



Final Report

# Water Rate Study

City of Garden Grove  
Public Works  
Water Services Division



March 2018

Prepared by:



PO BOX 472  
NEW YORK, NY 10272-0472  
[www.fg-solutions.com](http://www.fg-solutions.com)



FINAL

# Water Rate Study

---

Prepared for  
City of Garden Grove  
Public Works Department  
Water Services Division  
13802 Newhope St., Garden Grove, CA 92843  
March 6, 2018

This report has been prepared for the use of the client for the specific purposes identified in the report. The conclusions, observations and recommendations contained herein attributed to FG Solutions, LLC constitute the opinions of FG Solutions, LLC. To the extent that statements, information and opinions provided by the client or others have been used in the preparation of this report, FG Solutions, LLC has relied upon the same to be accurate, and for which no assurances are intended and no representations or warranties are made. FG Solutions, LLC makes no certification and gives no assurances except as explicitly set forth in this report.

---

© 2018 FG Solutions, LLC

All rights reserved.

---

# Table of Contents

Table of Contents

List of Tables

List of Figures

List of Abbreviations .....	iv
Executive Summary .....	1
1. Background and Report Organization.....	1-1
1.1 Introduction.....	1-1
1.2 Existing Rates and Rate Structure.....	1-2
1.3 Water Rate Study Process.....	1-3
2. Revenue Requirement Analysis .....	2-1
2.1 Introduction.....	2-1
2.2 Revenues.....	2-1
2.2.1 Key Assumptions .....	2-1
2.2.2 Non-Rate Revenues.....	2-1
2.2.3 Rate Revenues under Current Rates .....	2-1
2.2.4 Rate Revenues from Proposed Rate Increases.....	2-2
2.3 Expenses .....	2-2
2.3.1 Key Assumptions .....	2-2
2.3.2 Capital Facilities Plan .....	2-3
2.3.3 Existing and Future Debt.....	2-4
2.4 Operating Statement .....	2-5
2.4.1 Fund 601 (Water Operations).....	2-5
2.4.2 Fund 602 (Water Capital) .....	2-6
2.4.3 Fund 603 (Water Replacement).....	2-7
2.4.4 Financial Performance Indicators .....	2-8
3. Rate Structure Development.....	3-1
3.1 Cost-of-Service Analysis.....	3-1
3.2 Proposed Rate Schedule.....	3-4
3.3 Low Income/Senior Discount and Low Water User Discount .....	3-5
4. Example Monthly Water Bill Comparison.....	4-1
4.1 Introduction.....	4-1
4.2 Example Bill for a typical 5/8" x 3/4" Meter Connection .....	4-1
4.3 Comparison with Other Utilities .....	4-2
5. Fire Service Rates .....	5-1
5.1 Introduction.....	5-1
5.2 Existing Fire Service Rates .....	5-1

---

5.3 Proposed Fire Service Rates .....	5-1
6. Ongoing Considerations.....	6-1
Appendix A: Revenue Requirement .....	1
Appendix B: Cost-of-Service Analysis .....	1
Appendix C: Rate Design .....	1
Appendix D: Capital Facilities Plan.....	1
Appendix E: Not Used .....	1
Appendix F: Budget-Based Rate Structure Analysis .....	1

## List of Abbreviations

---

AF	Acre-Foot or Acre-Feet
AFY	Acre-Feet per Year
AWWA	American Water Works Association
AWWA M1 Manual	AWWA Ratemaking Manual
CIMIS	California Irrigation Management Information System
COS	Cost-of-Service
DSCR	Debt Service Coverage Ratio
ET	Evapotranspiration
ETAF	Evapotranspiration Adjustment Factor
GPM	Gallons per Minute
cf	cubic feet
hcf	hundred cubic feet
CFP	Capital Facilities Plan
CIP	Capital Improvement Program
CPI	Consumer Price Index
FG Solutions	FG Solutions, LLC
FTE	full-time equivalent
FY	fiscal year (July 1–June 30)
hcf	hundred cubic feet
kgal	thousand gallon(s)
mgd	million gallons per day
O&M	operations and maintenance
HP	Horsepower
MG	Million Gallons
MGD	Million Gallons per Day
MWD	Metropolitan Water District
MWDOC	Municipal Water District of Orange County
OCWD	Orange County Water District
RA	Replenishment Assessment
SAWPA	Santa Ana Watershed Project Authority
SWRCB	State Water Resources Control Board
T&D	Transmission and distribution

# Executive Summary

The Garden Grove Public Works Department Water Services Division (“Division”) owns and operates the water system that provides water services throughout the city. The Division operates 17 total water production facilities, 13 wells, 5 pump stations, 8 reservoirs that hold approximately 53 million gallons of water, and 433 miles of pipe. As part of its ongoing management of the water system, the Division has recognized the need to evaluate expenditures, revenues, and water rates to ensure that the Division can continue to provide safe and reliable service.

The Division is conducting a Water Rate Study that is intended to:

- Summarize the projected water revenue requirements for the five year study period for fiscal years (FY) 17/18 thru FY 21/22.
- Show a proposed schedule of water rates effective for FY 17/18 through FY 21/22 for the Division’s consideration. These proposed rates include minimum charges, commodity charges, capital improvement charges, and private fire service rates. All rates shown, unless otherwise indicated, are charged on a bi-monthly basis.
- Outline potentially changing conditions with financial implications, such as water conservation, the drought, and recommendations for ongoing monitoring of these items.
- Support the goal of Water Services Section: To provide sufficient and safe water at the lowest possible cost to the City’s residents.

The Rate Study was initiated in November 2016. The Rate Study was discussed during four Council Study Sessions held throughout 2017, and a Public Workshop was held in December 2017.

A key part of this Rate Study was developing a Capital Facilities Plan, which outlines the improvements to the water system. There are many high priority projects identified in the Division’s 2008 Water Master Plan that are not yet completed, and the Division has been deferring capital investments in recent years due to funding constraints.

A series of immediate priority capital needs was identified as part of this Rate Study, consisting primarily of reservoir improvements and repair/replacement projects. The reservoir improvements are a response to a recent condition assessment which identified mechanical, structural, and security deficiencies. These improvements are needed to keep the reservoirs in service and maintain reliable water service.

The proposed rate structure is shown in the tables below and is intended to meet the following goals:

1. Increase fixed charges (the Minimum Charge and the Capital Improvement Charge) to provide better revenue stability for the utility. Transition by FY 21/22 to collect 25% of revenues from fixed charges.
2. The higher fixed charges will cause financial impacts to rate payers, particularly low-income rate payers. To address this:
  - Retain the existing low water user discount, where residential customers using 6 hundred cubic feet (“hcf”) or less per billing period do not pay Commodity Charges.
  - Propose a new Low Income/Senior Discount of \$10 per billing period
3. Increase the Capital Improvement Charge to pay for more of the capital costs
4. Simplify the Commodity Charge structure by creating a new two-tiered Commodity Charge that replaces the current four-tier structure. The first tier is based on the cost of locally-produced groundwater, and the second tier is based on the cost of imported water.

