

# LA HABRA HEIGHTS COUNTY WATER DISTRICT

## Water Cost of Service and Rate Study

Final Report / January 2018

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



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

Phone 213.262.9300  
Fax 213.262.9303

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

January 31, 2018

Mr. Michael Gualtieri  
General Manager  
La Habra Heights County Water District  
La Habra Heights, CA

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

Dear Mr. Gualtieri:

Raftelis Financial Consultants, Inc. (Raftelis) is pleased to present this water cost of service study to the La Habra Heights County Water District (District). This study involved a comprehensive review of the District'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 District'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, rate derivation, and connection fee derivation.

It was a pleasure working with you, and we wish to express our thanks for the support you, Ms. Tammy Wagstaff, and other District staff provided during the study. If you have any questions, please do not hesitate to call me at (213) 262-9304.

Sincerely,

**RAFTELIS FINANCIAL CONSULTANTS, INC.**

A handwritten signature in brown ink, appearing to read 'Sanjay Gaur'.

**Sanjay Gaur**  
*Vice President*

A handwritten signature in black ink, appearing to read 'Nancy Phan'.

**Nancy Phan**  
*Consultant*

# TABLE OF CONTENTS

1	Executive Summary.....	1
1.1	Background .....	1
1.2	Financial Plan .....	1
1.3	Water Rates .....	4
1.4	Customer Impacts.....	5
1.5	Connection Fees.....	6
2	Financial Plan .....	7
2.1	Customer Accounts and Usage Data.....	7
2.2	Revenues.....	8
2.3	Water Supply Cost.....	10
2.4	O&M Expenses .....	12
2.5	Debt Service .....	12
2.6	Capital Improvement Plan .....	13
2.7	Proposed Financial Plan .....	13
3	Cost of Service Analysis.....	17
3.1	Legal Framework.....	17
3.2	Methodology.....	18
3.3	Revenue Requirement .....	19
3.4	Functionalization of Expenses.....	20
3.5	System-Wide Peaking Factors.....	21
3.6	Equivalent Meters.....	22
3.7	Allocation to Cost Components .....	23
3.8	Derivation of Unit Costs .....	29
4	Rate Derivation .....	31
4.1	Derivation of Meter Charges.....	31
4.2	Derivation of Commodity Charges.....	31
4.3	Proposed Water Rates .....	32
4.4	Customer Impacts .....	32
5	Connection Fees.....	34
5.1	Economic Framework .....	34
5.2	Legal Framework.....	34

5.3 Approach..... 35  
5.4 Connection Fee Calculation ..... 36  
Appendix ..... 38

# LIST OF TABLES

- Table 1-1: Proposed Water Rates ..... 5
- Table 1-2: Lower Zone Customer Impacts ..... 5
- Table 1-3: Upper Zone Customer Impacts ..... 6
- Table 1-4: Proposed Connection Fees ..... 6
- Table 2-1: Projected Customer Accounts ..... 7
- Table 2-2: Projected Water Usage ..... 7
- Table 2-3: Current Water Rates ..... 8
- Table 2-4: Calculated Rate Revenues..... 9
- Table 2-5: Projected Revenues ..... 10
- Table 2-6: Projected Water Production ..... 11
- Table 2-7: Calculated Water Supply Cost..... 11
- Table 2-8: Inflationary Assumptions ..... 12
- Table 2-9: Projected O&M Expenses ..... 12
- Table 2-10: Existing Debt Service ..... 13
- Table 2-11: Inflated Capital Projects..... 13
- Table 2-12: Proposed Revenue Adjustments..... 14
- Table 2-13: Proposed Financial Plan ..... 15
- Table 2-14: Projected Fund Balances ..... 16
- Table 3-1: Revenue Requirement ..... 20
- Table 3-2: System-Wide Peaking Factors..... 22
- Table 3-3: Equivalent Meters ..... 22
- Table 3-4: Operating Cost Allocations ..... 25
- Table 3-5: Capital Cost Allocations ..... 28
- Table 3-6: Allocation of Operating and Capital Costs ..... 28
- Table 3-7: Unit Cost Derivation..... 30
- Table 4-1: Proposed Meter Charges ..... 31
- Table 4-2: Proposed Commodity Charges ..... 32
- Table 4-3: Proposed Water Rates ..... 32
- Table 4-4: Lower Zone Customer Impacts ..... 33
- Table 4-5: Upper Zone Customer Impacts ..... 33
- Table 5-1: Net Asset Value Calculation ..... 37

Table 5-2: Proposed Connection Fees ..... 37  
Table 0-1: Complete Operating Budget ..... 38

# LIST OF FIGURES

Figure 1-1: Projected Operating 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 La Habra Heights County Water District (District) engaged Raftelis Financial Consultants, Inc. (Raftelis) to develop a comprehensive financial plan and rate study for the water utility. This report documents the assumptions, methodologies, analyses, and proposed rates for fiscal years (FY) 2019 through 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 District'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. Plan for rate and revenue stability to prevent rate spikes, preserve the overall financial health of the utility, and maintain adequate operating and capital reserves.

This executive summary provides an overview of the study and its results, including recommendations for updated water rates beginning July 2018<sup>1</sup>.

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 La Habra Heights County Water District was formed in 1976. The District provides water to a population of approximately 5,560 through 1,980 metered connections. The communities that the District serves include the majority of the City of La Habra Heights and certain parts of the City of Whittier and unincorporated Los Angeles County.

## 1.2 FINANCIAL PLAN

To determine the revenue requirements needed to fund the District'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.

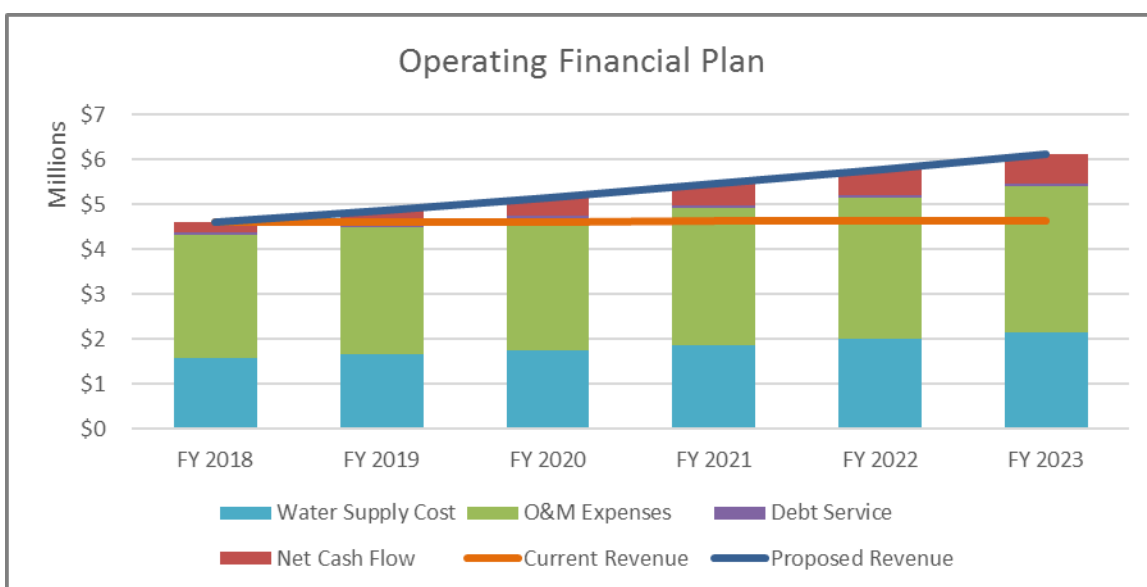
O&M expenses include salaries and benefits, purchased and pumped water, equipment and supplies, joint facilities costs, customer service, etc. Expected O&M expenses over the study period range from \$4.3 million to \$5.4 million each year. The District plans to spend approximately \$3.0 million in capital projects over the six-year period; the majority of costs are associated with the Ganter and Skyline/Oak Ranch 8" pipeline projects. The District does not plan to incur new debt, and all capital projects are funded through water rates and reserves.

---

<sup>1</sup> In this report, FY 2019 refers to the year starting in July 1, 2018 and ending June 30, 2019.

**Figure 1-1** shows the District’s financial plan over the six-year planning period. The orange line represents the current revenue, and the blue line represents the proposed revenue, which includes the revenue adjustments shown in **Figure 1-2**. The blue bars represent the water supply cost, which includes purchased water and groundwater pumping costs. The green bars represent the remaining O&M expenses and the purple bars represent the District’s existing debt service. The red bars represent the annual net cash flow; the red bars are above the x-axis for all years of the study, which indicates that the District is meeting its operating expenses. However, it is important to note that rate-funded capital costs are not included in this graph.

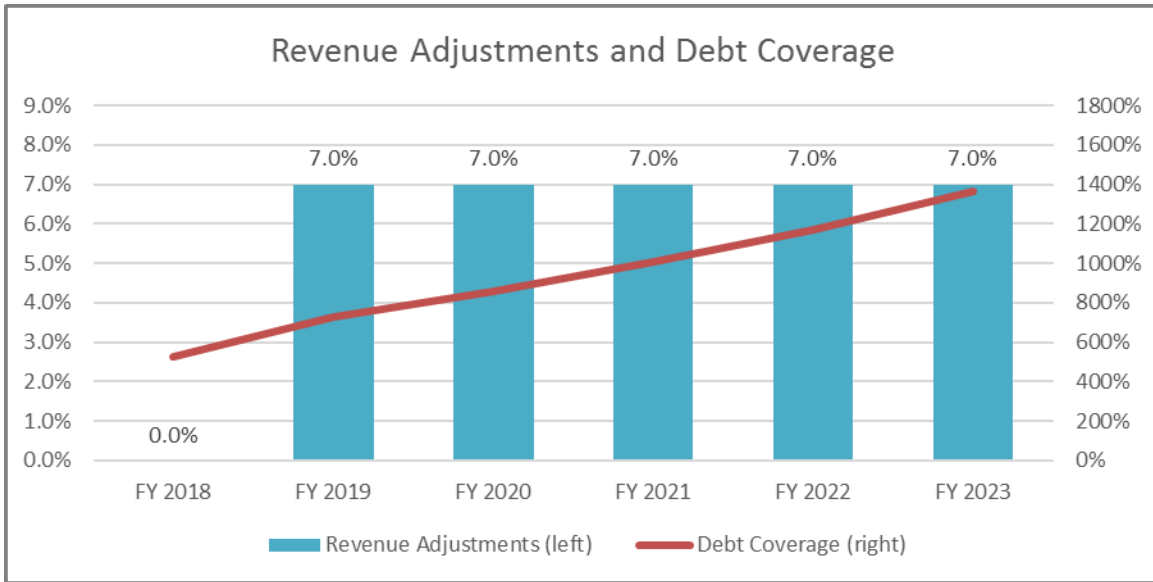
**Figure 1-1: Projected Operating Financial Plan**



**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. The District does not have a debt coverage ratio target, and the red line depicting the calculated debt coverage is for reference only. All revenue adjustments will be effective in July of the corresponding fiscal year. Although the graphs show anticipated revenue adjustments for the entire study period, the District will review and confirm the necessary revenue adjustments each year.

