.6%	-14.0%	-23.5%

Table 5-3 shows the purchased water cost savings calculation, which will be used to determine the net revenue loss. Lines 1-4 determine the amount of water supply needed at each level, factoring in a water loss percentage. Lines 5-9 determine the amount of water supplied from each source, with supply from Verdugo and San Fernando remaining at normal levels. The remaining water supply is met with MWD water.

Lines 10-20 show the fixed and O&M costs for each source of water; these costs do not vary with water usage reductions. Lines 21-29 show the calculation of variable costs based on the MWD Treated Tier 1 and Water Stewardship rates. The variable costs in dollars is calculated by multiplying the total amount of purchased water from MWD (Line 8) with the corresponding rates (Lines 23-24).

Line 30 shows the total costs of water supply; Line 31 shows the cost savings at each level of reduction. This number is equal to the difference in total water supply costs for each level of reduction with the base year.

For example, the cost savings at 1 percent reduction, is calculated using the following equation:

$$\$18,253,576 \text{ in base year costs} - \$18,067,110 = \$186,466$$

Table 5-3: Purchased Water Cost Savings

	FY 2019	1% Reduction	10% Reduction	20% Reduction	30% Reduction
1 Demand (hcf)	10,163,687	10,087,728	9,285,399	8,742,081	7,774,263
2 Demand (AF)	23,333	23,158	21,316	20,069	17,847
3 Water Loss (%)	3.5%	3.5%	3.5%	3.5%	3.5%
4 Supply Needed (AF)	24,179	23,998	22,089	20,797	18,495
5 Supply (AF)					
6 Verdugo	882	882	882	882	882
7 San Fernando	7,569	7,569	7,569	7,569	7,569
8 MWD	15,728	15,547	13,638	12,346	10,044
9 Total Supply	24,179	23,998	22,089	20,797	18,495
10 Fixed/O&M Costs					
11 Verdugo					
12 O&M	\$62,795	\$62,795	\$62,795	\$62,795	\$62,795
13 San Fernando					
14 O&M	\$574,826	\$574,826	\$574,826	\$574,826	\$574,826
15 LADWP Fee > 4,900 AF (\$/AF)	\$735	\$735	\$735	\$735	\$735
16 MWD					
17 O&M	\$3,256	\$3,256	\$3,256	\$3,256	\$3,256
18 MWD Capacity Cost	\$261,089	\$261,089	\$261,089	\$261,089	\$261,089
19 MWD RTS Charge	\$1,121,359	\$1,121,359	\$1,121,359	\$1,121,359	\$1,121,359
20 Total Fixed/O&M Costs	\$2,024,060	\$2,024,060	\$2,024,060	\$2,024,060	\$2,024,060
21 Variable Costs (\$/AF)					
22 MWD					
23 MWD Treated Tier 1 Rate (\$/AF)	\$977	\$977	\$977	\$977	\$977
24 MWD Water Stewardship (\$/AF)	\$55	\$55	\$55	\$55	\$55
25 Variable Costs (\$)					
26 MWD					
27 MWD Treated Tier 1 Rate (\$/AF)	\$15,358,624	\$15,182,164	\$13,318,278	\$12,056,097	\$9,807,763
28 MWD Water Stewardship (\$/AF)	\$870,892	\$860,886	\$755,196	\$683,626	\$556,137
29 Total Variable Costs	\$16,229,516	\$16,043,050	\$14,073,474	\$12,739,723	\$10,363,900
30 Total Costs	\$18,253,576	\$18,067,110	\$16,097,534	\$14,763,783	\$12,387,960
31 Cost Savings		\$186,466	\$2,156,042	\$3,489,793	\$5,865,616

5.4 DROUGHT SURCHARGE CALCULATION

Table 5-4 shows the projected revenue at each target level of reduction for each customer class and tier. The projected revenue at each level is calculated by multiplying the proposed FY 2019 rates by the projected usage in each customer class and tier for each level, shown in Table 5-2.

Table 5-4: Projected Revenues at Each Target Level

	FY 2019	1% Reduction	10% Reduction	20% Reduction	30% Reduction
Projected Revenue					
Single Family					
Tier 1	\$5,167,499	\$5,167,499	\$4,909,124	\$4,805,774	\$4,650,749
Tier 2	\$3,616,181	\$3,616,181	\$3,254,563	\$2,892,945	\$2,531,327
Tier 3	\$3,962,163	\$3,764,055	\$3,169,731	\$2,575,406	\$1,584,865
Multi Family					
Tier 1	\$8,002,719	\$8,002,719	\$7,682,610	\$7,442,528	\$7,042,393
Tier 2	\$3,748,989	\$3,655,264	\$2,811,742	\$2,624,292	\$1,499,596
Commercial	\$7,619,820	\$7,619,820	\$7,238,829	\$6,857,838	\$6,476,847
Irrigation	\$743,075	\$735,644	\$668,767	\$594,460	\$520,152
Private Fire Line	\$2,873	\$2,873	\$2,873	\$2,873	\$2,873
Total Projected Revenue	\$32,863,319	\$32,564,056	\$29,738,239	\$27,796,117	\$24,308,802

Table 5-5 shows the net revenue loss calculation for each level of reduction. The projected revenue in each level is calculated in **Table 5-4**. The revenue shortfall for each level is the difference in revenue for each level from the base year. The cost savings for each level of reduction is calculated in **Table 5-3**.