**Table ES-1: Proposed Bi-Monthly Minimum Charges**

Line No	Meter Size	Meter Equivalent Ratio	Current	Proposed Bi-Monthly Minimum Charges				
				FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	5/8 x 3/4"	1.0	\$12.74	\$18.02	\$28.15	\$29.63	\$31.95	\$33.85
2	1"	2.5	\$33.99	\$38.11	\$46.03	\$47.18	\$49.00	\$50.48
3	1 1/2"	5.0	\$65.82	\$68.92	\$74.86	\$75.72	\$77.09	\$78.20
4	2"	8.0	\$99.79	\$102.71	\$108.30	\$109.12	\$110.40	\$111.45
5	3"	16.0	\$165.62	\$174.25	\$190.83	\$193.24	\$197.04	\$200.15
6	4"	25.0	\$229.32	\$246.97	\$280.86	\$285.80	\$293.57	\$299.92
7	6"	50.0	\$524.45	\$537.61	\$562.87	\$566.55	\$572.34	\$577.08
8	8"	80.0	\$819.60	\$842.12	\$885.35	\$891.66	\$901.56	\$909.67
9	10"	120.0	\$1,114.73	\$1,174.33	\$1,288.76	\$1,305.45	\$1,331.67	\$1,353.13

**Table ES-2: Proposed Bi-Monthly Capital Improvement Charge**

Line No	Meter Size	Meter Equivalent Ratio	Current Charge	Proposed Bi-Monthly Capital Improvement Charge				
				FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	5/8 x 3/4"	1.0	\$1.47	\$3.00	\$4.00	\$5.00	\$6.00	\$7.00
2	1"	2.5	\$2.07	\$7.50	\$10.00	\$12.50	\$15.00	\$17.50
3	1 1/2"	5.0	\$2.64	\$15.00	\$20.00	\$25.00	\$30.00	\$35.00
4	2"	8.0	\$4.27	\$24.00	\$32.00	\$40.00	\$48.00	\$56.00
5	3"	16.0	\$16.19	\$48.00	\$64.00	\$80.00	\$96.00	\$112.00
6	4"	25.0	\$20.60	\$75.00	\$100.00	\$125.00	\$150.00	\$175.00
7	6"	50.0	\$30.90	\$150.00	\$200.00	\$250.00	\$300.00	\$350.00
8	8"	80.0	\$42.68	\$240.00	\$320.00	\$400.00	\$480.00	\$560.00
9	10"	120.0	\$54.45	\$360.00	\$480.00	\$600.00	\$720.00	\$840.00
10	Note: Proposed Minimum Charges rounded off to the nearest \$0.01.							

**Table ES-3: Proposed Commodity Charges and Estimated Pass-Through Charge**

Line No		Two-Tier Commodity Delivery Charge, \$/ccf				
		FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	Tier 1 Commodity Charge, Excluding Pass Through	\$2.94	\$2.94	\$2.92	\$2.89	\$2.86
2	Tier 1 Estimated Pass Through		\$0.07	\$0.15	\$0.20	\$0.29
3	Tier 2 Commodity Charge, Excluding Pass Through	\$3.65	\$4.06	\$4.15	\$4.28	\$4.40
4	Tier 2 Estimated Pass Through		\$0.08	\$0.17	\$0.25	\$0.28
5						
6	Note: Commodity Charges are rounded to the nearest \$0.01.					

The Division must pay others for water supply costs, which are approximately half of the costs for providing water service. 25% of the City's water is imported from the Metropolitan Water District of Southern California, and 75% of the City's water supply is locally produced groundwater. Using locally produced groundwater comes with an obligation to pay the Orange County Water District a Replenishment Assessment. The City has no control over water supply costs, and currently passes through increases in water supply costs. The City will retain this ability in the future, and the estimated pass-through costs are shown in Table ES-3 above.

During the five-year Rate Study Planning Period, the City will continue to monitor the financial condition of its water system, paying particular attention to:

- Water demands
- Water supply costs
- Capital project costs
- Inflation rates



- Interest rates

Differences in these parameters from the projections made in this Rate Study will have financial impacts. The Division will monitor these items on an ongoing basis and make necessary adjustments to its operations and/or financial plans in future years.



---

## Section 1

# Background and Report Organization

## 1.1 Introduction

The Garden Grove Public Works Department Water Services Division (“Division”) provides water services to approximately 36,762<sup>1</sup> connections throughout the City of Garden Grove. The Division is governed by the 7 member Garden Grove City Council. The Division is part of the Public Works Department and is responsible for providing safe and reliable water to the City of Garden Grove. In addition, it is responsible for maintaining wells, reservoirs, and imported water connections. It also provides ongoing maintenance and repair to the water delivery system.

The Division operates 17 total water production facilities, 13 wells, 5 pump stations, 8 reservoirs that hold approximately 53 million gallons of water, and 433 miles of pipe. Within this water system, the Division has an ongoing operation and maintenance program to ensure the continued provision of water conveyance and delivery services.

As part of its ongoing management of the water system, the Division has recognized the need to evaluate expenditures, revenues, and water rates to ensure that the Division can continue to provide safe and reliable service.

This Water Rate Study is funded in part by a grant from the Santa Ana Watershed Project Authority (SAWPA). As a component of the grant, budget-based rates, also known as conservation rates, were evaluated as a potential rate structure for the Division. More detail about budget-based rates and the analysis can be found in Appendix F.

The Division is conducting a Water Rate Study that is intended to:

- Summarize the projected water revenue requirements for the five-year study period for fiscal years (FY) 17/18 thru FY 21/22<sup>1</sup>.
- Show a proposed schedule of water rates effective for FY 17/18 through FY 21/22 for the Division’s consideration. These proposed rates include minimum charges, commodity charges, capital improvement charges, and private fire service rates. All rates shown, unless otherwise indicated, are charged on a bi-monthly basis.
- Outline potentially changing conditions with financial implications, such as water conservation, the drought, and recommendations for ongoing monitoring of these items.
- Support the goal of Water Services Section: To provide sufficient and safe water at the lowest possible cost to the City’s residents.

Historical and budgeted financial and operational data were provided by the Division and used by FG Solutions to develop the projected revenue requirement for the five-year study period. The revenue requirement analysis was an iterative process and draft versions were revised based on comments and input provided by Division staff and the Finance department. Next, the revenue requirement was compared with the revenues generated by the existing rates to generate additional revenues needed from rate increases.

---

<sup>1</sup>Including approximately 31,556 single-family residential connections, 1,923 residential units in multi-family residential connections, and 3,283 non-residential connections

<sup>2</sup> The Division’s fiscal year begins on July 1. FY 17/18 refers to the period between July 1, 2017 and June 30, 2018.

Key assumptions used in the Revenue Requirement analysis are summarized in Section 2. Additional assumptions are provided in the printout of the Revenue Requirement calculations that comprise Appendix A.

There are six appendices to this report. Appendix A contains the Revenue Requirement. Appendix B is the water system Cost-of-Service Analysis. Appendix C contains calculations associated with the Rate Design. Appendix D contains the proposed Capital Facilities Plan (CFP), which summarizes the capital improvements the Division has designated as immediate priorities. Appendix E contains the Fire Service rate calculations. Appendix F contains the analysis of Budget-based rates and detailed calculations of this analysis.

## 1.2 Existing Rates and Rate Structure

The current water rate structure has the following components, all charged on a bi-monthly basis; a) a minimum charge; b) a Capital Improvement Charge; and c) a Commodity Charge, per hundred cubic feet (hcf) consumed during the billing period, in a four-tier rate structure. Table 1-1 shows the bi-Monthly Minimum Charges and the Capital Improvement charges for each water meter size. All rates are current, as of February 1, 2018.

**Table 1-1. Existing Bi-Monthly Minimum Charge and Capital Improvement Charge**

Line No.	Meter Size (inches)	Minimum Charge	Capital Improvement Charge
1	5/8 x 3/4"	\$12.74	\$1.47
2	1"	\$33.99	\$2.07
3	1-1/2"	\$65.82	\$2.64
4	2"	\$99.79	\$4.27
5	3"	\$165.62	\$16.19
6	4"	\$229.32	\$20.60
7	6"	\$524.45	\$30.90
8	8"	\$819.60	\$42.68
9	10"	\$1,114.73	\$54.45

The Division currently has four rate tiers. Table 1-2 shows the existing Commodity Charges, per tier.