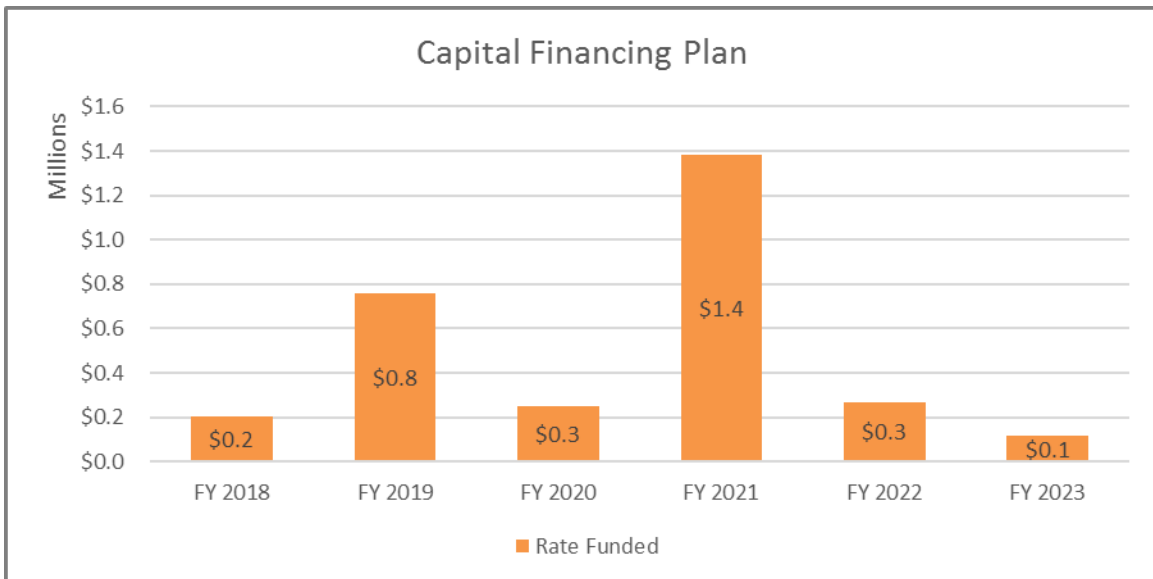
The main factors that determine the District’s revenue adjustments are O&M expenses and capital project costs. Overall, O&M expenses are expected to increase by approximately 3.9 percent to 4.8 percent each year. The District has approximately \$3.0 million in planned rate-funded capital costs from FY 2018 to FY 2023.

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



**Figure 1-3** shows the total amount of water capital projects and their funding sources. The District is expected to spend approximately \$3.0 million on capital projects over the planning period. Since the District does not plan to incur new debt, all capital project costs are funded through water rates or reserves, as shown by the orange bars.

**Figure 1-3: Proposed Capital Financing Plan**



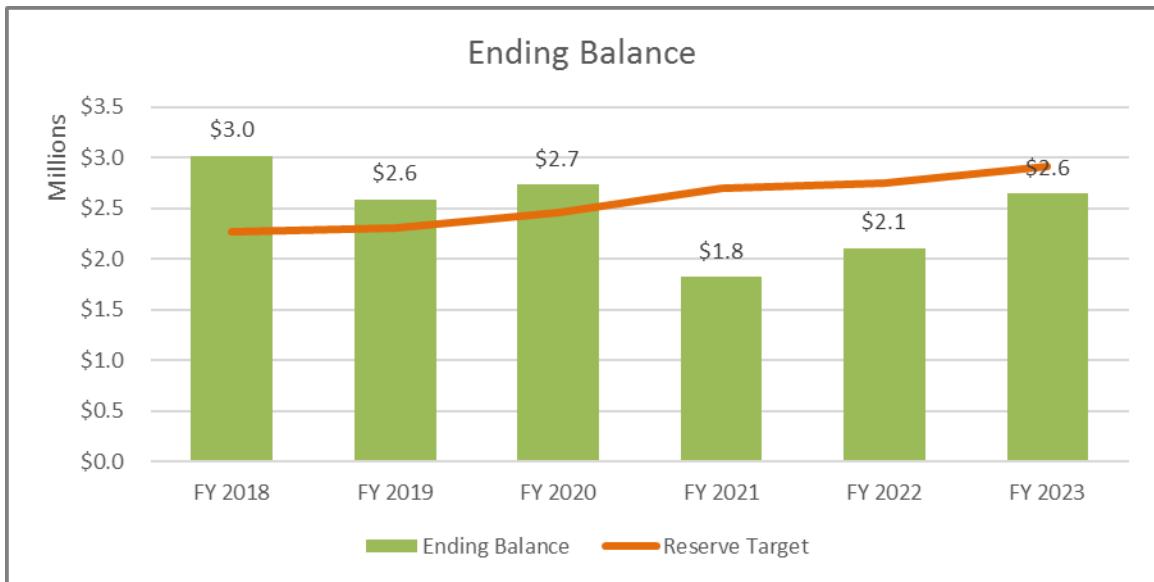
**Figure 1-4** shows the District’s fund ending balances. In FY 2021 and FY 2022, the ending balances fall below the reserve target due to high capital project costs in FY 2021. The proposed revenue adjustments allow the reserves to slowly increase from year to year thereafter.

The District’s current informal reserve policy includes 6 months of annual O&M expenses. Raftelis proposes a reserve policy that includes:

- » 4 months of annual O&M expenses (O&M Reserve)
- » 5-year average CIP (CIP Reserve)
- » \$250,000 which is equal to the cost to repair a well (Emergency Reserve)

The combination of the three reserve targets – O&M, CIP, and Emergency – help to mitigate cash flow risks, unexpected O&M expenses, or asset failure.

**Figure 1-4: Projected Ending Balances**



### 1.3 WATER RATES

The proposed water rates retain the same rate structure as the District’s current rates, which consists of a monthly readiness-to-serve charge by meter size, a commodity rate per hundred cubic feet (hcf) of water based on pumping zones, and a monthly service charge for hydrants or temporary connections.

**Table 1-1** shows the proposed water rates. The first year of rates are for implementation on July 1, 2018 and for all other years on July 1 thereafter.

**Table 1-1: Proposed Water Rates**

	July 2018	July 2019	July 2020	July 2021	July 2022
<b>Water Rates</b>					
<b>Monthly Readiness-to-Serve Charge</b>					
5/8" or 3/4"	\$36.34	\$38.89	\$41.62	\$44.54	\$47.66
1"	\$60.56	\$64.80	\$69.34	\$74.20	\$79.40
1 1/2"	\$121.10	\$129.58	\$138.66	\$148.37	\$158.76
2"	\$193.76	\$207.33	\$221.85	\$237.38	\$254.00
3"	\$423.83	\$453.50	\$485.25	\$519.22	\$555.57
4"	\$762.88	\$816.29	\$873.44	\$934.59	\$1,000.02
6"	\$1,695.28	\$1,813.95	\$1,940.93	\$2,076.80	\$2,222.18
<b>Commodity Rate (\$/hcf)</b>					
Upper Zone	\$2.11	\$2.26	\$2.42	\$2.59	\$2.78
Lower Zone	\$1.88	\$2.02	\$2.17	\$2.33	\$2.50
<b>Hydrant Rates</b>					
<b>Monthly Charge</b>					
3"	\$423.83	\$453.50	\$485.25	\$519.22	\$555.57

## 1.4 CUSTOMER IMPACTS

**Table 1-2** shows the impacts for customers with a 1” meter in the lower zone. **Table 1-3** shows the impacts for a similar customer in the upper zone.

**Table 1-2: Lower Zone Customer Impacts**

Usage Level	Current Monthly Service	Current Commodity Charge	Total Current Charge	Proposed Monthly Service	Proposed Commodity Charge	Total Proposed Charge	Difference (\$)	Difference (%)
5 hcf of water	\$56.79	\$8.70	\$65.49	\$60.56	\$9.40	\$69.96	\$4.47	6.8%
10 hcf of water	\$56.79	\$17.40	\$74.19	\$60.56	\$18.80	\$79.36	\$5.17	7.0%
15 hcf of water	\$56.79	\$26.10	\$82.89	\$60.56	\$28.20	\$88.76	\$5.87	7.1%
20 hcf of water	\$56.79	\$34.80	\$91.59	\$60.56	\$37.60	\$98.16	\$6.57	7.2%
25 hcf of water	\$56.79	\$43.50	\$100.29	\$60.56	\$47.00	\$107.56	\$7.27	7.2%
50 hcf of water	\$56.79	\$87.00	\$143.79	\$60.56	\$94.00	\$154.56	\$10.77	7.5%

**Table 1-3: Upper Zone Customer Impacts**

Usage Level	Current Monthly Service	Current Commodity Charge	Total Current Charge	Proposed Monthly Service	Proposed Commodity Charge	Total Proposed Charge	Difference (\$)	Difference (%)
5 hcf of water	\$56.79	\$9.80	\$66.59	\$60.56	\$10.55	\$71.11	\$4.52	6.8%
10 hcf of water	\$56.79	\$19.60	\$76.39	\$60.56	\$21.10	\$81.66	\$5.27	6.9%
15 hcf of water	\$56.79	\$29.40	\$86.19	\$60.56	\$31.65	\$92.21	\$6.02	7.0%
20 hcf of water	\$56.79	\$39.20	\$95.99	\$60.56	\$42.20	\$102.76	\$6.77	7.1%
25 hcf of water	\$56.79	\$49.00	\$105.79	\$60.56	\$52.75	\$113.31	\$7.52	7.1%
50 hcf of water	\$56.79	\$98.00	\$154.79	\$60.56	\$105.50	\$166.06	\$11.27	7.3%

## 1.5 CONNECTION FEES

The study also involved the calculation of water connection fees. Connection fees are one-time fees charged to new customers or development for connecting into the existing system. **Table 1-4** shows the proposed connection fees for each meter size.

**Table 1-4: Proposed Connection Fees**

Meter Size	Connection Fee	Current Fee	Difference
5/8" or 3/4"	\$8,157	\$7,897	3.3%
1"	\$13,593	\$13,162	3.3%
1 1/2"	\$27,183	\$26,323	3.3%
2"	\$43,495	\$42,117	3.3%
3"	\$95,142	\$92,131	3.3%
4"	\$171,252	\$165,837	3.3%
6"	\$380,560	\$368,526	3.3%

## 2 FINANCIAL PLAN

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

### 2.1 CUSTOMER ACCOUNTS AND USAGE DATA

The District provided customer accounts data for FY 2017 and water usage data for FY 2017 to FY 2018. The District does not expect any growth in accounts or usage over the study period. **Table 2-1** shows the actual and projected customer accounts and **Table 2-2** shows the actual and projected water usage data by pumping zone for the six-year period.