The net revenue shortfall to be recovered is the basis of the drought surcharge calculation. This number is divided by the projected water usage in each level to determine the dollar amount increase per hcf of water usage reduction. For example, with a 1 percent reduction, the calculation is as follows:

$$\$112,797 \text{ net revenue shortfall} / 10,087,728 \text{ hcf of water in Stage 0} = \$0.011 \text{ increase per hcf of water}$$

The dollar amount increase per hcf of water usage reduction is then divided by the actual reduction in usage for each level, shown in the last line of **Table 5-2**, to determine the increase. For example, with a 1 percent target reduction, the calculation is as follows:

$$\$0.011 \text{ increase} / 0.7\% \text{ reduction} / 100\% = \$0.015 \text{ for each percentage point reduction}$$

Table 5-5: Net Revenue Loss Calculation

	FY 2019	1% Reduction	10% Reduction	20% Reduction	30% Reduction
Projected Revenue	\$32,863,319	\$32,564,056	\$29,738,239	\$27,796,117	\$24,308,802
Revenue Shortfall		(\$299,264)	(\$3,125,080)	(\$5,067,202)	(\$8,554,517)
Cost Savings		\$186,466	\$2,156,042	\$3,489,793	\$5,865,616
Net Revenue Shortfall to be Recovered		(\$112,797)	(\$969,038)	(\$1,577,409)	(\$2,688,901)
Increase per hcf		\$0.011	\$0.104	\$0.180	\$0.346
Increase per hcf for each % point reduction in use		\$0.015	\$0.012	\$0.013	\$0.015

The increase in rates per percentage point reduction in use for all levels is conservatively estimated to be \$0.015 per hcf to ensure adequate cost recovery because estimated water use reductions in each tier and at each level may not precisely reflect actual reductions during drought. This means that for a 15 percent reduction in water usage due to drought, each variable rate will increase by 15 times \$0.015, which equals \$0.225, rounded up to \$0.23 per hcf. This calculation provides the City flexibility to set surcharges based on the actual level of reduction required.

The target levels of reduction shown in **Table 5-2** are used to more accurately calculate the surcharge per percentage point. Smaller reductions in demand provide a more accurate estimate because usage patterns are easier to predict. However, the proposed drought surcharges are based on the drought stages in the City’s Mandatory Water Conservation Ordinance, which has Stages 1 through 4, equal to 20 percent, 30 percent, 40 percent, and 50 percent reductions, respectively. **Table 5-6** shows the proposed surcharges for each stage of drought based on the \$0.015 increase for each percentage point reduction in use.

Table 5-6: Proposed Drought Surcharges

	Stage 1	Stage 2	Stage 3	Stage 4
Curtailment Target	20%	30%	40%	50%
Proposed Drought Surcharge (\$/hcf)	\$0.30	\$0.45	\$0.60	\$0.75

APPENDIX

Table A-1: Detailed Operating Budget

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
GWP Adm - Conservation & Utility Modernization						
Advertising	\$4,400	\$4,492	\$4,587	\$4,683	\$4,781	\$4,882
Auto allowance	\$2,144	\$2,189	\$2,235	\$2,282	\$2,330	\$2,379
Business meetings	\$71	\$72	\$74	\$76	\$77	\$79
Compensation insurance	\$1,095	\$1,139	\$1,184	\$1,232	\$1,281	\$1,332
Computer hardware	\$5,720	\$5,840	\$5,963	\$6,088	\$6,216	\$6,346
Computer software	\$1,980	\$2,022	\$2,064	\$2,107	\$2,152	\$2,197
Contractual services	\$731,282	\$746,639	\$762,318	\$778,327	\$794,672	\$811,360
Dental insurance	\$1,166	\$1,213	\$1,261	\$1,312	\$1,364	\$1,419
Disability insurance	\$519	\$540	\$561	\$584	\$607	\$631
Equipment usage	\$3,300	\$3,369	\$3,440	\$3,512	\$3,586	\$3,661
Furniture & equipment	\$31,218	\$31,874	\$32,543	\$33,226	\$33,924	\$34,636
General supplies	\$5,500	\$5,616	\$5,733	\$5,854	\$5,977	\$6,102
Hourly wages	\$8,565	\$8,745	\$8,929	\$9,116	\$9,307	\$9,503
Liability Insurance	\$3,964	\$4,123	\$4,287	\$4,459	\$4,637	\$4,823
Life insurance	\$197	\$205	\$213	\$222	\$230	\$240
Medical insurance	\$17,699	\$18,407	\$19,143	\$19,909	\$20,705	\$21,534
Medicare	\$2,136	\$2,221	\$2,310	\$2,403	\$2,499	\$2,599
Membership & dues	\$660	\$674	\$688	\$702	\$717	\$732
Miscellaneous	\$5,192	\$5,301	\$5,412	\$5,526	\$5,642	\$5,761
Office supplies	\$1,210	\$1,235	\$1,261	\$1,288	\$1,315	\$1,342
Other benefits	\$404	\$420	\$437	\$454	\$473	\$492
Overtime	\$11,280	\$11,517	\$11,759	\$12,006	\$12,258	\$12,515
Periodicals & newspapers	\$550	\$562	\$573	\$585	\$598	\$610
PERS cost sharing	(\$5,378)	(\$5,593)	(\$5,817)	(\$6,050)	(\$6,291)	(\$6,543)
PERS retirement	\$35,711	\$37,139	\$38,625	\$40,170	\$41,777	\$43,448
Post employment benefits	\$189	\$197	\$204	\$213	\$221	\$230
Postage	\$33,000	\$33,693	\$34,401	\$35,123	\$35,861	\$36,614
Printing and graphics	\$4,400	\$4,492	\$4,587	\$4,683	\$4,781	\$4,882
Repairs to equipment	\$5,258	\$5,368	\$5,481	\$5,596	\$5,714	\$5,834
Salaries	\$126,346	\$131,400	\$136,656	\$142,122	\$147,807	\$153,719
Sick leave	\$3,413	\$3,550	\$3,692	\$3,839	\$3,993	\$4,152
Training	\$8,239	\$8,412	\$8,589	\$8,769	\$8,953	\$9,141
Travel	\$5,789	\$5,911	\$6,035	\$6,161	\$6,291	\$6,423
Unemployment insurance	\$86	\$89	\$93	\$97	\$101	\$105
Vacation & comp time	\$3,159	\$3,285	\$3,417	\$3,553	\$3,696	\$3,843
Vision insurance	\$286	\$297	\$309	\$322	\$335	\$348
Materials	\$0	\$0	\$0	\$0	\$0	\$0
Books	\$0	\$0	\$0	\$0	\$0	\$0
Dues	\$0	\$0	\$0	\$0	\$0	\$0
Other Costs	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Adm - Conservation & Utility Modernization	\$1,060,750	\$1,086,655	\$1,113,248	\$1,140,552	\$1,168,585	\$1,197,371
GWP Adm - Customer Services						
Auto allowance	\$0	\$0	\$0	\$0	\$0	\$0
Bldg Maintenance Svc Charge	\$107,756	\$110,019	\$112,329	\$114,688	\$117,097	\$119,556
Business meetings	\$0	\$0	\$0	\$0	\$0	\$0
Compensation insurance	\$19,760	\$20,551	\$21,373	\$22,227	\$23,117	\$24,041
Contractual services	\$421,231	\$430,077	\$439,109	\$448,330	\$457,745	\$467,358
Cost allocation charge (1)	\$150,503	\$153,664	\$156,890	\$160,185	\$163,549	\$166,984
Dental insurance	\$7,629	\$7,934	\$8,251	\$8,581	\$8,925	\$9,281
Disability insurance	\$3,798	\$3,950	\$4,108	\$4,273	\$4,444	\$4,621