**Table 1-2. Existing Commodity Charges**

Line No.	Usage, units of water (hcf)	Commodity Charge, \$/hcf		
		Commodity Pass-Through	Balance	Total
1	0-36	\$0.82	\$2.25	\$3.07
2	37-250	\$0.82	\$2.33	\$3.15
3	251-500	\$0.82	\$2.42	\$3.24
4	>500	\$0.82	\$2.51	\$3.33

The Division charges Private Fire Service customers a Bi-Monthly Fire Service charge, based on the connection meter size, plus the Capital Improvement Fee. Private Fire Services are customers with Fire Service connections that have a separate meter that is connected only to the customer's fire sprinkler system. Table 1-3 shows these fees in detail.

**Table 1-3. Existing Private Fire Service Rates**

Connection Size (in)	Current Rates Fire Service	Current Capital	
		Improvement Charge	Current Rates Total
5/8 x 3/4"	\$11.00	\$1.47	\$12.47
1"	\$11.00	\$2.07	\$13.07
1 1/2"	\$11.00	\$2.64	\$13.64
2"	\$11.00	\$4.27	\$15.27
3"	\$14.00	\$16.19	\$30.19
4"	\$19.00	\$20.60	\$39.60
6"	\$29.00	\$30.90	\$59.90
8"	\$38.00	\$42.68	\$80.68
10"	\$48.00	\$54.45	\$102.45

### 1.3 Water Rate Study Process

The rate study kicked off in November 2016. In order to communicate with City Council and the public, the Division and the consultant team attended four Study Sessions, plus one public workshop. The first Council Study Session was held in January 2017, where an introduction to the water system was discussed, as was an overview of the 2017 financial status of the utility was presented.

A Study Session was held in April 2017 that focused on the Capital Facilities Plan and the preliminary revenue requirement analysis.

A Study Session was held in August 2017 that discussed Rate Structure Alternatives.

A Study Session was held in September 2017, where preliminary rate structures were presented to Council.

A Public Workshop was held in December 2017. The intent of this workshop was to have an open and transparent discussion with the public about the upcoming rate increase, and to assist customers in developing an understanding of what their water bill will be.

Figure 1-1 shows the overall approach and methodology used to complete the scope of services for this water rate study.

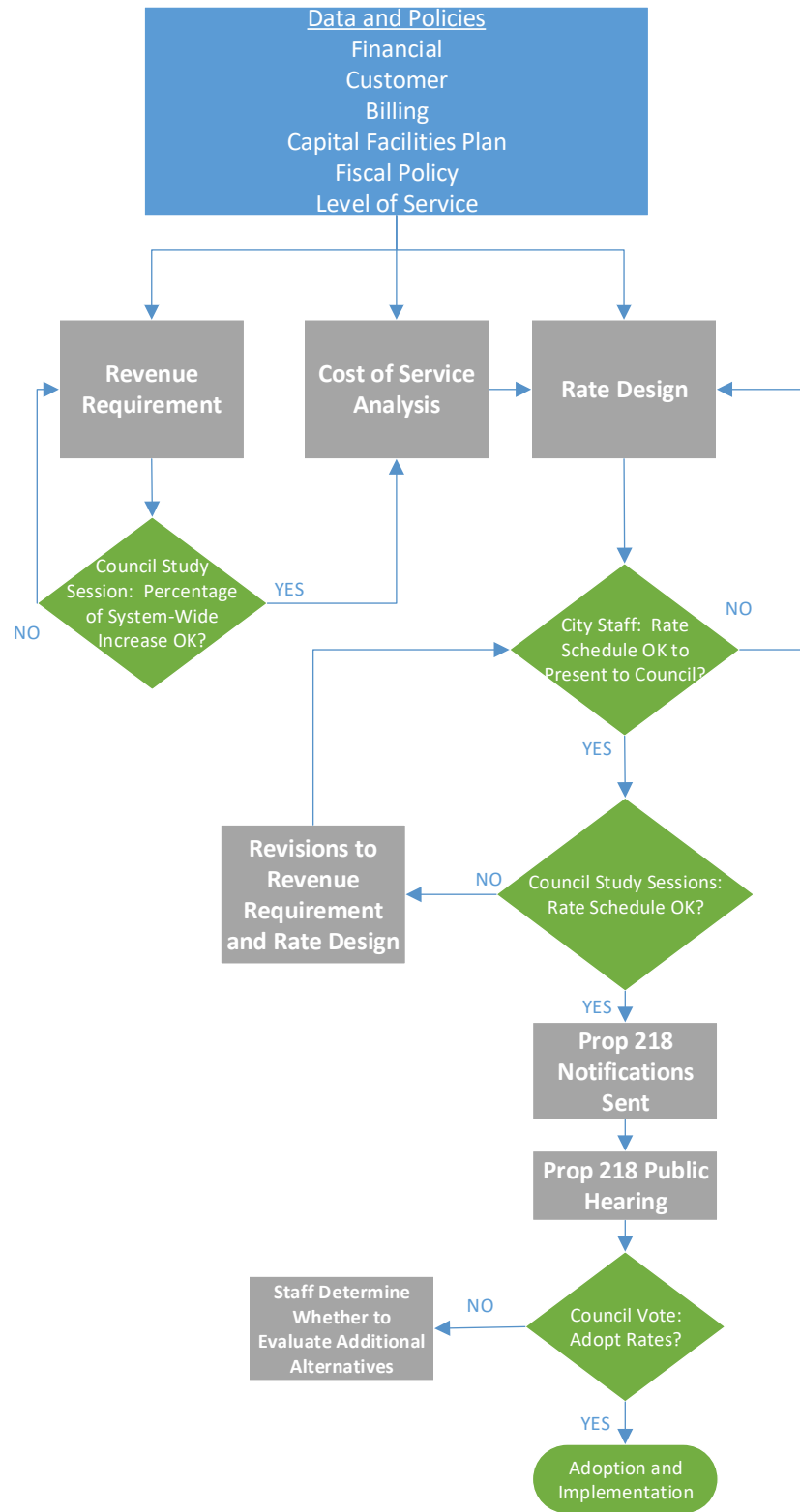


Figure 1-1 Overview of Methodology (To be revised)

## Section 2

# Revenue Requirement Analysis

## 2.1 Introduction

To provide for the continued operation of a utility on a sound financial basis, revenues must be sufficient to meet the cash requirements for operation and maintenance (O&M) expense, debt service requirements, debt service coverage requirements, reserves, and cash-funded capital expenditures not financed with debt. The sum of these cost components for a given year is referred to as a utility's Revenue Requirement.

Historical and budgeted financial and operational data were provided by the Division and used by FG Solutions to develop the projected revenue requirement for the five-year study period. The revenue requirement analysis was an iterative process and draft versions were revised based on comments and input provided by Division staff. Next, the revenue requirement was compared with the revenues generated by the existing rates to generate additional revenues needed from rate increases. The reserve requirement, described below, are met in the later years of the five-year projection period as the proposed rates were developed to generate these reserve levels over time. Revenue projections are a critical part of the revenue requirement analysis. The three aspects of revenue projections described in the sections below are non-rate revenues, rate revenues under the current rate schedule, and rate revenues from proposed rate increases.

Key assumptions used in the Revenue Requirement analysis are listed below. Additional assumptions are provided in the printout of the Revenue Requirement calculations that comprise Appendix A.