**Table 2-1: Projected Customer Accounts**

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>All Customers</b>							
5/8" or 3/4"	198	198	198	198	198	198	198
1"	1,517	1,517	1,517	1,517	1,517	1,517	1,517
1 1/2"	199	199	199	199	199	199	199
2"	63	63	63	63	63	63	63
3"	5	5	5	5	5	5	5
4"	3	3	3	3	3	3	3
6"	2	2	2	2	2	2	2
<b>Total - Meters</b>	<b>1,987</b>	<b>1,987</b>	<b>1,987</b>	<b>1,987</b>	<b>1,987</b>	<b>1,987</b>	<b>1,987</b>
<b>Hydrants</b>							
3"	2	2	2	2	2	2	2
<b>Total - Hydrants</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Total - Meters</b>	<b>1,989</b>	<b>1,989</b>	<b>1,989</b>	<b>1,989</b>	<b>1,989</b>	<b>1,989</b>	<b>1,989</b>

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

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>Water Usage (hcf)</b>							
Upper Zone	435,504	444,583	444,583	444,583	444,583	444,583	444,583
Lower Zone	642,196	686,671	686,671	686,671	686,671	686,671	686,671
<b>Total - Water Usage (hcf)</b>	<b>1,077,700</b>	<b>1,131,254</b>	<b>1,131,254</b>	<b>1,131,254</b>	<b>1,131,254</b>	<b>1,131,254</b>	<b>1,131,254</b>
<b>Water Usage (AF)</b>	2,474	2,597	2,597	2,597	2,597	2,597	2,597

## 2.2 REVENUES

**Table 2-3** shows the District’s current water rates. The current rate structure consists of a monthly readiness-to-serve charge by meter size, a commodity rate per hcf of water for each pumping zone, and a monthly service charge per account for hydrant or temporary customers. These rates are uniform for all customer classes.

**Table 2-3: Current Water Rates**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>Water Rates</b>						
<b>Monthly Readiness-to-Serve Charge</b>						
5/8" or 3/4"	\$34.08	\$34.08	\$34.08	\$34.08	\$34.08	\$34.08
1"	\$56.79	\$56.79	\$56.79	\$56.79	\$56.79	\$56.79
1 1/2"	\$113.57	\$113.57	\$113.57	\$113.57	\$113.57	\$113.57
2"	\$181.72	\$181.72	\$181.72	\$181.72	\$181.72	\$181.72
3"	\$397.50	\$397.50	\$397.50	\$397.50	\$397.50	\$397.50
4"	\$715.49	\$715.49	\$715.49	\$715.49	\$715.49	\$715.49
6"	\$1,589.98	\$1,589.98	\$1,589.98	\$1,589.98	\$1,589.98	\$1,589.98
<b>Commodity Rate (\$/hcf)</b>						
Upper Zone	\$1.96	\$1.96	\$1.96	\$1.96	\$1.96	\$1.96
Lower Zone	\$1.74	\$1.74	\$1.74	\$1.74	\$1.74	\$1.74
<b>Hydrant Rates</b>						
<b>Monthly Charge</b>						
Per Account	\$300.28	\$300.28	\$300.28	\$300.28	\$300.28	\$300.28

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 2-4** shows the calculated water rate revenues using the meter size data in **Table 2-1** and the usage data by zone in **Table 2-2**.

The monthly readiness-to-serve 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 5/8" or 3/4" meters in FY 2018 (Line 3), the equation is:

$$\$34.08 \text{ per account per month} \times 198 \text{ accounts} \times 12 \text{ months} \cong \$80,974$$

The commodity rate revenues are calculated by multiplying the amount of usage in each zone with the commodity rate per hcf of water. For upper zone customers in FY 2018 (Line 12), the equation is:

$$\$1.96 \text{ per hcf of water} \times 444,583 \text{ hcf} \cong \$871,383$$



The hydrant monthly charge revenues are calculated similarly to the readiness-to-serve charge revenues. The monthly charge per account is multiplied by the number of accounts for 12 months of the year. For 3” hydrants in FY 2018 (Line 17), the equation is:

$$\$300.28 \text{ per account per month} \times 2 \text{ accounts} \times 12 \text{ months} \cong \$7,207$$

The fixed charges (Line 20) are equal to the monthly readiness-to-serve charge revenues and the hydrant monthly charge revenues. The variable charges (Line 21) are equal to the commodity rate revenues.

**Table 2-4: Calculated Rate Revenues**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>1 Water Rates</b>						
<b>2 Monthly RTS Charge</b>						
3 5/8" or 3/4"	\$80,974	\$80,974	\$80,974	\$80,974	\$80,974	\$80,974
4 1"	\$1,033,805	\$1,033,805	\$1,033,805	\$1,033,805	\$1,033,805	\$1,033,805
5 1 1/2"	\$271,205	\$271,205	\$271,205	\$271,205	\$271,205	\$271,205
6 2"	\$137,380	\$137,380	\$137,380	\$137,380	\$137,380	\$137,380
7 3"	\$23,850	\$23,850	\$23,850	\$23,850	\$23,850	\$23,850
8 4"	\$25,758	\$25,758	\$25,758	\$25,758	\$25,758	\$25,758
9 6"	\$38,160	\$38,160	\$38,160	\$38,160	\$38,160	\$38,160
<b>10 Total - Monthly RTS Charge</b>	<b>\$1,611,132</b>	<b>\$1,611,132</b>	<b>\$1,611,132</b>	<b>\$1,611,132</b>	<b>\$1,611,132</b>	<b>\$1,611,132</b>
<b>11 Commodity Rate (\$/hcf)</b>						
12 Upper Zone	\$871,383	\$871,383	\$871,383	\$871,383	\$871,383	\$871,383
13 Lower Zone	\$1,194,808	\$1,194,808	\$1,194,808	\$1,194,808	\$1,194,808	\$1,194,808
<b>14 Total - Commodity Rate (\$/hcf)</b>	<b>\$2,066,190</b>	<b>\$2,066,190</b>	<b>\$2,066,190</b>	<b>\$2,066,190</b>	<b>\$2,066,190</b>	<b>\$2,066,190</b>
<b>15 Hydrant Rates</b>						
<b>16 Monthly Charge</b>						
17 Per Account	\$7,207	\$7,207	\$7,207	\$7,207	\$7,207	\$7,207
<b>18 Total - Monthly Charge</b>	<b>\$7,207</b>	<b>\$7,207</b>	<b>\$7,207</b>	<b>\$7,207</b>	<b>\$7,207</b>	<b>\$7,207</b>
<b>19 Total - Calculated Revenues</b>	<b>\$3,684,529</b>	<b>\$3,684,529</b>	<b>\$3,684,529</b>	<b>\$3,684,529</b>	<b>\$3,684,529</b>	<b>\$3,684,529</b>
20 Fixed Charges	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339
21 Variable Charges	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190

**Table 2-5** shows the District’s projected revenues for the study period. Water Sales-Consumption (Line 2) is equal to the variable charges (**Table 2-4**, Line 21); Water Sales-Readiness to Serve (Line 3) is equal to the fixed charges (**Table 2-4**, Line 20).

**Table 2-5: Projected Revenues**

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
<b>1 Operating Revenue</b>						
2 Water Sales-Consumption	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190
3 Water Sales-Readiness to Serve	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339
4 Wheeling Water Income	\$0	\$0	\$0	\$0	\$0	\$0
5 Administrative & Turn on fee	\$27,159	\$27,431	\$27,705	\$27,982	\$28,262	\$28,544
6 Water Rights Lease	\$18,235	\$18,417	\$18,602	\$18,788	\$18,975	\$19,165
<b>7 Total - Operating Revenue</b>	<b>\$3,729,923</b>	<b>\$3,730,377</b>	<b>\$3,730,835</b>	<b>\$3,731,298</b>	<b>\$3,731,766</b>	<b>\$3,732,238</b>
<b>8 Non-Operating Revenue</b>						
9 Interest Income	\$21,823	\$27,880	\$26,449	\$22,637	\$19,540	\$23,656
10 Property Tax Income	\$716,018	\$723,178	\$730,410	\$737,714	\$745,091	\$752,542
11 Rent Income	\$111,534	\$112,649	\$113,776	\$114,914	\$116,063	\$117,223
12 Oil Royalties	\$7,282	\$7,355	\$7,428	\$7,503	\$7,578	\$7,653
13 Miscellaneous Income	\$5,190	\$5,242	\$5,294	\$5,347	\$5,401	\$5,455
14 Gain on asset sold	\$0	\$0	\$0	\$0	\$0	\$0
<b>15 Total - Non-Operating Revenue</b>	<b>\$861,847</b>	<b>\$876,305</b>	<b>\$883,358</b>	<b>\$888,115</b>	<b>\$893,672</b>	<b>\$906,530</b>
<b>16 Total - Revenues</b>	<b>\$4,591,770</b>	<b>\$4,606,681</b>	<b>\$4,614,193</b>	<b>\$4,619,413</b>	<b>\$4,625,438</b>	<b>\$4,638,768</b>

### 2.3 WATER SUPPLY COST

The District’s primary source of water is groundwater from the Water Replenishment District of Southern California. The District imports additional water from the Central Basin Municipal Water District as a secondary source.

**Table 2-6** shows the water production amounts for each source of water. The water demand (Line 2) is equal to the amount shown in **Table 2-2**. The water produced (Line 3) is equal to the total water demand taking water loss (Line 1) into consideration. The District plans to purchase 137 acre feet (AF) per year of imported water (Line 11). The remaining water is produced from groundwater (Line 10).

**Table 2-6: Projected Water Production**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>1 Water Loss</b>	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
<b>2 Water Demand (AF)</b>	2,597	2,597	2,597	2,597	2,597	2,597
<b>3 Water Produced (AF)</b>	2,763	2,763	2,763	2,763	2,763	2,763
<b>4 Water Supply Maximum (AF)</b>						
5 Groundwater - Water Replenishment District	3,333	3,333	2,646	2,646	2,646	2,646
6 Imported Water - Central Basin MWD	0	0	0	0	0	0
7 Groundwater Carryover	0	707	707	20	20	20
<b>8 Total - Water Supply Maximum (AF)</b>	<b>3,333</b>	<b>4,040</b>	<b>3,353</b>	<b>2,666</b>	<b>2,666</b>	<b>2,666</b>
<b>9 Water Production (AF)</b>						
10 Groundwater - Water Replenishment District	2,626	2,626	2,626	2,626	2,626	2,626
11 Imported Water - Central Basin MWD	137	137	137	137	137	137
12 Additional Imported Water to Meet Needs	0	0	0	0	0	0
<b>13 Total - Water Production (AF)</b>	<b>2,763</b>	<b>2,763</b>	<b>2,763</b>	<b>2,763</b>	<b>2,763</b>	<b>2,763</b>

**Table 2-7** shows the calculated water supply cost from each source of water. The total cost per source is calculated by multiplying the average FY rate for each source by the amount of water produced.

The costs of groundwater from the Water Replenishment District in FY 2018 follows the equation:

$$2,625.77 \text{ AF of groundwater} \times \$318.00 \text{ per AF} \cong \$834,994$$

The costs of imported water from the Central Basin Municipal Water District in FY 2018 follows the equation:

$$(137 \text{ AF of imported water} \times \$1,110.00 \text{ per AF}) + (\$3,488.50 \text{ per month} \times 12 \text{ months}) \cong \$193,932$$

**Table 2-7: Calculated Water Supply Cost**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>1 Groundwater</b>						
2 Groundwater Replenishment Assessment (\$/AF)	\$318	\$343	\$371	\$401	\$433	\$467
<b>3 Imported Water</b>						
<b>4 Treated Tier 1 (\$/AF)</b>						
5 Average FY Rate	\$1,110	\$1,166	\$1,224	\$1,285	\$1,349	\$1,417
<b>6 Monthly Fixed Cost</b>						
7 Average FY Rate	\$3,489	\$3,663	\$3,846	\$4,038	\$4,240	\$4,452
<b>8 Water Cost</b>						
9 Groundwater - Water Replenishment District	\$834,994	\$901,794	\$973,937	\$1,051,852	\$1,136,000	\$1,226,880
10 Imported Water - Central Basin MWD	\$193,932	\$203,629	\$213,810	\$224,501	\$235,726	\$247,512
<b>11 Total - Water Cost</b>	<b>\$1,028,926</b>	<b>\$1,105,422</b>	<b>\$1,187,747</b>	<b>\$1,276,353</b>	<b>\$1,371,726</b>	<b>\$1,474,392</b>

## 2.4 O&M EXPENSES

**Table 2-8** shows the inflationary assumptions used to project future O&M expenses. District staff provided input to reasonably estimate the yearly inflationary assumptions.