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
Equipment usage	\$24,678	\$25,196	\$25,725	\$26,265	\$26,817	\$27,380
Fleet / equip rental charge	\$15,645	\$15,974	\$16,309	\$16,651	\$17,001	\$17,358
Furniture & equipment	\$718	\$733	\$748	\$764	\$780	\$797
General supplies	\$463	\$472	\$482	\$492	\$503	\$513
Hourly wages	\$0	\$0	\$0	\$0	\$0	\$0
ISD service charge	\$174,150	\$177,807	\$181,541	\$185,353	\$189,246	\$193,220
Liability Insurance	\$20,876	\$21,711	\$22,580	\$23,483	\$24,422	\$25,399
Life insurance	\$1,242	\$1,292	\$1,343	\$1,397	\$1,453	\$1,511
Medical insurance	\$83,497	\$86,836	\$90,310	\$93,922	\$97,679	\$101,586
Medicare	\$10,497	\$10,917	\$11,353	\$11,808	\$12,280	\$12,771
Membership & dues	\$143	\$146	\$149	\$152	\$155	\$158
Miscellaneous	\$0	\$0	\$0	\$0	\$0	\$0
Office supplies	\$3,913	\$3,995	\$4,079	\$4,165	\$4,252	\$4,341
Other benefits	\$2,728	\$2,837	\$2,950	\$3,068	\$3,191	\$3,318
Overtime	\$9,864	\$10,071	\$10,282	\$10,498	\$10,719	\$10,944
PERS cost sharing	\$15,030	\$15,631	\$16,256	\$16,906	\$17,583	\$18,286
PERS retirement	\$184,312	\$191,684	\$199,352	\$207,326	\$215,619	\$224,244
Post employment benefits	\$1,120	\$1,164	\$1,211	\$1,259	\$1,310	\$1,362
Postage	\$0	\$0	\$0	\$0	\$0	\$0
Salaries	\$750,086	\$765,838	\$781,920	\$798,340	\$815,106	\$832,223
Sick leave	\$20,140	\$20,563	\$20,994	\$21,435	\$21,885	\$22,345
Small tools	\$645	\$658	\$672	\$686	\$701	\$716
Training	\$256	\$261	\$267	\$272	\$278	\$284
Travel	\$0	\$0	\$0	\$0	\$0	\$0
Uncollectible accounts	\$59,410	\$60,658	\$61,932	\$63,232	\$64,560	\$65,916
Unemployment insurance	\$465	\$484	\$503	\$523	\$544	\$566
Vacation & comp time	\$18,633	\$19,378	\$20,153	\$20,959	\$21,797	\$22,669
Vision insurance	\$2,072	\$2,155	\$2,241	\$2,330	\$2,424	\$2,520
Subtotal GWP Adm - Customer Services	\$2,111,256	\$2,162,654	\$2,215,414	\$2,269,575	\$2,325,180	\$2,382,269
GWP Adm - Environmental & Safety						
Auto allowance	\$1,883	\$1,923	\$1,963	\$2,005	\$2,047	\$2,090
Books	\$44	\$45	\$46	\$47	\$48	\$49
Business meetings	\$10	\$10	\$11	\$11	\$11	\$11
Compensation insurance	\$752	\$782	\$813	\$846	\$880	\$915
Contractual services	\$4,837	\$4,938	\$5,042	\$5,148	\$5,256	\$5,366
Dental insurance	\$150	\$156	\$162	\$168	\$175	\$182
Disability insurance	\$150	\$156	\$162	\$169	\$176	\$183
General supplies	\$16,775	\$17,127	\$17,487	\$17,854	\$18,229	\$18,612
Liability Insurance	\$3,850	\$4,004	\$4,164	\$4,331	\$4,504	\$4,684
Life insurance	\$82	\$85	\$89	\$92	\$96	\$100
Medical insurance	\$1,856	\$1,930	\$2,007	\$2,087	\$2,171	\$2,258
Medicare	\$424	\$441	\$459	\$477	\$496	\$516
Membership & dues	\$76	\$78	\$79	\$81	\$83	\$84
Miscellaneous	\$3	\$3	\$4	\$4	\$4	\$4
Office supplies	\$17	\$17	\$18	\$18	\$19	\$19
Other benefits	\$97	\$101	\$105	\$109	\$113	\$118
Overtime	\$345	\$353	\$360	\$367	\$375	\$383
Periodicals & newspapers	\$32	\$32	\$33	\$34	\$34	\$35
PERS cost sharing	\$1,128	\$1,173	\$1,220	\$1,269	\$1,320	\$1,373
PERS retirement	\$7,496	\$7,796	\$8,107	\$8,432	\$8,769	\$9,120
Post employment benefits	\$43	\$45	\$46	\$48	\$50	\$52
Printing and graphics	\$253	\$259	\$264	\$270	\$275	\$281
Reports & publications	\$89	\$91	\$92	\$94	\$96	\$98
Salaries	\$139,195	\$142,118	\$145,102	\$148,150	\$151,261	\$154,437
Sick leave	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$4,995	\$5,100	\$5,207	\$5,317	\$5,428	\$5,542
Travel	\$634	\$647	\$661	\$674	\$689	\$703
Unemployment insurance	\$17	\$18	\$19	\$19	\$20	\$21