## 2.2 Revenues

### 2.2.1 Key Assumptions

Revenue projections are a critical part of the revenue requirement analysis. The three aspects of revenue projections described in the sections below are non-rate revenues, rate revenues under the current rate schedule, and rate revenues from proposed rate increases.

FY 17/18 revenues are based on FY 15/16 actual revenues, adjusted for changes in water use, between FY 15/16 and the projected FY 17/18 value.

Another key assumption is that no customer growth is projected through FY 21/22. For the purposes of these rate calculations, customer growth in the water service area is projected to be negligible.

### 2.2.2 Non-Rate Revenues

The key sources of water revenues other than rate revenues are predominantly late fees, with some non-rate revenues from interest income.

### 2.2.3 Rate Revenues under Current Rates

Rates that are currently effective are shown in Tables 1-1, 1-2, and 1-3. These rates were used to project the revenues shown in Table 2-1. Revenue estimates under current rates shown in Table 2-1 for FY 18/19 through FY 21/22 are projected to remain at FY 17/18 values. Late fee revenues are not included after 1/1/18 because it is anticipated that the late fee revenues will be used to fund the proposed low-income/senior discount, which will be discussed further in Section 3. This discount has not yet been approved by City Council.

**Table 2-1: Historical and Projected Revenues Under Existing Rates**

Line No	DESCRIPTION	Fund	Actual			Estimate			
			FY 15/16	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
<b>1</b>	<b>OPERATING REVENUES</b>								
2	WATER-METERED	601	\$21,805,999	\$22,208,411	\$29,801,011	\$29,801,011	\$29,801,011	\$29,801,011	\$29,801,011
3	WATER-FLAT RATE	601	147,878	79,000	79,000	79,000	79,000	79,000	79,000
4	WATER PROC FEE	601	0	0	0	0	0	0	0
5	LATE FEE (4)	601	347,843	300,000	150,000	0	0	0	0
6	AFTER HRS SERV CHG	601	1,014	500	500	500	500	500	500
7	WATER COSTS (5)	601	6,320,543	6,320,543	0	0	0	0	0
8	NSF FEE	601	6,600	4,000	4,000	4,000	4,000	4,000	4,000
9	CAPITAL RECOVERY	602	433,732	353,000	353,000	353,000	353,000	353,000	353,000
10	SERVICE INSTALL FEES	602	44,774	39,000	39,000	39,000	39,000	39,000	39,000
11	FRONTAGE ASSMT FEE	602	13,409	6,000	6,000	6,000	6,000	6,000	6,000
12	ACREAGE ASSMT FEE	602	10,564	4,000	4,000	4,000	4,000	4,000	4,000
<b>13</b>	<b>WATER SALES</b>		<b>\$29,132,355</b>	<b>\$29,314,453</b>	<b>\$30,436,511</b>	<b>\$30,286,511</b>	<b>\$30,286,511</b>	<b>\$30,286,511</b>	<b>\$30,286,511</b>

Estimated revenues from Water Metered and Water Flat Rate are expected to remain the same through the end of the planning period. Water Metered includes all water revenues from water rates. Line 7, Water Costs, include the pass-through charges. Pass-through charges are the portion of the Commodity Charge that is adjusted annually by the Division, based on actual changes in water supply costs. For the purposes of this rate study, water costs revenues for FY 17/18 and subsequent years are included in Line 2, Water-Metered. For more detail, refer to Table A4 in Appendix A.

## 2.2.4 Rate Revenues from Proposed Rate Increases

Rate revenues resulting from proposed rate increases are shown later in this report.

## 2.3 Expenses

### 2.3.1 Key Assumptions

FY 17/18 O&M expenses are primarily based on the Division's FY 17/18 budget. In subsequent years, expenses are escalated for inflation. For the purposes of this rate study, General inflation was assumed to be 2.5%, Salaries and Wages Escalation is assumed to be 4%, and the rate of escalation for any Capital Improvements is assumed to be 2.5%. All percentages are assumed to remain constant through the end of the planning period, FY 21/22.

O&M expenses for FY 16/17 were obtained from the Division, as was the FY 17/18 budget. These records, along with conversations with Division staff, were used to identify significant deviations in O&M expenses compared with the Division's FY 17/18 budget.

Water production expenses are the single largest component of the Division's expenditures. A key assumption is that 75% of future water supply is locally produced groundwater, with the remaining 25% future water supply coming from imported water.

Projected annual water production, a combination of both locally produced groundwater and imported water, is assumed to be 23,000 acre-feet (AF) per year, for the entire planning period. This number takes water conservation and the drought into consideration.

Table 2-2 shows projected O&M expenses for the Study period. Additional detail is included in Appendix A, Table A-5.



**Table 2-2: Projected O&M Expenses**

Line No	PKG-NAME	Estimated				
		FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	Total Salaries and Wages	\$5,776,453	\$6,007,511	\$6,247,812	\$6,497,724	\$6,757,633
2	Total Contractual Services	\$7,557,919	\$7,927,772	\$7,583,182	\$7,742,477	\$7,905,754
3	Total Materials and Supplies	\$709,906	\$727,654	\$745,845	\$764,491	\$783,603
4	Total Water Production Expenses	\$15,246,121	\$16,036,877	\$16,972,643	\$17,736,364	\$18,067,013
5	<b>Total O&amp;M Expenses</b>	<b>\$29,290,399</b>	<b>\$30,699,814</b>	<b>\$31,549,481</b>	<b>\$32,741,056</b>	<b>\$33,514,003</b>

For the 25% of water production that is imported water, the primary cost is the imported water charge from Metropolitan Water District (MWD). For the 75% of water that is locally produced, the primary expenses are energy costs for pumping water, and the recharge assessment from the Orange County Water District (OCWD). More detail can be found in Appendix A.

### 2.3.2 Capital Facilities Plan

A key aspect of any rate study is defining the anticipated level of capital improvements over the planning period. Part of the scope of work of this rate study is the compilation and prioritization of a summary of known capital projects into a single Capital Facilities Plan (CFP). A review of the Division's 2008 Water Master Plan shows that some of the projects outlined were completed, however there are many high priority projects that remain.

The City of Garden Grove's water CFP projects were prioritized based on balancing several key factors and criteria, such as planning, engineering, operations, and affordability to the City. The Consultant Team reviewed the 2008 Water Master Plan and conducted numerous discussions with Division staff regarding water system priorities. The agreed approach was to distribute proposed CFP project costs as equally as possible into three categories ranked by priority, that correspond with three five-year planning periods. The first planning period is from 2017-2022, these are the Immediate Priority Projects that are outlined in Table 2-3. The second planning period is from 2022-2027, which covers the Second Priority Projects. The third planning period is from 2027-2032. Projects were prioritized from a reliability and sustainability perspective, by the Division and the Consultant Team.

**Table 2-3: Priority Phase, Dates and Total Cost**

Priority Phase/Date	Total Cost (\$)
Immediate Priority Projects (2017-2022)	\$36,643,066
Secondary Priority Projects (2022-2027)	41,378,105
Third Priority Projects (2027-2032)	98,507,944
<b>TOTAL</b>	<b>\$176,529,115</b>

Through discussions with Division staff, the highest priority was placed on water storage. Booster Pump Replacements/Upgrades and critical Existing System Fire Flow pipeline projects were given second highest priority. The remaining lesser critical distribution system improvements were given third highest priority.