**Table 2-8: Inflationary Assumptions**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>Expense Inflation Factor</b>						
General	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Salary	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Benefits	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Utilities	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Groundwater Pumping	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Capital	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Non-Inflated	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

**Table 2-9** shows the budgeted and projected O&M expenses for the study period. The District provided the FY 2018 budget, which was inflated using the assumptions shown in **Table 2-8**. The purchased water costs (Line 2) are equal to the cost of imported water (**Table 2-7**, Line 10) for years FY 2019 and beyond. The groundwater replenishment costs are equal to the cost of groundwater (**Table 2-7**, Line 9) for FY 2019 and beyond. For FY 2018, the purchased water and groundwater replenishment costs (Lines 2-3) are from the District’s budget, rather than the calculation shown in **Table 2-7**. The full O&M 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
<b>1 Operating Expense - Source of Supply</b>						
2 Purchased Water	\$196,312	\$203,629	\$213,810	\$224,501	\$235,726	\$247,512
3 Ground Water Replenishment	\$865,846	\$901,794	\$973,937	\$1,051,852	\$1,136,000	\$1,226,880
4 Upper Zone Power	\$69,580	\$73,059	\$76,712	\$80,548	\$84,575	\$88,804
5 Lower Zone Power	\$445,214	\$467,475	\$490,848	\$515,391	\$541,160	\$568,218
6 Less: Rowland Water District portion	\$0	\$0	\$0	\$0	\$0	\$0
<b>7 Total - Operating Expense - Source of Supply</b>	<b>\$1,576,952</b>	<b>\$1,645,956</b>	<b>\$1,755,308</b>	<b>\$1,872,291</b>	<b>\$1,997,461</b>	<b>\$2,131,414</b>
<b>8 Other Operating Expense</b>	\$780,553	\$803,970	\$828,089	\$852,931	\$878,519	\$904,875
<b>9 Administrative &amp; General Expense</b>	\$1,943,914	\$2,019,958	\$2,099,119	\$2,181,529	\$2,267,328	\$2,356,661
<b>10 Non-Operating Expense</b>	\$16,822	\$17,327	\$17,846	\$18,382	\$18,933	\$19,501
<b>11 Total - Expenses</b>	<b>\$4,318,241</b>	<b>\$4,487,210</b>	<b>\$4,700,361</b>	<b>\$4,925,133</b>	<b>\$5,162,242</b>	<b>\$5,412,451</b>

## 2.5 DEBT SERVICE

The District currently has one existing debt, shown in **Table 2-10**, and does not plan to incur any new debt during the study period.

**Table 2-10: Existing Debt Service**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>Existing Debt Service</b>						
Davis/Grunsky						
Principal	\$41,679	\$42,721	\$43,789	\$44,884	\$46,006	\$47,156
Interest	\$10,405	\$9,363	\$8,295	\$7,201	\$6,079	\$4,928
<b>Total - Existing Debt Service</b>	<b>\$52,084</b>	<b>\$52,084</b>	<b>\$52,084</b>	<b>\$52,084</b>	<b>\$52,084</b>	<b>\$52,084</b>

## 2.6 CAPITAL IMPROVEMENT PLAN

**Table 2-11** shows the District’s six-year water CIP. District staff provided capital project costs in current dollars from FY 2018 to FY 2023. Starting in FY 2019, capital project costs are inflated for future dollars using the Capital inflation factor shown in **Table 2-8**.

**Table 2-11: Inflated Capital Projects**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>Capital Projects</b>						
Ganter-700' 8" pipe	\$0	\$0	\$0	\$804,278	\$0	\$0
SCADA system upgrade	\$154,000	\$0	\$0	\$0	\$0	\$0
Skyline/Oak Ranch 900' 8"	\$0	\$0	\$0	\$576,690	\$0	\$0
Valve and Vac Equipment	\$0	\$0	\$0	\$0	\$140,383	\$0
Water Rate Study	\$50,000	\$0	\$0	\$0	\$0	\$0
Well Siting Study	\$0	\$0	\$0	\$0	\$0	\$116,945
Avocado Crest 1330' 8" pipe	\$0	\$0	\$252,316	\$0	\$0	\$0
Leucadia 820' 8" pipe	\$0	\$150,509	\$0	\$0	\$0	\$0
Reservoir 10A	\$0	\$332,800	\$0	\$0	\$0	\$0
Skyline 1500' 8" pipe	\$0	\$272,938	\$0	\$0	\$0	\$0
Plant 5 700gpm pump	\$0	\$0	\$0	\$0	\$128,872	\$0
<b>Total - Capital Projects</b>	<b>\$204,000</b>	<b>\$756,246</b>	<b>\$252,316</b>	<b>\$1,380,967</b>	<b>\$269,255</b>	<b>\$116,945</b>

As the District does not plan to incur new debt, all capital projects shown in **Table 2-11** are funded through rates and reserves.

## 2.7 PROPOSED FINANCIAL PLAN

The following revenue adjustments ensure adequate revenue to fund operating expenses, 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 for FY 2019 to FY 2023.

**Table 2-12: Proposed Revenue Adjustments**

Year	Revenue Adjustment
FY 2019	7.0%
FY 2020	7.0%
FY 2021	7.0%
FY 2022	7.0%
FY 2023	7.0%

**Table 2-13** shows the operating cash flow detail for the study period, including the proposed revenue adjustments. The table shows the net cash flow and net operating revenue (Lines 30-31), the latter of which excludes costs associated with rate funded capital projects. With the proposed revenue adjustments, the District will cover all operating expenses for all years of the study and all costs, including capital costs, in all years but FY 2019 and FY 2021.

**Table 2-13: Proposed Financial Plan**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>1 Rate Revenues</b>						
2 Water Sales-Consumption	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190	\$2,066,190
3 Water Sales-Readiness to Serve	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339	\$1,618,339
<b>4 Revenue Adjustments</b>						
5 FY 2018	\$0	\$0	\$0	\$0	\$0	\$0
6 FY 2019		\$257,917	\$257,917	\$257,917	\$257,917	\$257,917
7 FY 2020			\$275,971	\$275,971	\$275,971	\$275,971
8 FY 2021				\$295,289	\$295,289	\$295,289
9 FY 2022					\$315,959	\$315,959
10 FY 2023						\$338,077
<b>11 Total - Revenue Adjustments</b>	<b>\$0</b>	<b>\$257,917</b>	<b>\$533,888</b>	<b>\$829,177</b>	<b>\$1,145,137</b>	<b>\$1,483,213</b>
<b>12 Revenues</b>						
13 Rate Revenues	\$3,684,529	\$3,684,529	\$3,684,529	\$3,684,529	\$3,684,529	\$3,684,529
14 Revenue Adjustments	\$0	\$257,917	\$533,888	\$829,177	\$1,145,137	\$1,483,213
15 Other Operating Revenue	\$45,394	\$45,848	\$46,306	\$46,769	\$47,237	\$47,710
16 Non-Operating Revenue	\$840,024	\$848,424	\$856,908	\$865,478	\$874,132	\$882,874
17 Interest Income	\$21,823	\$27,880	\$26,449	\$22,637	\$19,540	\$23,656
<b>18 Total - Revenues</b>	<b>\$4,591,770</b>	<b>\$4,864,598</b>	<b>\$5,148,081</b>	<b>\$5,448,590</b>	<b>\$5,770,575</b>	<b>\$6,121,982</b>
<b>19 Expenses</b>						
20 Operating Expense - Source of Supply	\$1,576,952	\$1,645,956	\$1,755,308	\$1,872,291	\$1,997,461	\$2,131,414
21 Other Operating Expense	\$780,553	\$803,970	\$828,089	\$852,931	\$878,519	\$904,875
22 Administrative & General Expense	\$1,943,914	\$2,019,958	\$2,099,119	\$2,181,529	\$2,267,328	\$2,356,661
23 Non-Operating Expense	\$16,822	\$17,327	\$17,846	\$18,382	\$18,933	\$19,501
<b>24 Total - Expenses</b>	<b>\$4,318,241</b>	<b>\$4,487,210</b>	<b>\$4,700,361</b>	<b>\$4,925,133</b>	<b>\$5,162,242</b>	<b>\$5,412,451</b>
<b>25 Debt and Capital</b>						
26 Existing Debt Service	\$52,084	\$52,084	\$52,084	\$52,084	\$52,084	\$52,084
27 Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
28 Rate Funded Capital	\$204,000	\$756,246	\$252,316	\$1,380,967	\$269,255	\$116,945
<b>29 Total - Debt and Capital</b>	<b>\$256,084</b>	<b>\$808,331</b>	<b>\$304,400</b>	<b>\$1,433,052</b>	<b>\$321,339</b>	<b>\$169,029</b>
<b>30 Net Cash Flow</b>	<b>\$17,444</b>	<b>(\$430,943)</b>	<b>\$143,320</b>	<b>(\$909,595)</b>	<b>\$286,994</b>	<b>\$540,501</b>
31 Net Operating Revenue	\$273,529	\$377,388	\$447,720	\$523,457	\$608,333	\$709,530

**Table 2-14** shows the District’s projected fund balances over the study period. The reserve target is equal to 4 months of annual O&M expenses for the O&M reserve (Line 21), the five-year average CIP for the CIP reserve (Line 22), and \$250,000 for the cost to repair a well for the Emergency reserve (Line 23). These reserve requirements help mitigate cash flow risks, unexpected O&M expenses, or asset failure.