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
Vacation & comp time	\$711	\$740	\$769	\$800	\$832	\$866
Vision insurance	\$142	\$148	\$153	\$160	\$166	\$173
Repairs-Bldgs & Grounds	\$1,375	\$1,404	\$1,433	\$1,463	\$1,494	\$1,525
Repairs to Equipment	\$243	\$248	\$253	\$259	\$264	\$270
Furniture & Equipment	\$1,115	\$1,139	\$1,163	\$1,187	\$1,212	\$1,237
Subtotal GWP Adm - Environmental & Safety	\$188,819	\$193,105	\$197,494	\$201,989	\$206,592	\$211,306
GWP Adm - UOC & Warehouse						
Books	\$0	\$0	\$0	\$0	\$0	\$0
Business meetings	\$110	\$112	\$115	\$117	\$120	\$122
Compensation insurance	\$4,565	\$4,748	\$4,938	\$5,135	\$5,340	\$5,554
Contractual services	\$64,900	\$66,263	\$67,654	\$69,075	\$70,526	\$72,007
Dental insurance	\$565	\$588	\$611	\$636	\$661	\$687
Disability insurance	\$350	\$364	\$379	\$394	\$409	\$426
Discount earned & lost	\$44,400	\$45,332	\$46,284	\$47,256	\$48,249	\$49,262
Equipment usage	\$0	\$0	\$0	\$0	\$0	\$0
Furniture & equipment	\$211	\$215	\$220	\$225	\$229	\$234
General supplies	\$927	\$946	\$966	\$986	\$1,007	\$1,028
Hourly wages	\$0	\$0	\$0	\$0	\$0	\$0
Janitorial services	\$5,394	\$5,507	\$5,623	\$5,741	\$5,862	\$5,985
Laundry & towel service	\$6,270	\$6,402	\$6,536	\$6,673	\$6,814	\$6,957
Lease payments	\$12,540	\$12,803	\$13,072	\$13,347	\$13,627	\$13,913
Liability Insurance	\$2,123	\$2,208	\$2,296	\$2,388	\$2,484	\$2,583
Life insurance	\$127	\$132	\$137	\$143	\$149	\$155
Material overhead	\$0	\$0	\$0	\$0	\$0	\$0
Medical insurance	\$9,435	\$9,812	\$10,205	\$10,613	\$11,038	\$11,479
Medicare	\$1,140	\$1,186	\$1,233	\$1,282	\$1,334	\$1,387
Membership & dues	\$0	\$0	\$0	\$0	\$0	\$0
Miscellaneous	\$9,020	\$9,209	\$9,403	\$9,600	\$9,802	\$10,008
Office supplies	\$1,210	\$1,235	\$1,261	\$1,288	\$1,315	\$1,342
Other benefits	\$340	\$354	\$368	\$382	\$398	\$414
Periodicals & newspapers	\$0	\$0	\$0	\$0	\$0	\$0
PERS cost sharing	(\$3,109)	(\$3,233)	(\$3,363)	(\$3,497)	(\$3,637)	(\$3,783)
PERS retirement	\$20,659	\$21,485	\$22,345	\$23,239	\$24,168	\$25,135
Post employment benefits	\$112	\$116	\$121	\$126	\$131	\$136
Postage	\$110	\$112	\$115	\$117	\$120	\$122
Printing and graphics	\$0	\$0	\$0	\$0	\$0	\$0
Regulatory	\$0	\$0	\$0	\$0	\$0	\$0
Repairs-bldgs & grounds	\$12,643	\$12,908	\$13,179	\$13,456	\$13,739	\$14,027
Salaries	\$73,780	\$75,329	\$76,911	\$78,526	\$80,175	\$81,859
Sick leave	\$1,992	\$2,072	\$2,155	\$2,241	\$2,330	\$2,424
Small tools	\$330	\$337	\$344	\$351	\$359	\$366
Unemployment insurance	\$48	\$50	\$52	\$54	\$56	\$58
Utilities	\$15,015	\$15,090	\$15,166	\$15,317	\$15,470	\$15,625
Vacation & comp time	\$1,844	\$1,918	\$1,994	\$2,074	\$2,157	\$2,244
Vehicle maintenance	\$0	\$0	\$0	\$0	\$0	\$0
Vision insurance	\$202	\$210	\$218	\$227	\$236	\$246
Auto Allowance	\$0	\$0	\$0	\$0	\$0	\$0
Training	\$0	\$0	\$0	\$0	\$0	\$0
Software	\$0	\$0	\$0	\$0	\$0	\$0
Overtime	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance Service Charge	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Adm - UOC & Warehouse	\$287,253	\$293,812	\$300,539	\$307,513	\$314,666	\$322,002
GWP Adm - Utility Finance						
Compensation insurance	\$1,890	\$1,966	\$2,044	\$2,126	\$2,211	\$2,299
Dental insurance	\$615	\$640	\$665	\$692	\$720	\$749
Disability insurance	\$429	\$446	\$464	\$482	\$502	\$522
Liability Insurance	\$2,072	\$2,154	\$2,241	\$2,330	\$2,423	\$2,520