The City of Garden Grove's water system has a total of eight reservoirs at five sites. Four reservoirs, which include Magnolia, West Garden Grove, West Haven East, and West Haven West, are underground. Four reservoirs, which include Trask East, Trask West, Lampson East, and Lampson West, are partially aboveground. Designs to address reservoir deficiencies have been completed for the underground West Haven Reservoirs rehabilitation project. Phase 1 of this project is ready to move forward but lacks the required funding for construction implementation. The rehabilitation of the remaining reservoirs, including those partially aboveground, has not been designed. Phase 2 is scheduled after the completion immediately following the Phase 1 West Haven Reservoir rehabilitations.

Reservoir Rehabilitations were determined to be a top priority, as a recent condition assessment identified improvements to eight reservoirs, addressing mechanical, structural, and security deficiencies. Reservoir rehabilitation is needed to maintain reliable water service with the current storage capacity volume.

Supervisory Control and Data Acquisition (SCADA) improvements at manually operated wells were also considered a high priority. In addition to potential to mechanical and electrical improvements, SCADA system limitations will also need to be addressed.

Although the first phase of SCADA improvements has been completed, the remaining SCADA improvements at manually operated wells are considered a high priority. Currently, O&M staff are required to visit the well sites to make necessary control adjustments at each well site in order to operate portions of the water system. The SCADA improvements will allow the O&M staff to operate the whole water system automatically and collect historical pumping data for future master planning efforts.

Table 2-4 are the items that were determined to be of immediate priority, and their costs, in 2016 dollars.

**Table 2-4: Capital Facilities Plan Immediate Priority Cost Summary**

<b>Capital Improvement/Facilities Plan: Immediate Priority Cost Summary (2017-2022)</b>		
<b>Category</b>	<b>Project Name</b>	<b>Cost (2016 dollars)</b>
Recurring Replacements	Service Lines, Fire Hydrants, Meters, Valves, and Appurtenances	\$17,537,415
Wells	Well Condition Assessment & Rehabilitation	\$933,257
Reservoirs	Reservoir Rehabilitations	\$16,272,538
Boosters	Portable Back-up Generators	\$1,047,510
Studies	Master Plan Update	\$450,000
Studies	Asset Management Study	\$227,347
Studies	Cyber Security	\$175,000
<b>TOTAL</b>		<b>\$36,643,066</b>

These are the projects that the Division plans to complete within the next five years, by 2022. Recurring replacements which are items like replacing pipes, fire hydrants, water meters, valves, and other appurtenances. This line item is estimated at approximately \$17.5M. The next largest item in Table 2-4 are the reservoir rehabilitations.

Projected project costs for all projects except for the reservoir rehabilitations are based on the costs provided in the 2008 Water Master Plan. The Consultant Team escalated the 2008 Water Master Plan to 2016 costs in two different ways. It used changes in the Turner Building Cost index between 2008 and 2016, and used changes in the Consumer Price Index (CPI) Utility and Public Transportation Category Index between 2008 and 2016. Of these two methods, the Turner Building Cost index produced the higher 2016 estimated costs, and this was used for the purposes of this analysis. The 2016 escalated cost was then further escalated to future (FY 17/18 thru FY 21/22) costs based on an assumed 3% annual inflation rate to generate the cost estimates used in the Rate Study.

Costs for the reservoir rehabilitation projects were based on the proposed costs presented in the City of Garden Grove Condition Assessment of Eight Concrete Reservoirs, prepared by Kleinfelder and Simon Wong in December 2013. The Capital Facilities Plan Assessment and Prioritization can be found in Appendix D, along with a complete list of all CFP projects and their costs, in 2016 dollars.

### 2.3.3 Existing and Future Debt

The Division currently has existing revenue bond debt. Table 2-5 describes the existing revenue bond principal and interest payments per fiscal year for the planning period. More detail is shown in Appendix A, Table A-9.

**Table 2-5: Existing Revenue Bond Debt Service**

Line No	Existing Revenue Bond Debt Service	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	Revenue Bond 2010A	\$910,163	\$918,638	\$914,263	\$906,913	\$909,413	\$905,038
2	Revenue Bond 2010B (Balloon 12/15/28 \$4.125M)	258,349	258,349	258,349	258,349	258,349	258,349
3	Revenue Bond 2010C (Balloon 12/15/30 \$3.195M)	204,129	204,129	204,129	204,129	204,129	204,129
4	Revenue and Refunding Bonds 2015	1,003,850	1,006,350	998,550	1,010,350	1,001,750	1,002,850
5	2010 Bonds Premium Amortization	4,853	4,853	4,853	4,853	4,853	4,853
6	2015 Bonds Premium Amortization	11,135	14,847	14,847	14,847	14,847	14,847
7	Total	\$2,392,478	\$2,407,164	\$2,394,989	\$2,399,439	\$2,393,339	\$2,390,064

The Division plans to issue new revenue bond debt in FY 18/19. The debt issuance is planned to ensure that the Division's Capital Facilities Plan can be implemented. At the same time, new debt reduces the amount of required revenue from rates, and from a rate increase. Below in Table 2-6, the amount of new revenue bond debt and the total principal and interest payments are shown for the planning period.

**Table 2-6: Proposed Revenue Bond Debt Service**

Line No	Proposed Debt Service	Issue Date	Issuance Amount	Interest Rate	Total Principal and Interest Payment				
					FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	Revenue Bond FY 17/18	17/18	\$0	5.0%	\$0	\$0	\$0	\$0	\$0
2	Revenue Bond FY 18/19	18/19	\$15,375,000	5.0%		1,120,634	1,120,634	1,120,634	1,120,634
3	Total				\$0	\$1,120,634	\$1,120,634	\$1,120,634	\$1,120,634

The Division also has an outstanding Intercity Loan with the City's General Fund. This debt has been in existence since the mid-1990s. The outstanding balance, as of FY 16/17 is \$13,374,978. The interest rate has been 6.5%. The Intercity Loan recognizes the cost of street damages related to the provision of water services until the mid-1990s. Since the mid-1990s, the Division has paid an annual street damage charge to the General Fund. This annual street damage charge is included in the O&M expenses shown in Table 2-2. Currently, the Division has been making annual interest payments, but has not been paying down principal.

Per conversations with City Council during the Council Study Sessions, the Division has taken two actions: 1) it will begin to repay principal over a 15 year period, and 2) the interest rate will be adjusted to a more current, competitive interest rate. For the purposes of this report, the interest rate will be revised to 4.10%. Table 2-6 shows the change in interest rate and the principal and interest payments for the planning period.

**Table 2-7: Proposed Intercity Loan Debt Service**

Line No	Intercity Loan Debt Service	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	Outstanding Principal Beginning year	\$13,374,978	\$13,374,978	\$12,711,965	\$12,021,769	\$11,303,274	\$10,555,322
2	Interest Rate (1)	6.50%	4.10%	4.10%	4.10%	4.10%	4.10%
3	Interest Payment	\$869,374	\$548,374	\$521,191	\$492,893	\$463,434	\$432,768
4	Principal Payment	0	663,013	690,196	718,494	747,953	778,619
5	Outstanding Principal, End of Year	\$13,374,978	\$12,711,965	\$12,021,769	\$11,303,274	\$10,555,322	\$9,776,703

## 2.4 Operating Statement

Water utility revenues and expenses are tracked in three funds: 1) Fund 601 (Water Operations); 2) Fund 602 (Water Capital); and 3) Fund 603 (Water Replacement). This section shows the revenues and expenses in each fund.

### 2.4.1 Fund 601 (Water Operations)

Table 2-8 and Table 2-9 are the Operating Statement for the Water Fund 601. Table 2-8 shows the sources of funds in Water Fund 601, which includes rate revenues and other income, including non-rate revenues. The total sources of funds is the sum of the beginning year fund balance, plus rate revenues and other income. Lines 7 thru 11 show the projected percentage rate increases in overall water rate revenues in each fiscal year. Water rate revenue increases were determined to pay the Division's expenses through FY 21/22, and meet the minimum reserve and debt service coverage ratio targets.