**Table 2-14: Projected Fund Balances**

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
<b>1 Water Fund</b>						
<b>2 Beginning Balance</b>	<b>\$3,000,000</b>	<b>\$3,017,444</b>	<b>\$2,586,502</b>	<b>\$2,729,822</b>	<b>\$1,820,227</b>	<b>\$2,107,221</b>
<b>3 Sources of Funds</b>						
4 Rate Revenues	\$3,684,529	\$3,684,529	\$3,684,529	\$3,684,529	\$3,684,529	\$3,684,529
5 Revenue Adjustments	\$0	\$257,917	\$533,888	\$829,177	\$1,145,137	\$1,483,213
6 Other Operating Revenue	\$45,394	\$45,848	\$46,306	\$46,769	\$47,237	\$47,710
7 Non-Operating Revenue	\$840,024	\$848,424	\$856,908	\$865,478	\$874,132	\$882,874
8 Debt Proceeds	\$0	\$0	\$0	\$0	\$0	\$0
9 Interest Income	\$21,823	\$27,880	\$26,449	\$22,637	\$19,540	\$23,656
<b>10 Total - Sources of Funds</b>	<b>\$4,591,770</b>	<b>\$4,864,598</b>	<b>\$5,148,081</b>	<b>\$5,448,590</b>	<b>\$5,770,575</b>	<b>\$6,121,982</b>
<b>11 Uses of Funds</b>						
12 Operating Expense - Source of Supply	\$1,576,952	\$1,645,956	\$1,755,308	\$1,872,291	\$1,997,461	\$2,131,414
13 Other Operating Expense	\$780,553	\$803,970	\$828,089	\$852,931	\$878,519	\$904,875
14 Administrative & General Expense	\$1,943,914	\$2,019,958	\$2,099,119	\$2,181,529	\$2,267,328	\$2,356,661
15 Non-Operating Expense	\$16,822	\$17,327	\$17,846	\$18,382	\$18,933	\$19,501
16 Existing Debt Service	\$52,084	\$52,084	\$52,084	\$52,084	\$52,084	\$52,084
17 Proposed Debt Service	\$0	\$0	\$0	\$0	\$0	\$0
18 Capital Projects	\$204,000	\$756,246	\$252,316	\$1,380,967	\$269,255	\$116,945
<b>19 Total - Uses of Funds</b>	<b>\$4,574,325</b>	<b>\$5,295,541</b>	<b>\$5,004,761</b>	<b>\$6,358,185</b>	<b>\$5,483,581</b>	<b>\$5,581,480</b>
<b>20 Ending Balance</b>	<b>\$3,017,444</b>	<b>\$2,586,502</b>	<b>\$2,729,822</b>	<b>\$1,820,227</b>	<b>\$2,107,221</b>	<b>\$2,647,722</b>
21 O&M Reserve	\$1,439,414	\$1,495,737	\$1,566,787	\$1,641,711	\$1,720,747	\$1,804,150
22 CIP Reserve	\$572,557	\$555,146	\$643,042	\$798,959	\$781,425	\$854,533
23 Emergency Reserve	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000	\$250,000
<b>24 Total Reserve Target</b>	<b>\$2,261,970</b>	<b>\$2,300,883</b>	<b>\$2,459,829</b>	<b>\$2,690,670</b>	<b>\$2,752,172</b>	<b>\$2,908,684</b>



# 3 COST OF SERVICE ANALYSIS

---

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

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

This section of the report describes the legal framework that was considered to ensure that the calculated cost of service rates provide a fair and equitable allocation of costs to customer classes.

### **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. No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.
6. 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.

---

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

## **California Constitution - Article X, Section 2**

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

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

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

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

## **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 utility rates that comply with Proposition 218 and industry standards while meeting other emerging goals and objectives of the utility, there are four major steps discussed below.

### **1) Calculate Revenue Requirement**

The rate-making process starts by determining the test year revenue requirement - which for this study is FY 2019. The revenue requirement should sufficiently fund the District’s O&M, debt service, and capital expenses, and reserve funding.

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

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

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

---

<sup>3</sup> 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 Study Report to help educate the public about the proposed changes, the rationale and justifications behind the changes and their anticipated financial impacts in lay terms.

## 3.3 REVENUE REQUIREMENT

**Table 3-1** shows the revenue requirement derivation with 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 be later allocated to the cost components.

The revenue requirement is calculated using FY 2019 expenses, which includes water supply costs, other O&M expenses, debt service, and rate funded capital costs. The revenue requirement is calculated by subtracting revenue offsets (or miscellaneous, non-rate revenues) and adjustments from the expenses. The Adjustment to Annualize Rate Increase (Line 16) is equal to zero because the revenue adjustments are effective for a full fiscal year. The Adjustment for Cash Balance (Line 17) is equal to the negative Net Cash Flow in **Table 2-13** for FY 2019.

**Table 3-1: Revenue Requirement**

	Operating	Capital	Total
<b>1 Revenue Requirements</b>			
2 Operating Expense - Source of Supply	\$1,645,956		\$1,645,956
3 Other Operating Expense	\$803,970		\$803,970
4 Administrative & General Expense	\$2,019,958		\$2,019,958
5 Non-Operating Expense	\$17,327		\$17,327
6 Existing Debt Service		\$52,084	\$52,084
7 Proposed Debt Service		\$0	\$0
8 Rate Funded Capital		\$756,246	\$756,246
<b>9 Total - Revenue Requirements</b>	<b>\$4,487,210</b>	<b>\$808,331</b>	<b>\$5,295,541</b>
<b>10 Revenue Offsets</b>			
11 Other Operating Revenue	\$45,848		\$45,848
12 Non-Operating Revenue	\$848,424		\$848,424
13 Interest Income		\$27,880	\$27,880
<b>14 Total - Revenue Offsets</b>	<b>\$894,272</b>	<b>\$27,880</b>	<b>\$922,153</b>
<b>15 Adjustments</b>			
16 Adjustments to Annualize Rate Increase	\$0		\$0
17 Adjustments for Cash Balance	\$430,943		\$430,943
<b>18 Total - Adjustments</b>	<b>\$430,943</b>	<b>\$0</b>	<b>\$430,943</b>
<b>19 Total Revenue to be Recovered from Rates</b>	<b>\$3,161,995</b>	<b>\$780,450</b>	<b>\$3,942,446</b>

### 3.4 FUNCTIONALIZATION OF EXPENSES

After determining the District’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 costs of T&D system
- » Treatment – represents the costs of treating the water supply
- » Pumping – represents the costs of pumping water to customers
- » Storage – represents the costs of storing water
- » Meter – represents the cost of purchasing and maintaining water meters
- » Billing – represents the costs of billing and customer service
- » Administrative – represents the costs of administrative support, or all other costs

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 fire protection capacity
- » Treatment – costs associated with treating the water supply
- » Pumping – costs associated with pumping water to customers
- » 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 maximum usage day.

Different facilities, such as distribution and storage facilities, and the O&M costs associated with those facilities are designed to meet the peaking demands of customers. Therefore, extra capacity costs include the O&M and capital costs associated with meeting peak customer demand.

### 3.5 SYSTEM-WIDE PEAKING FACTORS

**Table 3-2** shows the system-wide peaking factors used to derive the cost component allocation bases for Base Delivery, Peaking, and Fire costs. The Base use is considered average daily demand during the year, which is equal to a factor of 1.00. The maximum day peaking factor represents that the maximum day demand is 2.37 times more than average demand. Similarly, the maximum hour peaking factor shows that the maximum hour demand is 3.55 times more than average demand.

The Maximum Day allocations are calculated using the following equations:

- » Base Delivery:  $42\% = (1.00/2.37) \times 100\%$
- » Maximum Day:  $58\% = (2.37-1.00)/2.37 \times 100\%$

The Maximum Hour allocations are calculated using the following equations:

- » Base Delivery:  $28\% = (1.00/3.55) \times 100\%$
- » Maximum Day:  $39\% = (2.37-1.00)/3.55 \times 100\%$
- » Maximum Hour:  $33\% = (3.55-2.37)/3.55 \times 100\%$

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

- » Base Delivery:  $37\% = 42\% - 5\%$  (half of Fire allocation)
- » Maximum Day:  $53\% = 58\% - 5\%$  (half of Fire allocation)
- » Fire: 10%

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

- » Base Delivery:  $25\% = 28\% - 3.33\%$  (third of Fire allocation)
- » Maximum Day:  $35\% = 29\% - 3.33\%$  (third of Fire allocation)

- » Maximum Hour: 30% = 33% - 3.33% (third of Fire allocation)
- » Fire: 10%

**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	2.37	42%	58%	0%	0%	100%
Max Hour	3.55	28%	39%	33%	0%	100%
Max Day with Fire		37%	53%	0%	10%	100%
Max Hour with Fire		25%	35%	30%	10%	100%
Average Max Day/Hour with Fire		31%	44%	15%	10%	100%

### 3.6 EQUIVALENT METERS

To allocate meter related costs appropriately, we employ 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 or smallest 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 or meters, which in this study is the 5/8" and 3/4" meter sizes.

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 the capacity in gallons per minute (gpm) provided in the M1 Manual for each meter size. **Table 3-3** shows the equivalent meters for the test year, FY 2019.

**Table 3-3: Equivalent Meters**

Meter Size	Capacity (gpm)	Meter Ratio	Number of Meters	Equivalent Meters
5/8" or 3/4"	30	1.00	198	198
1"	50	1.67	1,517	2,528
1 1/2"	100	3.33	199	663
2"	160	5.33	63	336
3"	350	11.66	5	58
4"	630	20.99	3	63
6"	1,400	46.65	2	93
<b>Total</b>			<b>1,987</b>	<b>3,940</b>

### 3.7 ALLOCATION TO COST COMPONENTS

**Table 3-4** allocates the O&M expenses to each cost causation component. The functionalized costs, which are represented by each expense line item of the District’s budget, are allocated according to industry standards based on the nature of the water function.

For example, transmission facilities are designed to handle maximum day demand with fire, and distribution facilities are designed to handle maximum hour demand with fire. The District functionalizes T&D together, and therefore the allocation for all T&D related costs is the average between maximum day with fire and maximum hour with fire.

All other functionalized costs are allocated directly to the corresponding cost component. Supply-related functional costs are allocated to the Supply cost component, Treatment-related functional costs are allocated to the Treatment cost component, and so on.

After the functionalized costs are allocated to each cost 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 component is divided by the total O&M expense budget. For example, all Supply costs equal \$1,231,697 and all O&M expenses total \$4,487,210 for the test year in FY 2019. The resulting allocation for Supply costs follows the equation:

$$\text{\$1,231,697 in Supply Costs} / \text{\$4,487,210 in total O\&M costs} \cong 27.45\%$$

The remaining cost component allocations are calculated in the same manner. The resulting allocations to each cost component for Operating costs is shown in the last line of **Table 3-4**.

Similarly, the Capital costs are allocated to each cost component using the same methodology. **Table 3-5** shows the resulting allocations for the Capital costs.

**Table 3-6** shows the allocation of the Operating and Capital costs to each cost component based on the Operating and Capital percentage allocations derived in **Table 3-4** and **Table 3-5**. The Operating and Capital costs are equal to that shown in **Table 3-1** (Line 19). The Operating costs are allocated based on the Operating cost allocations, and the Capital costs are allocated based on the Capital cost allocations.

For example, the Supply cost allocation for Operating costs follows the equation:

$$\text{\$3,161,995 in total Operating costs} \times 27.45\% \text{ allocated to Supply} \cong \text{\$867,938}$$

All other costs are allocated using the same methodology. After the initial allocations are calculated, the General costs are reallocated based on the Total Cost of Service, excluding Supply costs. Supply costs are

not included in the reallocation because Supply costs are only associated with very specific costs, such as water supply or water purchase costs.

The total used to reallocate General costs uses the Total costs and omits the General costs and Supply costs. The equation used to calculate the Adjusted Total cost is as follows:

$$\text{\$3,942,446 in Total costs} - \text{\$1,058,184 in General costs} - \text{\$947,296 in Supply costs} = \text{\$1,936,966}$$

As an example, the reallocation of General costs to Base Delivery costs uses the following equation:

$$\text{\$1,058,184 in General costs} \times (\text{\$407,156 in Base Delivery costs} / \text{\$1,936,996}) \cong \text{\$222,434}$$

The remaining General costs are allocated using the same methodology. The Total Allocated Cost of Service is the number that is used to calculate the final rates.