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
Life insurance	\$228	\$237	\$246	\$256	\$267	\$277
Medical insurance	\$12,521	\$13,022	\$13,543	\$14,084	\$14,648	\$15,234
Medicare	\$1,113	\$1,158	\$1,204	\$1,252	\$1,302	\$1,354
Other benefits	\$381	\$396	\$412	\$428	\$445	\$463
PERS cost sharing	\$3,042	\$3,163	\$3,290	\$3,421	\$3,558	\$3,701
PERS retirement	\$20,198	\$21,006	\$21,846	\$22,720	\$23,629	\$24,574
Post employment benefits	\$113	\$118	\$123	\$128	\$133	\$138
Salaries	\$74,925	\$76,498	\$78,105	\$79,745	\$81,420	\$83,129
Sick leave	\$2,064	\$2,146	\$2,232	\$2,322	\$2,415	\$2,511
Unemployment insurance	\$46	\$48	\$50	\$52	\$54	\$56
Vacation & comp time	\$1,910	\$1,987	\$2,066	\$2,149	\$2,235	\$2,324
Vision insurance	\$213	\$222	\$231	\$240	\$250	\$260
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Adm - Utility Finance	\$121,760	\$125,207	\$128,761	\$132,428	\$136,210	\$140,111
GWP Administration						
Auto allowance	\$2,125	\$2,170	\$2,215	\$2,262	\$2,309	\$2,358
Bldg Maintenance Svc Charge	\$497,089	\$507,528	\$518,186	\$529,068	\$540,178	\$551,522
Business meetings	\$2,197	\$2,244	\$2,291	\$2,339	\$2,388	\$2,438
Compensation insurance	\$4,671	\$4,858	\$5,052	\$5,255	\$5,465	\$5,683
Contractual services	\$80,482	\$82,172	\$83,898	\$85,660	\$87,458	\$89,295
Cost allocation charge (1)	\$3,612,593	\$3,688,457	\$3,765,915	\$3,844,999	\$3,925,744	\$4,008,185
Dental insurance	\$1,267	\$1,317	\$1,370	\$1,425	\$1,482	\$1,541
Depreciation	\$6,560,000	\$6,560,000	\$6,560,000	\$6,560,000	\$6,560,000	\$6,560,000
Disability insurance	\$967	\$1,006	\$1,046	\$1,088	\$1,132	\$1,177
Fleet / equip rental charge	\$471,601	\$481,505	\$491,616	\$501,940	\$512,481	\$523,243
General supplies	\$5,185	\$5,294	\$5,405	\$5,518	\$5,634	\$5,753
Hourly wages	\$6,895	\$7,040	\$7,188	\$7,338	\$7,493	\$7,650
ISD service charge	\$803,191	\$820,058	\$837,279	\$854,862	\$872,814	\$891,143
Liability Insurance	\$4,842	\$5,035	\$5,237	\$5,446	\$5,664	\$5,891
Life insurance	\$484	\$504	\$524	\$545	\$567	\$589
Medical insurance	\$19,558	\$20,340	\$21,154	\$22,000	\$22,880	\$23,795
Medicare	\$2,475	\$2,574	\$2,676	\$2,784	\$2,895	\$3,011
Membership & dues	\$396	\$404	\$413	\$421	\$430	\$439
Miscellaneous	\$7,088	\$7,237	\$7,389	\$7,544	\$7,703	\$7,865
Office supplies	\$11,397	\$11,637	\$11,881	\$12,130	\$12,385	\$12,645
Other benefits	\$879	\$914	\$951	\$989	\$1,028	\$1,069
Overtime	\$440	\$449	\$459	\$468	\$478	\$488
Periodicals & newspapers	\$440	\$449	\$459	\$468	\$478	\$488
PERS cost sharing	\$8,325	\$8,658	\$9,004	\$9,364	\$9,739	\$10,129
PERS retirement	\$44,318	\$46,090	\$47,934	\$49,851	\$51,845	\$53,919
Post employment benefits	\$249	\$259	\$269	\$280	\$291	\$303
Postage	\$232	\$237	\$242	\$247	\$252	\$257
Printing and graphics	\$5,500	\$5,616	\$5,733	\$5,854	\$5,977	\$6,102
Regulatory	\$4,400	\$4,492	\$4,587	\$4,683	\$4,781	\$4,882
Repairs to office equip	\$440	\$449	\$459	\$468	\$478	\$488
Salaries	\$165,991	\$169,477	\$173,036	\$176,670	\$180,380	\$184,168
Sick leave	\$4,457	\$4,636	\$4,821	\$5,014	\$5,214	\$5,423
Training	\$1,100	\$1,123	\$1,147	\$1,171	\$1,195	\$1,220
Travel	\$4,400	\$4,492	\$4,587	\$4,683	\$4,781	\$4,882
Unemployment insurance	\$107	\$112	\$116	\$121	\$126	\$131
Utilities	\$10,697	\$10,750	\$10,804	\$10,912	\$11,021	\$11,131
Vacation & comp time	\$4,128	\$4,293	\$4,465	\$4,643	\$4,829	\$5,022
Vision insurance	\$292	\$304	\$316	\$328	\$342	\$355
Advertising	\$0	\$0	\$0	\$0	\$0	\$0
Books	\$0	\$0	\$0	\$0	\$0	\$0
Furniture & Equipment	\$0	\$0	\$0	\$0	\$0	\$0
Fees	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Administration	\$12,350,898	\$12,474,179	\$12,600,122	\$12,728,840	\$12,860,339	\$12,994,681