Proposed rate increases would be effective on January 1 of each year. Although the FY 17/18 rate increase, if adopted, would become effective in May 2018, the projections shown in Table 2-8 were made in the fall of 2017 and are based on a January 1, 2018 rate increase instead of the proposed May 1, 2018 rate increase. This Operating Statement shows the two month lag between the effective date of the rate increase, and when the Division receives revenues from the rate increase.

**Table 2-8: Sources of Funds, Fund 601**

Line No	SOURCES OF FUNDS			FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
FUND 601 (WATER OPERATIONS)								
1	Beginning of Year Balance, Fund 601			\$8,610,247	\$8,427,620	\$7,312,240	\$7,308,926	\$8,443,710
2	Rate Revenues							
3	Water Sales Revenues under Existing Rates			\$29,880,011	\$29,880,011	\$29,880,011	\$29,880,011	\$29,880,011
4	Additional Revenues From Rate Increases							
5		Percent	Months					
6	Fiscal Year	Increase	of Revenue					
7	FY 17/18	12.40%	4	1,235,040	3,705,121	3,705,121	3,705,121	3,705,121
8	FY 18/19	11.30%	4		1,265,040	3,795,120	3,795,120	3,795,120
9	FY 19/20	3.50%	4			436,103	1,308,309	1,308,309
10	FY 20/21	3.50%	4				451,367	1,354,100
11	FY 21/22	3.50%	4					467,164
12	Total Additional Revenues			\$1,235,040	\$4,970,161	\$7,936,344	\$9,259,917	\$10,629,814
13	Total Rate Revenues			\$31,115,051	\$34,850,172	\$37,816,355	\$39,139,928	\$40,509,825
14	Other Income							
15	Other Water Sales Revenue			\$154,500	\$4,500	\$4,500	\$4,500	\$4,500
16	Other Revenues			25,000	25,000	25,000	25,000	25,000
17	Non-Operating Revenues			220,385	220,385	220,385	220,385	220,385
18	Total Other Income			\$399,885	\$249,885	\$249,885	\$249,885	\$249,885
19	<b>Total Revenues</b>			<b>\$31,514,936</b>	<b>\$35,100,057</b>	<b>\$38,066,240</b>	<b>\$39,389,813</b>	<b>\$40,759,710</b>
20	Total Sources of Funds			\$40,125,183	\$43,527,677	\$45,378,480	\$46,698,739	\$49,203,420

Table 2-9 shows Water Fund 601 Uses of Funds. This table shows the payment of O&M Expenditures from Fund 601, along with Debt Service and transfers to Fund 603, which will be discussed later in the report.

**Table 2-9: Uses of Funds, Fund 601**

Line No	USES OF FUNDS			FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
FUND 601 (WATER OPERATIONS)								
1	O&M Expenditures							
2	Salaries & Wages			\$5,776,453	\$6,007,511	\$6,247,812	\$6,497,724	\$6,757,633
3	Contractual Services			7,557,919	7,927,772	7,583,182	7,742,477	7,905,754
4	Materials & Supplies			709,906	727,654	745,845	764,491	783,603
5	Water Production Expenses			15,246,121	16,036,877	16,972,643	17,736,364	18,067,013
6	Subtotal O&M Expenditures			\$29,290,399	\$30,699,814	\$31,549,481	\$32,741,056	\$33,514,003
7								
8	Subtotal Debt Service			\$2,407,164	\$3,515,623	\$3,520,073	\$3,513,973	\$3,510,698
9								
10	Transfer to Fund 602			\$0	\$0	\$0	\$0	\$0
11	Transfer to Fund 603			\$0	\$2,000,000	\$3,000,000	\$2,000,000	\$2,000,000
12	<b>Total Uses of Funds</b>			<b>\$31,697,563</b>	<b>\$36,215,438</b>	<b>\$38,069,554</b>	<b>\$38,255,030</b>	<b>\$39,024,701</b>
13								
14	End of Year Balance, Fund 601			\$8,427,620	\$7,312,240	\$7,308,926	\$8,443,710	\$10,178,719

## 2.4.2 Fund 602 (Water Capital)

Revenues in Fund 602, (Water Capital), are funded from the Capital Improvement Charge, and by revenue bond proceeds (see Table 2-8). Table 2-10 shows revenues for the Division's Water Capital fund. CFP expenses are both funded and paid for within Fund 602.

**Table 2-10: Sources of Funds, Fund 602**

Line No	SOURCES OF FUNDS			FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
No	FUND 602 (WATER CAPITAL)							
1	Beginning of Year Balance, Fund 602			\$8,744,205	\$5,395,365	\$15,465,650	\$11,195,978	\$6,941,942
2	Capital Improvement Charge							
3	Revenues Under Existing Rates			\$353,000	\$353,000	\$353,000	\$353,000	\$353,000
4	Additional Rate Revenues							
5			Months					
6	Fiscal Year	% Increase	of Revenue					
7	FY 17/18	12.40%	4	\$14,591	\$43,772	\$43,772	\$43,772	\$43,772
8	FY 18/19	11.30%	4		14,945	44,835	44,835	44,835
9	FY 19/20	3.50%	4			5,152	15,456	15,456
10	FY 20/21	3.50%	4				5,332	15,997
11	FY 21/22	3.50%	4					5,519
12	Total Additional Revenues Required			\$14,591	\$58,717	\$93,759	\$109,395	\$125,579
13								
14	Other Revenues			\$104,699	\$104,699	\$104,699	\$104,699	\$104,699
15	CIEDB Debt Proceeds			0	0	0	0	0
16	Revenue Bond Debt Proceeds			0	15,375,000	0	0	0
17	Transfer From Fund 601			0	0	0	0	0
18	Total Sources of Funds, 602			\$9,216,495	\$21,286,781	\$16,017,108	\$11,763,072	\$7,525,220

Table 2-10, lines 7-11, Revenues from Rate Increases are shown as percentage increases over current Capital Improvement Charge revenues and do not reflect the proposed rate structure shown in Section 3.

Table 2-11 shows the expenditures from Fund 602. The expenditures are capital improvements, and a transfer to the Division's Fund 603.

**Table 2-11: Uses of Funds, Fund 602**

Line No	USES OF FUNDS			FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
No	FUND 602 (WATER CAPITAL)							
1	Capital Improvements			\$3,821,130	\$3,821,130	\$3,821,130	\$3,821,130	\$3,821,130
2	Transfer to Fund 603			0	2,000,000	1,000,000	1,000,000	1,000,000
3	Capitalized Labor			0	0	0	0	0
4	Total Use of Funds			\$3,821,130	\$5,821,130	\$4,821,130	\$4,821,130	\$4,821,130
5	Ending Year Fund Balance, Fund 602			\$5,395,365	\$15,465,650	\$11,195,978	\$6,941,942	\$2,704,089

Table 2-11, Line 1, Capital Improvements, is shown as a five-year capital cost estimate of \$19,105,650, spread evenly over the five-year period.

### 2.4.3 Fund 603 (Water Replacement)

Table 2-12, Sources of Funds, Fund 603, (Water Replacement), pays for replacements, such as pipes, meters, valves, and hydrants. Fund 603 is funded by transfers from Fund 601, (Water Operations), and Fund 602, (Water Capital).