**Table 3-4: Operating Cost Allocations**

O&M Expenses	Function	Supply	Base Delivery	Max Day	Max Hour	Fire	Treatment	Pumping	Meter	Customer	General	Total
Purchased Water	Supply	100%										100%
Ground Water Replenishment	Supply	100%										100%
Upper Zone Power	Pumping							100%				100%
Lower Zone Power	Pumping							100%				100%
Less: Rowland Water District portion	Pumping							100%				100%
Labor-Vacation, Sick & Holiday	Admin										100%	100%
Labor-Pumping Upper Zone	Pumping							100%				100%
Labor-Pumping Lower Zone	Pumping							100%				100%
Maintenance-Pumping Upper Zone	Pumping							100%				100%
Maintenance-Pumping Lower Zone	Pumping							100%				100%
Maintenance & Labor-Treatment	Treatment						100%					100%
Less: Rowland Water District portion	Supply	100%										100%
Labor-Trans & Distribution	T & D		31%	44%	15%	10%						100%
Maint-Trans & Distribution	T & D		31%	44%	15%	10%						100%
Joint Facilities-Wells	Supply	100%										100%
Joint Facilities-Wells-Power	Supply	100%										100%
Joint Facilities-LaMirada Conduit	T & D		31%	44%	15%	10%						100%
Joint Facilities-Reservoir	Storage		37%	53%		10%						100%
Less: Orchard Dale portion	Supply	100%										100%
Less: Rowland Water District portion	Supply	100%										100%
Labor& Maint-Customer Service	Meter								100%			100%
Labor-Customer Account	Billing									100%		100%
Uncollectible Accounts	Billing									100%		100%
Wages-Management,Office&Sick/Vac/Holiday	Admin									10%	90%	100%
Office Supplies	Admin										100%	100%
Auto Service	Admin										100%	100%
Bank Service Charge	Admin									90%	10%	100%
Dues & Subscription	Admin										100%	100%
Building Service	Admin									10%	90%	100%
Office Equipment	Admin									10%	90%	100%
Professional	Admin										100%	100%
Education & Meetings	Admin										100%	100%
Legal	Admin										100%	100%
Utilities-Office	Admin									20%	80%	100%
Engineering	Admin										100%	100%
Insurance-Auto, Liability, Property & Bond	Admin										100%	100%
Insurance-Group Health & Life	Admin										100%	100%
Employee Workers Compensation	Admin										100%	100%
Dental	Admin										100%	100%
Retirement-CalPERS	Admin										100%	100%
Retirement-Deferred Compensation	Admin										100%	100%

O&M Expenses	Function	Supply	Base Delivery	Max Day	Max Hour	Fire	Treatment	Pumping	Meter	Customer	General	Total
Retirement-CalPERS-Unfunded Accrued Liability	Admin										100%	100%
Payroll Taxes	Admin										100%	100%
Maint-General Plant	Admin										100%	100%
Capital Improvement	T & D		31%	44%	15%	10%						100%
Property Taxes	Admin										100%	100%
Director's Fees	Admin										100%	100%
Director's Expenses	Admin										100%	100%
Election Expense	Admin										100%	100%

O&M Expenses	Function	Supply	Base Delivery	Max Day	Max Hour	Fire	Treatment	Pumping	Meter	Customer	General	Total
Purchased Water	Supply	\$203,629	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$203,629
Ground Water Replenishment	Supply	\$901,794	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$901,794
Upper Zone Power	Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$73,059	\$0	\$0	\$0	\$73,059
Lower Zone Power	Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$467,475	\$0	\$0	\$0	\$467,475
Less: Rowland Water District portion	Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Labor-Vacation, Sick & Holiday	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$60,813	\$60,813
Labor-Pumping Upper Zone	Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$7,715	\$0	\$0	\$0	\$7,715
Labor-Pumping Lower Zone	Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$53,570	\$0	\$0	\$0	\$53,570
Maintenance-Pumping Upper Zone	Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$6,829	\$0	\$0	\$0	\$6,829
Maintenance-Pumping Lower Zone	Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$34,841	\$0	\$0	\$0	\$34,841
Maintenance & Labor-Treatment	Treatment	\$0	\$0	\$0	\$0	\$0	\$33,227	\$0	\$0	\$0	\$0	\$33,227
Less: Rowland Water District portion	Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Labor-Trans & Distribution	T & D	\$0	\$60,947	\$86,527	\$29,384	\$19,651	\$0	\$0	\$0	\$0	\$0	\$196,509
Maint-Trans & Distribution	T & D	\$0	\$38,541	\$54,717	\$18,582	\$12,427	\$0	\$0	\$0	\$0	\$0	\$124,266
Joint Facilities-Wells	Supply	\$141,203	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$141,203
Joint Facilities-Wells-Power	Supply	\$158,681	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$158,681
Joint Facilities-LaMirada Conduit	T & D	\$0	\$2,613	\$3,710	\$1,260	\$843	\$0	\$0	\$0	\$0	\$0	\$8,425
Joint Facilities-Reservoir	Storage	\$0	\$3,872	\$5,497	\$0	\$1,041	\$0	\$0	\$0	\$0	\$0	\$10,409
Less: Orchard Dale portion	Supply	(\$173,609)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$173,609)
Less: Rowland Water District portion	Supply	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Labor& Maint-Customer Service	Meter	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$133,423	\$0	\$0	\$133,423
Labor-Customer Account	Billing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,992	\$0	\$4,992
Uncollectible Accounts	Billing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,675	\$0	\$2,675
Wages-Management,Office&Sick/Vac/Holiday	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$42,723	\$384,508	\$427,231
Office Supplies	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$29,480	\$29,480
Auto Service	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$47,262	\$47,262
Bank Service Charge	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,499	\$833	\$8,333
Dues & Subscription	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$21,581	\$21,581
Building Service	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,680	\$15,122	\$16,802
Office Equipment	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,733	\$15,600	\$17,333
Professional	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,549	\$50,549
Education & Meetings	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$17,509	\$17,509
Legal	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$52,560	\$52,560

O&M Expenses	Function	Supply	Base Delivery	Max Day	Max Hour	Fire	Treatment	Pumping	Meter	Customer	General	Total
Utilities-Office	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,480	\$41,919	\$52,399
Engineering	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$28,322	\$28,322
Insurance-Auto, Liability, Property & Bond	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$80,888	\$80,888
Insurance-Group Health & Life	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$235,959	\$235,959
Employee Workers Compensation	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$39,012	\$39,012
Dental	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,470	\$6,470
Retirement-CalPERS	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$158,691	\$158,691
Retirement-Deferred Compensation	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$16,946	\$16,946
Retirement-CalPERS-Unfunded Accrued Liability	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$55,412	\$55,412
Payroll Taxes	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$68,561	\$68,561
Maint-General Plant	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$52,899	\$52,899
Capital Improvement	T & D	\$0	\$165,094	\$234,385	\$79,596	\$53,231	\$0	\$0	\$0	\$0	\$0	\$532,305
Property Taxes	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,457	\$3,457
Director's Fees	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,682	\$9,682
Director's Expenses	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,645	\$7,645
Election Expense	Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total - O&amp;M Expenses</b>		<b>\$1,231,697</b>	<b>\$271,067</b>	<b>\$384,835</b>	<b>\$128,821</b>	<b>\$87,191</b>	<b>\$33,227</b>	<b>\$643,488</b>	<b>\$133,423</b>	<b>\$71,783</b>	<b>\$1,501,677</b>	<b>\$4,487,210</b>
Operating Allocation		27%	6%	9%	3%	2%	1%	14%	3%	2%	33%	100%

**Table 3-5: Capital Cost Allocations**

Capital Asset Function	Supply	Base Delivery	Max Day	Max Hour	Fire	Treatment	Pumping	Meter	Customer	General	Total
Supply	100%										100%
T & D		31%	44%	15%	10%						100%
Treatment						100%					100%
Pumping							100%				100%
Storage		37%	53%		10%						100%
Meter								100%			100%
Billing									100%		100%
Admin										100%	100%

Capital Asset Function	Supply	Base Delivery	Max Day	Max Hour	Fire	Treatment	Pumping	Meter	Customer	General	Total
Supply	\$2,992,424	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,992,424
T & D	\$0	\$4,740,433	\$6,730,028	\$2,285,481	\$1,528,438	\$0	\$0	\$0	\$0	\$0	\$15,284,381
Treatment	\$0	\$0	\$0	\$0	\$0	\$24,814	\$0	\$0	\$0	\$0	\$24,814
Pumping	\$0	\$0	\$0	\$0	\$0	\$0	\$552,832	\$0	\$0	\$0	\$552,832
Storage	\$0	\$3,409,932	\$4,841,213	\$0	\$916,794	\$0	\$0	\$0	\$0	\$0	\$9,167,939
Meter	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,108,197	\$0	\$0	\$1,108,197
Billing	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$298,657	\$0	\$298,657
Admin	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$2,992,424</b>	<b>\$8,150,365</b>	<b>\$11,571,241</b>	<b>\$2,285,481</b>	<b>\$2,445,232</b>	<b>\$24,814</b>	<b>\$552,832</b>	<b>\$1,108,197</b>	<b>\$298,657</b>	<b>\$0</b>	<b>\$29,429,244</b>
Capital Allocation	10%	28%	39%	8%	8%	0%	2%	4%	1%	0%	100%

**Table 3-6: Allocation of Operating and Capital Costs**

	Supply	Base Delivery	Max Day	Max Hour	Fire	Treatment	Pumping	Meter	Customer	General	Total
Operating Costs	\$867,938	\$191,012	\$271,181	\$90,776	\$61,441	\$23,414	\$453,446	\$94,019	\$50,583	\$1,058,184	\$3,161,995
Capital Costs	\$79,358	\$216,144	\$306,864	\$60,610	\$64,846	\$658	\$14,661	\$29,389	\$7,920	\$0	\$780,450
<b>Total Cost of Service</b>	<b>\$947,296</b>	<b>\$407,156</b>	<b>\$578,045</b>	<b>\$151,386</b>	<b>\$126,288</b>	<b>\$24,072</b>	<b>\$468,107</b>	<b>\$123,408</b>	<b>\$58,504</b>	<b>\$1,058,184</b>	<b>\$3,942,446</b>
Allocation of General Costs		\$222,434	\$315,792	\$82,704	\$68,992	\$13,151	\$255,732	\$67,419	\$31,961	(\$1,058,184)	\$0
<b>Total Allocated Cost of Service</b>	<b>\$947,296</b>	<b>\$629,590</b>	<b>\$893,838</b>	<b>\$234,090</b>	<b>\$195,280</b>	<b>\$37,223</b>	<b>\$723,838</b>	<b>\$190,827</b>	<b>\$90,465</b>	<b>\$0</b>	<b>\$3,942,446</b>

### 3.8 DERIVATION OF UNIT COSTS

The next step in the COS analysis is to derive unit costs for each of the rate components, shown in **Table 3-7**. To do this, the final cost component allocations are allocated to each rate component. The rate components consist of the District's different rates: the Meter Charge, Commodity Charge, and Upper Zone Surcharge.

Supply and Treatment costs are fully allocated to the Commodity Charge rate component, since these costs are associated with water usage. Peaking (Maximum Day and Maximum Hour), Fire, Meter, and Customer costs are fully allocated with the Meter Charge component because these costs can be associated with meter capacity.