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
GWP Water - Engineering						
Auto allowance	\$7,551	\$7,710	\$7,872	\$8,037	\$8,206	\$8,378
Books	\$797	\$814	\$831	\$848	\$866	\$884
Business meetings	\$298	\$304	\$311	\$317	\$324	\$331
Compensation insurance	\$48,604	\$50,548	\$52,570	\$54,672	\$56,859	\$59,134
Computer hardware	\$190	\$194	\$198	\$202	\$206	\$210
Computer software	\$5,513	\$5,629	\$5,747	\$5,868	\$5,991	\$6,117
Contractual services	\$587,337	\$599,671	\$612,264	\$625,122	\$638,249	\$651,652
Dental insurance	\$7,423	\$7,720	\$8,029	\$8,350	\$8,684	\$9,032
Disability insurance	\$5,652	\$5,878	\$6,113	\$6,358	\$6,612	\$6,877
Equipment usage	\$496	\$506	\$517	\$527	\$538	\$550
General supplies	\$88	\$90	\$92	\$94	\$96	\$98
Hourly wages	\$101,973	\$104,114	\$106,301	\$108,533	\$110,812	\$113,139
Liability Insurance	\$35,605	\$37,029	\$38,510	\$40,051	\$41,653	\$43,319
Life insurance	\$2,758	\$2,869	\$2,983	\$3,103	\$3,227	\$3,356
Medical insurance	\$111,266	\$115,717	\$120,345	\$125,159	\$130,166	\$135,372
Medicare	\$18,155	\$18,882	\$19,637	\$20,422	\$21,239	\$22,089
Membership & dues	\$669	\$683	\$698	\$712	\$727	\$743
Miscellaneous	\$208	\$212	\$216	\$221	\$226	\$230
Office supplies	\$2,837	\$2,896	\$2,957	\$3,019	\$3,083	\$3,147
Other benefits	\$20,507	\$21,327	\$22,181	\$23,068	\$23,991	\$24,950
Overtime	\$13,662	\$13,949	\$14,242	\$14,541	\$14,847	\$15,158
PERS cost sharing	(\$47,078)	(\$48,961)	(\$50,920)	(\$52,957)	(\$55,075)	(\$57,278)
PERS retirement	\$324,515	\$337,495	\$350,995	\$365,035	\$379,637	\$394,822
Post employment benefits	\$1,860	\$1,935	\$2,012	\$2,093	\$2,176	\$2,263
Regulatory	\$439	\$448	\$457	\$467	\$477	\$487
Salaries	\$1,234,265	\$1,260,184	\$1,286,648	\$1,313,668	\$1,341,255	\$1,369,421
Salary charges in (out)	\$0	\$0	\$0	\$0	\$0	\$0
Sick leave	\$33,480	\$34,819	\$36,212	\$37,660	\$39,166	\$40,733
Social Security/PARS	\$161	\$168	\$174	\$181	\$189	\$196
Training	\$2,851	\$2,911	\$2,972	\$3,034	\$3,098	\$3,163
Travel	\$1,156	\$1,180	\$1,205	\$1,230	\$1,256	\$1,282
Unemployment insurance	\$918	\$955	\$993	\$1,033	\$1,074	\$1,117
Utilities	\$3,124,708	\$3,224,795	\$3,260,843	\$3,313,776	\$3,367,647	\$3,422,473
Vacation & comp time	\$31,000	\$32,240	\$33,530	\$34,871	\$36,266	\$37,716
Vision insurance	\$2,759	\$2,869	\$2,984	\$3,104	\$3,228	\$3,357
PARS supplemental retirement	\$0	\$0	\$0	\$0	\$0	\$0
PERS funding reversal	\$0	\$0	\$0	\$0	\$0	\$0
PERS GASB 68 expense	\$0	\$0	\$0	\$0	\$0	\$0
Advertising	\$0	\$0	\$0	\$0	\$0	\$0
Employee benefit overhead	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Water - Engineering	\$5,682,624	\$5,847,780	\$5,950,719	\$6,072,420	\$6,196,995	\$6,324,520
GWP Water Distribution						
Compensation insurance	\$199,870	\$207,865	\$216,179	\$224,826	\$233,819	\$243,172
Construction services	\$180,000	\$183,780	\$187,639	\$191,580	\$195,603	\$199,711
Contractual services	\$0	\$0	\$0	\$0	\$0	\$0
Data communication	\$0	\$0	\$0	\$0	\$0	\$0
Dental insurance	\$17,986	\$18,705	\$19,453	\$20,231	\$21,041	\$21,882
Disability insurance	\$8,195	\$8,523	\$8,864	\$9,218	\$9,587	\$9,970
Equipment usage	\$110,501	\$112,822	\$115,191	\$117,610	\$120,080	\$122,602
General supplies	\$149,805	\$152,951	\$156,163	\$159,442	\$162,791	\$166,209
Laundry & towel service	\$0	\$0	\$0	\$0	\$0	\$0
Liability Insurance	\$45,366	\$47,180	\$49,067	\$51,030	\$53,071	\$55,194
Life insurance	\$3,247	\$3,377	\$3,512	\$3,653	\$3,799	\$3,951
Medical insurance	\$259,305	\$269,677	\$280,464	\$291,683	\$303,350	\$315,484
Medicare	\$23,062	\$23,984	\$24,944	\$25,941	\$26,979	\$28,058
Miscellaneous	\$1,000	\$1,021	\$1,042	\$1,064	\$1,087	\$1,110
Miscellaneous revenue	\$0	\$0	\$0	\$0	\$0	\$0