**Table 2-12: Sources of Funds, Fund 603**

Line No	SOURCES OF FUNDS			FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
No	FUND 603 (WATER REPLACEMENT)							
1	Beginning of Year Balance, Fund 603			\$3,588,879	\$113,295	\$637,712	\$1,162,129	\$686,545
2	Other Revenues (Interest)			\$31,900	\$31,900	\$31,900	\$31,900	\$31,900
3	Transfer From Fund 601			0	2,000,000	3,000,000	2,000,000	2,000,000
4	Transfer From Fund 602			0	2,000,000	1,000,000	1,000,000	1,000,000
5	Total Sources of Funds, 603			\$3,620,778	\$4,145,195	\$4,669,612	\$4,194,028	\$3,718,445

Table 2-13, Uses of Funds, Fund 603 (Water Replacement), shows that Replacement Expenditures are projected to be \$3,507,483 for each year in the five-year planning period.

**Table 2-13: Uses of Funds, Fund 603**

Line No	USES OF FUNDS FUND 603 (WATER REPLACEMENT)	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	Replacement Expenditures	\$3,507,483	\$3,507,483	\$3,507,483	\$3,507,483	\$3,507,483
2	Capitalized Labor	0	0	0	0	0
3	Total Use of Funds	\$3,507,483	\$3,507,483	\$3,507,483	\$3,507,483	\$3,507,483
4						
5	Ending Year Fund Balance, Fund 603	\$113,295	\$637,712	\$1,162,129	\$686,545	\$210,962

#### 2.4.4 Financial Performance Indicators

The Financial Performance Indicators used to evaluate water utility revenues are: 1) End of Year Reserve Balance; 2) Debt Service Coverage Ratio. Table 2-14 shows these Financial Performance Indicators for each year in the five year planning period.

The Division's reserve policy is that reserves must exceed the sum of:

1. Two months of O&M expenses
2. \$500,000 for contingencies
3. 5% of the net plant value

Table 2-14 shows that this policy is met in each of the five years in the planning period. Table 2-14 also shows the Debt Service Coverage Ratio (DSCR) calculation. A DSCR of at least 1.75 is maintained throughout the five-year planning period. This DSCR exceeds the requirement of the City's Revenue Bond Ordinances, and was used to improve the financial position of the utility. The DSCR criteria of 1.75 was used because it will give the City an advantage when it goes to the bond market in FY 18/19 to borrow money.

**Table 2-14: Financial Performance Indicators**

Line No	FINANCIAL PERFORMANCE INDICATORS	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	End of Year (EOY) Reserve Balance Criteria					
2	Criteria: Total combined fund 601,602,603 Reserves					
3	Combined EOY 601,602,603 Balance	\$13,936,280	\$23,415,602	\$19,667,032	\$16,072,197	\$13,093,770
4	Target Reserve Balance					
5	2 months O&M Expenses	4,881,733	5,116,636	5,258,247	5,456,843	5,585,667
6	Plus \$500,000 for Contingencies	500,000	500,000	500,000	500,000	500,000
7	Plus 5% of Net Plant (3)	6,940,000	6,940,000	6,940,000	6,940,000	6,940,000
8	Subtotal	\$12,321,733	\$12,556,636	\$12,698,247	\$12,896,843	\$13,025,667
9	Exceeds Target?	Yes	Yes	Yes	Yes	Yes
10	Available Reserves for Capital Projects	\$1,614,547	\$10,858,966	\$6,968,786	\$3,175,354	\$68,103
11	Debt Service Coverage Ratio					
12	Gross Revenue	\$32,019,126	\$35,648,373	\$38,649,598	\$39,988,807	\$41,374,888
13	Less O&M Expenses	(\$27,797,246)	(\$29,488,427)	(\$30,338,094)	(\$31,529,669)	(\$32,302,616)
14	Revenue Available for Debt Service	\$4,221,880	\$6,159,946	\$8,311,504	\$8,459,138	\$9,072,272
15						
16	Revenue Bond Debt Service	\$2,407,164	\$3,515,623	\$3,520,073	\$3,513,973	\$3,510,698
17	Debt Service Coverage Ratio	1.75	1.75	2.36	2.41	2.58

Line 13 shows O&M expenses subtracted from gross revenues. For purposes of debt service coverage calculation, our calculations do not include intercity loan interest and intercity loan principal. The O&M expenses in the debt service calculation will differ from the O&M expense in Table 2-2 above.

## Section 3

# Rate Structure Development

This section outlines the proposed water rate structure. The rate structure is developed using a Cost of Service Analysis, completed consistently with industry standards. This Cost of Service analysis used methodology from the American Water Works Association’s M1 Manual, Principles of Water Rates, Fees, and Charges (7<sup>th</sup> Edition).

### 3.1 Cost-of-Service Analysis

The first step in a Cost-of-Service analysis is functionalization, where water system expenses are grouped according to the functions of a water system. Water functions include pumping, storage, transmission and distribution (T&D), customer, meter, and administration. Table 3-1 shows the functionalization of the Division’s O&M expenses for FY 17/18. Additional detail is available in Appendix B.

Some of the key aspects of the functionalization calculations are:

1. Labor costs were functionalized based on a review, with division staff, of the job responsibilities of Water Division employees.
2. All source of supply expenses are included in Table 3-1 in the Rate Tier Calculations.
3. The City Street Damage Fee and the Intercity Loan was functionalized 50% to T&D, and 50% on a per customer basis.

**Table 3-1: Water System Cost-of-Service Analysis, FY 17/18 - Functionalization of O & M Expenditures**

Line No.	FY 17/18 Total	Pumping	Storage	T&D	Customer	Meter	Admin	Rate Tier Calculations	Fire Protection	
1	Total Salaries and Wages Expenditures	\$5,776,453	\$650,263	\$472,348	\$1,954,359	\$781,400	\$108,779	\$1,030,016	\$758,915	\$20,372
2	Total Contractual Services	7,557,919	240,220	106,744	1,819,453	1,990,605	40,185	3,072,827	280,358	7,526
3	Total Materials & Supplies	709,906	111,723	26,755	310,188	108,659	18,690	0	130,391	3,500
4	Total Water Production Expenses	15,246,121	439,147	0	0	0	0	0	14,806,974	0
5	Total	\$42,624,771	\$2,331,836	\$1,184,939	\$7,857,812	\$5,652,669	\$316,618	\$8,205,686	\$17,015,911	\$59,296

Table 3-2 shows the Functionalization of the Phase 1 Capital Facilities Plan. Forty six percent of the Phase 1 CFP cost are related to water storage, 32% of these costs are service line and meter replacements, which are functionalized to meters.