The Base Delivery costs, which can be tied to water usage and meter capacity, is allocated in a manner such that the current fixed revenue recovery percentage is maintained. The District's current fixed revenue recovery percentage is 44 percent; the proposed COS analysis retains this percentage to maintain revenue stability.

The Pumping costs are allocated to the Commodity Charge and Upper Zone Surcharge rate components based on the power, labor, and maintenance costs for each zone shown near the top of **Table 3-4**. The total Pumping costs for both zones equal \$643,488. The total Upper Zone costs are \$87,603, or 13.6 percent of Pumping costs associated with both zones. The remaining costs are allocated to the Commodity Charge rate component, which is also charged to upper zones.

The final allocations to each rate component are then divided by the units to determine the unit cost. Meter Charges are charged based on equivalent meters, which was calculated in **Table 3-3**. The Commodity Charge and Upper Zone Surcharge is charged based on water usage. The Commodity Charge is divided by all water usage for all zones, and the Upper Zone Surcharge is divided by upper zone usage only.

**Table 3-7: Unit Cost Derivation**

	Meter Charge	Commodity Charge	Upper Zone Surcharge	Total
Supply		100.0%		100%
Base Delivery	18.0%	82.0%		100%
Max Day	100.0%			100%
Max Hour	100.0%			100%
Fire	100.0%			100%
Treatment		100.0%		100%
Pumping		86.4%	13.6%	100%
Meter	100.0%			100%
Customer	100.0%			100%

	Meter Charge	Commodity Charge	Upper Zone Surcharge	Total Costs
Supply	\$0	\$947,296	\$0	\$947,296
Base Delivery	\$113,326	\$516,264	\$0	\$629,590
Max Day	\$893,838	\$0	\$0	\$893,838
Max Hour	\$234,090	\$0	\$0	\$234,090
Fire	\$195,280	\$0	\$0	\$195,280
Treatment	\$0	\$37,223	\$0	\$37,223
Pumping	\$0	\$625,297	\$98,541	\$723,838
Meter	\$190,827	\$0	\$0	\$190,827
Customer	\$90,465	\$0	\$0	\$90,465
<b>Total</b>	<b>\$1,717,825</b>	<b>\$2,126,079</b>	<b>\$98,541</b>	<b>\$3,942,446</b>

Units of Service	47,275	1,131,254	444,583
Units of Measure	equivalent meters/year	hcf	hcf
Unit Cost	\$36.34	\$1.88	\$0.22
	per equivalent meter	per hcf	per hcf

# 4 RATE DERIVATION

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

## 4.1 DERIVATION OF METER CHARGES

**Table 4-1** shows the derivation of the monthly readiness-to-serve charges, or meter charges. The unit cost derived in Table 3-7 is multiplied by the meter ratios shown in **Table 3-3** to determine the proposed charge for each meter size.

For example, the proposed charge for 2” meters is calculated using the following equation:

$$\$36.34 \text{ per equivalent meter} \times 5.33 \text{ meter ratio} = \$193.76 \text{ (rounded up)}$$

Charges for hydrants or temporary usage is equal to the monthly meter charge. The cost of serving these customers are equal to the costs to temporarily service the meter.

**Table 4-1: Proposed Meter Charges**

Meter Size	Meter Ratio	Number of Meters	Meter Costs	Proposed Charge	Current Charge	Difference (\$)	Difference (%)
5/8" or 3/4"	1.00	198	\$36.34	<b>\$36.34</b>	\$34.08	\$2.26	7%
1"	1.67	1,517	\$60.55	<b>\$60.56</b>	\$56.79	\$3.77	7%
1 1/2"	3.33	199	\$121.09	<b>\$121.10</b>	\$113.57	\$7.53	7%
2"	5.33	63	\$193.75	<b>\$193.76</b>	\$181.72	\$12.04	7%
3"	11.66	5	\$423.82	<b>\$423.83</b>	\$397.50	\$26.33	7%
4"	20.99	3	\$762.87	<b>\$762.88</b>	\$715.49	\$47.39	7%
6"	46.65	2	\$1,695.27	<b>\$1,695.28</b>	\$1,589.98	\$105.30	7%

## 4.2 DERIVATION OF COMMODITY CHARGES

**Table 4-2** shows the derivation of the commodity charges. The commodity charge for lower zones is equal to the Commodity Charge unit cost shown in **Table 3-7**; the commodity charge for upper zones is equal to the Commodity Charge and Upper Zone Surcharge unit costs.

**Table 4-2: Proposed Commodity Charges**

	Commodity Charge	Upper Zone Surcharge	Proposed Charge	Current Charge	Difference (\$)	Difference (%)
Upper Zone	\$1.88	\$0.22	<b>\$2.11</b>	\$1.96	\$0.15	8%
Lower Zone	\$1.88	\$0.00	<b>\$1.88</b>	\$1.74	\$0.14	8%

### 4.3 PROPOSED WATER RATES

**Table 4-3** shows the proposed five-year rate schedule, starting in July of FY 2019 to July of FY 2023.

**Table 4-3: Proposed Water Rates**

	July 2018	July 2019	July 2020	July 2021	July 2022
<b>Water Rates</b>					
<b>Monthly Readiness-to-Serve Charge</b>					
5/8" or 3/4"	\$36.34	\$38.89	\$41.62	\$44.54	\$47.66
1"	\$60.56	\$64.80	\$69.34	\$74.20	\$79.40
1 1/2"	\$121.10	\$129.58	\$138.66	\$148.37	\$158.76
2"	\$193.76	\$207.33	\$221.85	\$237.38	\$254.00
3"	\$423.83	\$453.50	\$485.25	\$519.22	\$555.57
4"	\$762.88	\$816.29	\$873.44	\$934.59	\$1,000.02
6"	\$1,695.28	\$1,813.95	\$1,940.93	\$2,076.80	\$2,222.18
<b>Commodity Rate (\$/hcf)</b>					
Upper Zone	\$2.11	\$2.26	\$2.42	\$2.59	\$2.78
Lower Zone	\$1.88	\$2.02	\$2.17	\$2.33	\$2.50
<b>Hydrant Rates</b>					
<b>Monthly Charge</b>					
3"	\$423.83	\$453.50	\$485.25	\$519.22	\$555.57

### 4.4 CUSTOMER IMPACTS

**Table 4-4** shows the impacts to customers with a 1" meter in the lower zone at different levels of water usage. **Table 4-5** shows the impacts to customers with a 1" meter in the upper zone.



**Table 4-4: Lower Zone Customer Impacts**

Usage Level	Current Monthly Service	Current Commodity Charge	Total Current Charge	Proposed Monthly Service	Proposed Commodity Charge	Total Proposed Charge	Difference (\$)	Difference (%)
5 hcf of water	\$56.79	\$8.70	\$65.49	\$60.56	\$9.40	\$69.96	\$4.47	6.8%
10 hcf of water	\$56.79	\$17.40	\$74.19	\$60.56	\$18.80	\$79.36	\$5.17	7.0%
15 hcf of water	\$56.79	\$26.10	\$82.89	\$60.56	\$28.20	\$88.76	\$5.87	7.1%
20 hcf of water	\$56.79	\$34.80	\$91.59	\$60.56	\$37.60	\$98.16	\$6.57	7.2%
25 hcf of water	\$56.79	\$43.50	\$100.29	\$60.56	\$47.00	\$107.56	\$7.27	7.2%
50 hcf of water	\$56.79	\$87.00	\$143.79	\$60.56	\$94.00	\$154.56	\$10.77	7.5%

**Table 4-5: Upper Zone Customer Impacts**

Usage Level	Current Monthly Service	Current Commodity Charge	Total Current Charge	Proposed Monthly Service	Proposed Commodity Charge	Total Proposed Charge	Difference (\$)	Difference (%)
5 hcf of water	\$56.79	\$9.80	\$66.59	\$60.56	\$10.55	\$71.11	\$4.52	6.8%
10 hcf of water	\$56.79	\$19.60	\$76.39	\$60.56	\$21.10	\$81.66	\$5.27	6.9%
15 hcf of water	\$56.79	\$29.40	\$86.19	\$60.56	\$31.65	\$92.21	\$6.02	7.0%
20 hcf of water	\$56.79	\$39.20	\$95.99	\$60.56	\$42.20	\$102.76	\$6.77	7.1%
25 hcf of water	\$56.79	\$49.00	\$105.79	\$60.56	\$52.75	\$113.31	\$7.52	7.1%
50 hcf of water	\$56.79	\$98.00	\$154.79	\$60.56	\$105.50	\$166.06	\$11.27	7.3%

## 5 CONNECTION FEES

---

As part of the water rate study, Raftelis developed connection fees for the District’s water system. The methodology used to calculate the connection fees is described in this section.

### 5.1 ECONOMIC FRAMEWORK

For publicly owned water systems, most of the assets are typically paid for by the contributions of existing customers through rates and charges. In service areas that incorporate new customers, the infrastructure developed by previous customers are generally extended toward the service of new customers. Existing customers’ investment in the system capacity allows newly connecting customers to take advantage of unused surplus capacity.

To further economic equality among new and existing customers, new customers will typically refund the value of the existing system capacity to existing customers, effectively putting them on par with existing customers. In other words, the new customers are buying into the existing system through a refund to the existing customers for the portion of the system that has already been invested in.

The basic economic philosophy behind connection fees is that the cost of providing water service should be paid for by those that receive utility from the product. To effect fair distribution of the value of the system, the fee should reflect a reasonable estimate of the cost of providing capacity to new users and not unduly burden existing users. The philosophy that service should be paid for by those that receive utility from the product is often referred to as “growth-should-pay-for-growth.” This principal is summarized in M1 Manual.

### 5.2 LEGAL FRAMEWORK<sup>4</sup>

The District reserves broad authority over the pricing of water connection fees. The most salient limitation on this authority is the requirement that recovery costs on new development bear a reasonable relationship to the needs and benefits brought about by the development. Courts have long used a standard of reasonableness to evaluate the legality of connection fees. The basic statutory standards governing water connection fees are embodied by Government Code Sections 66013, 66016, 66022 and 66023. Government Code Section 66013 contains requirements specific to pricing water connection fees:

*“Notwithstanding any other provision of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed, unless a question regarding the amount the fee or charge in excess of the estimated*

---

<sup>4</sup> Raftelis does not practice law nor does it provide legal advice. The above discussion is to provide a general review of apparent state institutional constraints and is labeled “legal framework” for literary convenience only. The District should consult with its counsel for clarification and/or specific review of any of the above or other matters.

*reasonable cost of providing the services or materials is submitted to, and approved by, a popular vote of two-thirds of those electors voting on the issue.”*

Section 66013 also includes the following general requirements:

- » Local agencies must follow a process set forth in the law, making certain determinations regarding the purpose and use of the fee; they must establish a nexus or relationship between a development project and the public improvement being financed with the fee.
- » The connection fee revenue must be segregated from the general fund to avoid commingling of connection fees and the general fund.

### 5.3 APPROACH

There are several available methodologies for calculating connection fees. The various approaches have evolved largely around the basis of changing public policy, legal requirements, and the unique and special circumstances of every local agency. However, there are three general approaches that are widely accepted and appropriate for water connection fees. They are the “buy-in,” “incremental-cost,” and “hybrid” approaches.