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
Office supplies	\$123	\$126	\$129	\$131	\$134	\$137
Other benefits	\$31,171	\$32,418	\$33,714	\$35,063	\$36,466	\$37,924
Overtime	\$53,396	\$54,518	\$55,662	\$56,831	\$58,025	\$59,243
PERS cost sharing	(\$50,464)	(\$52,483)	(\$54,582)	(\$56,765)	(\$59,036)	(\$61,397)
PERS retirement	\$414,191	\$430,759	\$447,989	\$465,909	\$484,545	\$503,927
Post employment benefits	\$2,487	\$2,586	\$2,690	\$2,797	\$2,909	\$3,025
Postage	\$7	\$7	\$7	\$8	\$8	\$8
Regulatory	\$35,661	\$36,410	\$37,174	\$37,955	\$38,752	\$39,566
Repairs to equipment	\$3,555	\$3,629	\$3,706	\$3,783	\$3,863	\$3,944
Repairs-bldgs & grounds	\$2,385	\$2,435	\$2,486	\$2,538	\$2,591	\$2,646
Salaries	\$1,710,823	\$1,746,750	\$1,783,432	\$1,820,884	\$1,859,122	\$1,898,164
Salary charges in (out)	\$0	\$0	\$0	\$0	\$0	\$0
Sick leave	\$44,740	\$46,530	\$48,391	\$50,326	\$52,340	\$54,433
Small tools	\$15,189	\$15,508	\$15,833	\$16,166	\$16,505	\$16,852
Unemployment insurance	\$1,174	\$1,221	\$1,270	\$1,321	\$1,374	\$1,429
Utilities	\$93,608	\$94,076	\$94,546	\$95,491	\$96,446	\$97,411
Vacation & comp time	\$41,426	\$43,083	\$44,806	\$46,599	\$48,462	\$50,401
Vision insurance	\$5,299	\$5,511	\$5,731	\$5,961	\$6,199	\$6,447
Employee benefit overhead	\$0	\$0	\$0	\$0	\$0	\$0
PARS supplemental retirement	\$0	\$0	\$0	\$0	\$0	\$0
Social Security/PARS	\$0	\$0	\$0	\$0	\$0	\$0
PERS funding reversal	\$0	\$0	\$0	\$0	\$0	\$0
PERS GASB 68 expense	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Water Distribution	\$3,403,106	\$3,492,967	\$3,585,504	\$3,681,277	\$3,779,912	\$3,881,502

GWP Water Operation

Books	\$1,329	\$1,357	\$1,385	\$1,414	\$1,444	\$1,474
Business meetings	\$0	\$0	\$0	\$0	\$0	\$0
Compensation insurance	\$113,753	\$118,303	\$123,036	\$127,957	\$133,075	\$138,398
Computer hardware	\$126	\$129	\$132	\$134	\$137	\$140
Computer software	\$76,572	\$78,180	\$79,822	\$81,498	\$83,210	\$84,957
Construction services	\$0	\$0	\$0	\$0	\$0	\$0
Contractual services	\$705,000	\$719,805	\$734,921	\$750,354	\$766,112	\$782,200
Dental insurance	\$7,689	\$7,997	\$8,316	\$8,649	\$8,995	\$9,355
Disability insurance	\$3,430	\$3,568	\$3,710	\$3,859	\$4,013	\$4,174
Equipment usage	\$266,393	\$271,987	\$277,699	\$283,530	\$289,484	\$295,564
Furniture & equipment	\$0	\$0	\$0	\$0	\$0	\$0
General supplies	\$106,626	\$108,865	\$111,151	\$113,485	\$115,869	\$118,302
Hourly wages	\$24,939	\$25,463	\$25,997	\$26,543	\$27,101	\$27,670
Laundry & towel service	\$7,620	\$7,780	\$7,943	\$8,110	\$8,280	\$8,454
Liability Insurance	\$29,424	\$30,601	\$31,825	\$33,098	\$34,422	\$35,799
Life insurance	\$1,524	\$1,585	\$1,649	\$1,714	\$1,783	\$1,854
Medical insurance	\$88,263	\$91,794	\$95,465	\$99,284	\$103,255	\$107,386
Medicare	\$13,745	\$14,295	\$14,867	\$15,462	\$16,080	\$16,723
Membership & dues	\$53,921	\$55,053	\$56,209	\$57,390	\$58,595	\$59,825
Miscellaneous	\$623	\$636	\$649	\$663	\$677	\$691
Miscellaneous revenue	\$0	\$0	\$0	\$0	\$0	\$0
Office supplies	\$7,400	\$7,556	\$7,714	\$7,876	\$8,042	\$8,211
Other benefits	\$13,690	\$13,978	\$14,271	\$14,571	\$14,877	\$15,189
Overtime	\$201,852	\$206,091	\$210,419	\$214,838	\$219,350	\$223,956
PERS cost sharing	(\$28,157)	(\$29,283)	(\$30,454)	(\$31,673)	(\$32,939)	(\$34,257)
PERS retirement	\$222,570	\$231,473	\$240,732	\$250,361	\$260,375	\$270,790
Post employment benefits	\$1,327	\$1,380	\$1,435	\$1,493	\$1,552	\$1,614
Postage	\$1	\$1	\$1	\$1	\$1	\$1
Printing and graphics	\$0	\$0	\$0	\$0	\$0	\$0
Purchased water	\$16,377,036	\$17,615,220	\$18,431,935	\$19,287,129	\$20,182,651	\$21,120,441
Regulatory	\$131,765	\$134,532	\$137,357	\$140,242	\$143,187	\$146,194
Repairs to equipment	\$29,520	\$30,140	\$30,773	\$31,419	\$32,079	\$32,752
Repairs to office equip	\$0	\$0	\$0	\$0	\$0	\$0