#### **Buy-In Approach**

The buy-in approach rests on the premise that new customers are entitled to service at the same price as existing customers. However, existing customers have already developed the facilities that will serve new customers, including the costs associated with financing those services. Under this approach, new customers pay only an amount equal to the net investment already made by existing users, based on replacement cost less depreciation. This net equity investment figure divided by the current demand of the system – the number of equivalent water meters – determines the new user’s fee.

For instance, if an existing system has 100 units of average usage and the new connector uses an equivalent unit, then the new customer would pay 1/100th of the total value of the existing system. By contributing this connection fee, the new user has bought into the existing system. The user has effectively acquired a financial position on par with existing customers and will face future capital challenges on equal financial footing with those customers. This approach is suited for agencies that have capacity in their system and are essentially close to full build-out.

#### **Incremental Cost Approach**

When new users connect to a water system, they use either surplus capacity from the existing system, which must then be replaced, or they require new capacity that must be added to the system to accommodate their needs. Under the incremental-cost approach, new customers pay for additional capacity requirements regardless of the value of past investments made by existing customers.

For instance, if it costs X dollars (\$X) to provide 100 additional units of capacity for average usage and a new connector uses one of those equivalent units, then the new user would pay \$X/100 to connect to the system. In other words, new customers pay the incremental cost of capacity. As with the equity buy-in

approach, new connectors will effectively acquire a financial position that is on par with existing customers. This approach is best suited for growing communities where additional facilities are needed to accommodate growth.

### **Hybrid Approach**

In addition to the above two connection fee calculation methodologies, there is also a hybrid approach which entails using aspects of both the incremental cost approach and the buy-in approach. This is appropriate when cities are in a position where they have already built out their delivery system substantially yet are also in the process of planning or building additional capacity. The hybrid approach recognizes that new customers benefit from both existing infrastructure and planned capital improvements and therefore the charge is calculated to reflect this fact.

## **5.4 CONNECTION FEE CALCULATION**

The most appropriate approach to calculate connection fees for the District is the buy-in approach. Since the District's water infrastructure is substantially built-out, new customers will largely be served by existing infrastructure into which existing customers have invested a considerable amount of economic resources through water rates.

The basic methodology for the buy-in approach is to take the total current and planned values of the District's water system and divide by the system's current demands represented by equivalent meters.

Replacement Cost Less Depreciation (RCLD) is the most appropriate method to determine the current value of the District's water system, or assets. RCLD is a commonly used method, and it is often preferred to alternative methods such as Original Cost (OC), Original Cost Less Depreciation (OCLD), and Replacement Cost (RC) because of its defensibility. In most cases, RCLD is most defensible because the replacement cost is inflation-adjusted (and therefore recovers the costs of replacing that capacity in current dollars) and accounts for depreciation (and thus addresses the fact that the system is not new and has been used by current users).

The net asset value, shown in **Table 5-1**, is determined by subtracting the outstanding principal for the Davis/Grunsky loan shown in **Table 2-10** (the last year of debt service is in FY 2024 and is not shown) and adding cash reserves, which are equal to the beginning balance for FY 2019 shown in **Table 2-14**. The net asset value is divided by the number of equivalent meters, shown in **Table 3-3**, to calculate the unit cost per equivalent meter.

**Table 5-1: Net Asset Value Calculation**

Asset Value	\$29,429,244
Outstanding Principal	(\$314,569)
Cash Reserves	\$3,017,444
<b>Net Asset Value</b>	<b>\$32,132,119</b>
Equivalent Meters	3,940
Unit Cost	\$8,157

The unit cost per equivalent meter is multiplied by the meter ratio to determine the connection fee for each meter size, as shown in **Table 5-2**.

**Table 5-2: Proposed Connection Fees**

Meter Size	Connection Fee	Current Fee	Difference
5/8" or 3/4"	\$8,157	\$7,897	3.3%
1"	\$13,593	\$13,162	3.3%
1 1/2"	\$27,183	\$26,323	3.3%
2"	\$43,495	\$42,117	3.3%
3"	\$95,142	\$92,131	3.3%
4"	\$171,252	\$165,837	3.3%
6"	\$380,560	\$368,526	3.3%

# APPENDIX

**Table 0-1: Complete Operating Budget**

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
<b>Operating Expense - Source of Supply</b>						
Purchased Water	\$196,312	\$203,629	\$213,810	\$224,501	\$235,726	\$247,512
Ground Water Replenishment	\$865,846	\$901,794	\$973,937	\$1,051,852	\$1,136,000	\$1,226,880
Upper Zone Power	\$69,580	\$73,059	\$76,712	\$80,548	\$84,575	\$88,804
Lower Zone Power	\$445,214	\$467,475	\$490,848	\$515,391	\$541,160	\$568,218
Less: Rowland Water District portion	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total - Operating Expense - Source of Supply</b>	<b>\$1,576,952</b>	<b>\$1,645,956</b>	<b>\$1,755,308</b>	<b>\$1,872,291</b>	<b>\$1,997,461</b>	<b>\$2,131,414</b>
<b>Other Operating Expense</b>						
Labor-Vacation, Sick & Holiday	\$59,042	\$60,813	\$62,638	\$64,517	\$66,452	\$68,446
Labor-Pumping Upper Zone	\$7,490	\$7,715	\$7,946	\$8,185	\$8,430	\$8,683
Labor-Pumping Lower Zone	\$52,010	\$53,570	\$55,177	\$56,833	\$58,538	\$60,294
Maintenance-Pumping Upper Zone	\$6,630	\$6,829	\$7,034	\$7,245	\$7,462	\$7,686
Maintenance-Pumping Lower Zone	\$33,826	\$34,841	\$35,886	\$36,963	\$38,071	\$39,214
Maintenance & Labor-Treatment	\$32,259	\$33,227	\$34,224	\$35,250	\$36,308	\$37,397
Less: Rowland Water District portion	\$0	\$0	\$0	\$0	\$0	\$0
Labor-Trans & Distribution	\$190,785	\$196,509	\$202,404	\$208,476	\$214,730	\$221,172
Maint-Trans & Distribution	\$120,647	\$124,266	\$127,994	\$131,834	\$135,789	\$139,863
Joint Facilities-Wells	\$137,090	\$141,203	\$145,439	\$149,802	\$154,296	\$158,925
Joint Facilities-Wells-Power	\$154,059	\$158,681	\$163,441	\$168,344	\$173,395	\$178,597
Joint Facilities-LaMirada Conduit	\$8,180	\$8,425	\$8,678	\$8,939	\$9,207	\$9,483
Joint Facilities-Reservoir	\$10,106	\$10,409	\$10,721	\$11,043	\$11,374	\$11,716
Less: Orchard Dale portion	(\$168,552)	(\$173,609)	(\$178,817)	(\$184,181)	(\$189,707)	(\$195,398)
Less: Rowland Water District portion	\$0	\$0	\$0	\$0	\$0	\$0
Labor& Maint-Customer Service	\$129,537	\$133,423	\$137,426	\$141,549	\$145,795	\$150,169
Labor-Customer Account	\$4,847	\$4,992	\$5,142	\$5,296	\$5,455	\$5,619
Uncollectible Accounts	\$2,597	\$2,675	\$2,755	\$2,838	\$2,923	\$3,011
<b>Total - Other Operating Expense</b>	<b>\$780,553</b>	<b>\$803,970</b>	<b>\$828,089</b>	<b>\$852,931</b>	<b>\$878,519</b>	<b>\$904,875</b>

	Budgeted FY 2018	Projected FY 2019	Projected FY 2020	Projected FY 2021	Projected FY 2022	Projected FY 2023
<b>Administrative &amp; General Expense</b>						
Wages-Management,Office&Sick/Vac/Holiday	\$414,787	\$427,231	\$440,048	\$453,249	\$466,846	\$480,852
Office Supplies	\$28,621	\$29,480	\$30,364	\$31,275	\$32,213	\$33,180
Auto Service	\$45,885	\$47,262	\$48,679	\$50,140	\$51,644	\$53,193
Bank Service Charge	\$8,090	\$8,333	\$8,583	\$8,840	\$9,105	\$9,379
Dues & Subscription	\$20,952	\$21,581	\$22,228	\$22,895	\$23,582	\$24,289
Building Service	\$16,313	\$16,802	\$17,306	\$17,826	\$18,360	\$18,911
Office Equipment	\$16,828	\$17,333	\$17,853	\$18,388	\$18,940	\$19,508
Professional	\$49,077	\$50,549	\$52,066	\$53,628	\$55,237	\$56,894
Education & Meetings	\$16,999	\$17,509	\$18,034	\$18,575	\$19,133	\$19,706
Legal	\$51,029	\$52,560	\$54,137	\$55,761	\$57,434	\$59,157
Utilities-Office	\$50,873	\$52,399	\$53,971	\$55,590	\$57,258	\$58,976
Engineering	\$27,497	\$28,322	\$29,172	\$30,047	\$30,948	\$31,877
Insurance-Auto, Liability, Property & Bond	\$77,036	\$80,888	\$84,932	\$89,179	\$93,638	\$98,320
Insurance-Group Health & Life	\$224,723	\$235,959	\$247,757	\$260,145	\$273,152	\$286,810
Employee Workers Compensation	\$37,154	\$39,012	\$40,962	\$43,010	\$45,161	\$47,419
Dental	\$6,162	\$6,470	\$6,794	\$7,133	\$7,490	\$7,864
Retirement-CalPERS	\$151,134	\$158,691	\$166,625	\$174,956	\$183,704	\$192,890
Retirement-Deferred Compensation	\$16,139	\$16,946	\$17,793	\$18,683	\$19,617	\$20,598
Retirement-CalPERS-Unfunded Accrued Liability	\$52,773	\$55,412	\$58,182	\$61,091	\$64,146	\$67,353
Payroll Taxes	\$65,296	\$68,561	\$71,989	\$75,588	\$79,368	\$83,336
Maint-General Plant	\$51,358	\$52,899	\$54,486	\$56,120	\$57,804	\$59,538
Capital Improvement	\$511,832	\$532,305	\$553,597	\$575,741	\$598,771	\$622,722
Property Taxes	\$3,356	\$3,457	\$3,560	\$3,667	\$3,777	\$3,891
<b>Total - Administrative &amp; General Expense</b>	<b>\$1,943,914</b>	<b>\$2,019,958</b>	<b>\$2,099,119</b>	<b>\$2,181,529</b>	<b>\$2,267,328</b>	<b>\$2,356,661</b>
<b>Non-Operating Expense</b>						
Interest Expense-Davis Grunsky loan	\$0	\$0	\$0	\$0	\$0	\$0
Principal-Davis Grunsky loan	\$0	\$0	\$0	\$0	\$0	\$0
Interest Reimb.-Orchard Dale	\$0	\$0	\$0	\$0	\$0	\$0
Director's Fees	\$9,400	\$9,682	\$9,972	\$10,272	\$10,580	\$10,897
Director's Expenses	\$7,422	\$7,645	\$7,874	\$8,110	\$8,354	\$8,604
Election Expense	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total - Non-Operating Expense</b>	<b>\$16,822</b>	<b>\$17,327</b>	<b>\$17,846</b>	<b>\$18,382</b>	<b>\$18,933</b>	<b>\$19,501</b>
<b>Total - Expenses</b>	<b>\$4,318,241</b>	<b>\$4,487,210</b>	<b>\$4,700,361</b>	<b>\$4,925,133</b>	<b>\$5,162,242</b>	<b>\$5,412,451</b>