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
Repairs-bldgs & grounds	\$73,025	\$74,558	\$76,124	\$77,722	\$79,355	\$81,021
Reports & publications	\$0	\$0	\$0	\$0	\$0	\$0
Salaries	\$913,726	\$932,914	\$952,505	\$972,508	\$992,931	\$1,013,782
Sick leave	\$23,895	\$24,850	\$25,844	\$26,878	\$27,953	\$29,071
Small tools	\$345	\$352	\$360	\$367	\$375	\$383
Training	\$23,915	\$24,417	\$24,930	\$25,454	\$25,988	\$26,534
Travel	\$2,219	\$2,266	\$2,313	\$2,362	\$2,411	\$2,462
Unemployment insurance	\$762	\$792	\$824	\$857	\$891	\$927
Utilities	\$13,511	\$13,579	\$13,647	\$13,783	\$13,921	\$14,060
Vacation & comp time	\$22,125	\$23,010	\$23,930	\$24,888	\$25,883	\$26,918
Vision insurance	\$2,795	\$2,907	\$3,023	\$3,144	\$3,270	\$3,401
Employee Benefits	\$0	\$0	\$0	\$0	\$0	\$0
PARS supplemental retirement	\$0	\$0	\$0	\$0	\$0	\$0
PERS funding reversal	\$0	\$0	\$0	\$0	\$0	\$0
PERS GASB 68 expense	\$0	\$0	\$0	\$0	\$0	\$0
Social Security/PARS	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Water Operation	\$19,534,300	\$20,848,130	\$21,742,461	\$22,677,366	\$23,654,685	\$24,676,418
GWP Water Quality						
Compensation insurance	\$72,655	\$75,561	\$78,584	\$81,727	\$84,996	\$88,396
Contractual services	\$340,000	\$347,140	\$354,430	\$361,873	\$369,472	\$377,231
Dental insurance	\$5,919	\$6,156	\$6,402	\$6,658	\$6,924	\$7,201
Disability insurance	\$2,720	\$2,829	\$2,942	\$3,060	\$3,182	\$3,309
Equipment usage	\$16,585	\$16,933	\$17,289	\$17,652	\$18,023	\$18,401
General supplies	\$129,244	\$131,958	\$134,729	\$137,558	\$140,447	\$143,396
Liability Insurance	\$15,619	\$16,244	\$16,894	\$17,569	\$18,272	\$19,003
Life insurance	\$895	\$930	\$968	\$1,006	\$1,047	\$1,089
Medical insurance	\$77,509	\$80,609	\$83,834	\$87,187	\$90,675	\$94,301
Medicare	\$7,938	\$8,256	\$8,586	\$8,929	\$9,286	\$9,658
Membership & dues	\$372	\$380	\$388	\$396	\$404	\$413
Office supplies	\$0	\$0	\$0	\$0	\$0	\$0
Other benefits	\$10,664	\$11,090	\$11,534	\$11,995	\$12,475	\$12,974
Overtime	\$17,349	\$17,713	\$18,085	\$18,465	\$18,853	\$19,249
PERS cost sharing	(\$17,412)	(\$18,108)	(\$18,832)	(\$19,586)	(\$20,369)	(\$21,184)
PERS retirement	\$145,051	\$150,853	\$156,887	\$163,163	\$169,689	\$176,477
Post employment benefits	\$856	\$891	\$926	\$963	\$1,002	\$1,042
Postage	\$355	\$363	\$370	\$378	\$386	\$394
Printing and graphics	\$0	\$0	\$0	\$0	\$0	\$0
Regulatory	\$35,091	\$35,827	\$36,580	\$37,348	\$38,132	\$38,933
Repairs to equipment	\$927	\$947	\$967	\$987	\$1,008	\$1,029
Repairs-bldgs & grounds	\$902	\$921	\$941	\$960	\$981	\$1,001
Salaries	\$590,109	\$602,502	\$615,154	\$628,072	\$641,262	\$654,728
Sick leave	\$15,432	\$16,050	\$16,692	\$17,359	\$18,054	\$18,776
Unemployment insurance	\$403	\$419	\$436	\$454	\$472	\$491
Vacation & comp time	\$14,289	\$14,860	\$15,455	\$16,073	\$16,716	\$17,385
Vision insurance	\$1,162	\$1,209	\$1,257	\$1,308	\$1,360	\$1,414
PARS supplemental retirement	\$13,990	\$14,550	\$15,132	\$15,737	\$16,366	\$17,021
PERS funding reversal	\$0	\$0	\$0	\$0	\$0	\$0
PERS GASB 68 expense	\$0	\$0	\$0	\$0	\$0	\$0
Employee Benefits	\$0	\$0	\$0	\$0	\$0	\$0
Social Security/PARS	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Water Quality	\$1,498,626	\$1,537,084	\$1,576,628	\$1,617,293	\$1,659,115	\$1,702,129
GWP Yard Administration						
Compensation insurance	\$2,556	\$2,658	\$2,765	\$2,875	\$2,990	\$3,110
Contractual services	\$0	\$0	\$0	\$0	\$0	\$0
Disability insurance	\$628	\$653	\$679	\$706	\$735	\$764
Liability Insurance	\$2,654	\$2,760	\$2,871	\$2,985	\$3,105	\$3,229
Life insurance	\$152	\$158	\$164	\$171	\$178	\$185

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
Medical insurance	\$11,550	\$12,012	\$12,492	\$12,992	\$13,512	\$14,052
Medicare	\$1,424	\$1,481	\$1,540	\$1,602	\$1,666	\$1,733
Other benefits	\$300	\$312	\$324	\$337	\$351	\$365
PERS cost sharing	(\$3,881)	(\$4,036)	(\$4,198)	(\$4,366)	(\$4,540)	(\$4,722)
PERS retirement	\$25,782	\$26,813	\$27,886	\$29,001	\$30,161	\$31,368
Post employment benefits	\$146	\$152	\$158	\$164	\$171	\$178
Salaries	\$97,926	\$99,982	\$102,082	\$104,226	\$106,415	\$108,649
Sick leave	\$2,643	\$2,749	\$2,859	\$2,973	\$3,092	\$3,216
Unemployment insurance	\$59	\$61	\$64	\$66	\$69	\$72
Vacation & comp time	\$2,448	\$2,546	\$2,648	\$2,754	\$2,864	\$2,978
Vision insurance	\$212	\$220	\$229	\$238	\$248	\$258
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Placeholder	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal GWP Yard Administration	\$144,599	\$148,522	\$152,564	\$156,727	\$161,015	\$165,434
TOTAL O&M EXPENSES	\$46,383,990	\$48,210,096	\$49,563,455	\$50,985,980	\$52,463,293	\$53,997,743
Recycled Water O&M (included in total O&M expenses)	\$920,495	\$939,825	\$959,562	\$979,713	\$1,000,286	\$1,021,293

(1) Based on the following two reports:
City of Glendale, Full Cost Allocation Plan, dated 03-08-18
City of Glendale, Public Safety Cost Reimbursement Study, dated 06-06-17