**Table 3-2: Water System Cost-of-Service Analysis - Functionalization of Phase 1 CFP**

Line	Project	Total Phase 1							Rate Tier Calculation	Fire Protection
		Capital Spending	Pumping	Storage	T&D	Customer	Meter	Admin		
1	Replace Misc. Distribution System Appurtenances	\$286,232			100%					
2	Service Line Replacements	7,068,075					100%			
3	Fire Hydrant Replacements	1,866,270								100%
4	Meter Replacements	5,141,311					100%			
5	Gate Valve Replacements	3,175,527			100%					
6	Site Modifications to Place Manually Operated Wells on SCADA	628,506	25%	25%	25%					25%
7	Portable Back-up Power Units	1,047,510	100%							
8	Reservoir Rehabilitations_ Near Term West Haven Reservoir Projects	4,599,808		100%						
9	Reservoir Rehabilitations_Trask Reservoirs Medium and High Priorities	1,055,106		100%						
10	Reservoir Rehabilitations_Trask Reservoirs Low Priorities	1,943,366		100%						
11	Trast Reservoir Site Mechanical and Security - High and Medium Priority	183,763		100%						
12	Reservoir Rehabilitations - Magnolia Reservoir Medium and High Priorities	549,598		100%						
13	Reservoir Rehabilitations Magnolia Reservoir Low Priorities	1,691,723		100%						
14	Magnolia Reservoir Site Mechanical and Security - High and Medium Priority	113,874		100%						
15	Magnolia Reservoir Site Mechanical and Security - Low Priority	3,383		100%						
16	Reservoir Rehabilitations West Garden Grove Reservoir Medium and High Priorities	988,389		100%						
17	Reservoir Rehabilitations West Garden Grove Reservoir Low Priorities	3,171,980		100%						
18	West Garden Grove Reservoir Site Mechanical and Security - High & Medium Priority	64,708		100%						
19	Reservoir Rehabilitations Lampson Reservoir Medium and High Priorities	1,513,246		100%						
20	Reservoir Rehabilitations_ Lampson Reservoir Low Priorities	338,345		100%						
21	Lampson Reservoir Site Mechanical and Security - High & Medium Priority	55,247		100%						
22	Exhaust Stack Corrections	22,129	100%							
23	West GG Sumps	511,840	100%							
24	Underground Vault Rehabilitation	785,633		100%						
25	Asset Management Study	327,347	25%	25%	25%					25%
26	Masterplan Update	550,000	25%	25%	25%					25%
27	Cyber Security	175,000	25%	25%	25%					25%
28	Total	\$37,857,916	\$2,001,692	\$17,478,382	\$3,881,972	\$0	\$12,209,386	\$0	\$0	\$2,286,483
29	As Percent		5%	46%	10%	0%	32%	0%	0%	6%

Table 3-3 shows the Functionalization of the Rate Revenue Requirement, for FY 17/18. Included in the rate revenue requirement are O&M expenditures, debt service payments, capital improvements and replacement expenditures. In FY 17/18, these expenditures are partially offset by non-rate revenues and use of reserves.

**Table 3-3: Functionalization of Rate Revenue Requirement**

Line No.		FY 17/18 Total	Pumping	Storage	T&D	Customer	Meter	Admin	Rate Tier Calculations	Fire Protection
1	O&M Expenses									
2	Water Production Expenses	\$15,246,121	\$439,147	\$0	\$0	\$0	\$0	\$0	\$14,806,974	\$0
3	Other	14,044,278	1,002,206	605,847	4,084,000	2,880,664	167,654	4,102,843	1,169,664	31,398
4	Debt Service	2,407,164	209,837	1,003,283	767,958	0	211,319	0	175,192	39,574
5	Capital Improvements	3,821,130	202,038	1,764,154	391,821	0	1,232,336	0	0	230,783
6	Replacement Expenditures	3,507,483	185,454	1,619,348	359,659	0	1,131,183	0	0	211,839
7	Less Other Revenues									
8	601 Fund	(399,885)	(7,138)	(62,327)	(13,843)	(154,000)	(43,538)	(110,885)	0	(8,154)
9	602 Fund	(104,699)	0	0	0	(39,000)	0	(65,699)	0	0
10	603 Fund	(31,900)	0	0	0	0	0	(31,900)	0	0
11	Change in Fund Balance	(7,007,051)	(370,489)	(3,235,041)	(718,507)	0	(2,259,812)	0	0	(423,201)
12										
13	Rate Revenue Requirement	\$31,482,642	\$1,661,055	\$1,695,264	\$4,871,088	\$2,687,664	\$439,142	\$3,894,359	\$16,151,830	\$82,239

The next step in a Cost of Service Analysis is allocation, where functionalized expenses are allocated to water system characteristics of average day demand, peak day demand, peak hour demand, and customer and water meter size.



In addition, source of supply costs are carried through the allocation step to be used in the rate tier calculations described later in this section. Table 3-4 shows the Allocation of FY 17/18 Rate Revenue Requirement.

**Table 3-4: Allocation of FY 17/18 Rate Revenue Requirement**

Line No.	FY 17/18 Projection	Extra Capacity			Customer		Rate Tier Calculations	Private Fire Protection
		Base	Max Day (2)	Max Hour(2)	Customer	Meter		
1	Water System Expenses							
2	Pumping	\$1,661,055	\$1,145,555	\$515,500	\$0	\$0	\$0	\$0
3	Storage	\$1,695,264	\$1,088,287	\$473,405	\$0	\$0	\$0	\$133,573
4	T&D	\$4,871,088	\$1,535,713	\$691,071	\$890,713	\$0	\$0	\$1,753,592
5	Customer	\$2,687,664	\$0	\$0	\$0	\$2,687,664	\$0	\$0
6	Meter	\$439,142	\$0	\$0	\$0	\$0	\$439,142	\$0
7	Administration (3)	\$3,894,359	\$1,283,615	\$572,068	\$303,307	\$915,208	\$149,537	\$0
8	Rate Tier Calculations	\$16,151,830	\$0	\$0	\$0	\$0	\$0	\$16,151,830
9	Fire Protection	\$82,239	\$0	\$0	\$0	\$0	\$0	\$82,239
10	Reallocate Public FP (4)	\$0	\$0	\$0	\$0	\$0	\$2,230,825	(\$2,230,825)
11	Total	\$31,482,642	\$5,053,170	\$2,252,044	\$1,194,020	\$3,602,872	\$2,819,504	\$16,151,830
12	Percent of Total	100%	16%	7%	4%	11%	9%	51%

Some of the key aspects of the allocation calculations are:

1. Pumping and storage costs are allocated to base (also referred to as average day) demand and maximum day demand. This is because pumping and reservoirs are sized to meet peak day demands, and they also are in use every day on a 24/7 basis.
2. A portion of storage costs are attributed to providing fire protection, based on an assessment of the amount of reservoir storage that is needed for fire protection, as described in the City's 2008 Water Master Plan.
3. Transmission and distribution system expenses are allocated to base, maximum day, and maximum hour demands because sizing of pipes also considers maximum hour demands. A portion of transmission and distribution expenses is also allocated to fire protection, recognizing that pipes are sized to provide fire flows.
4. Water supply costs are carried through to the rate tier calculations. In the Commodity Charge calculations described below, the charges for each rate tier are based on water supply costs.
5. Administrative expenses are allocated based on a weighted average of all other expenses.
6. Fire protection expenses, and the reallocation of public fire protection expenses, are discussed in further detail in Section 5 of this report.

Table 3-5 defines terms and clarifies the relationship between Water Service Characteristics and how costs are recovered in the proposed rate structure. The terms base, max-day, and max-hour demand are used in the industry standard publication, AWWA M1 Manual, Principals of Water Rates, Fees, and Charges, 7<sup>th</sup> Edition. Fixed charges refer to the Bi-Monthly Minimum Charge and the Capital Improvement Charge.

**Table 3-5: Relationship Between Water Service Characteristics and Rate Structure**

Water Service Characteristics	How Costs are Recovered in Rate Structure
Base Demand	Mostly through Commodity Charges, partially through Fixed Charges
Max Day and Max Hour	Commodity Charges
Customer and Meter	Fixed Charges
Rate Tier Calculations	Commodity Charges
Private Fire Protection	Fire Service Costs

## 3.2 Proposed Rate Schedule

The proposed rate structure was developed collaboratively by the Consultant and the Division, with input from City Council that was obtained during the four study sessions that occurred in 2017. The proposed rate structure is based on the following goals:

1. Balance revenue stability of higher fixed charges with financial impacts to rate payers that occur when fixed charges are raised.
2. Transition by FY 21/22 to collect 25% of revenues from fixed charges
3. Increasing the Capital Improvement Charge to pay for more of the capital costs
4. Simplify the Commodity Charge structure.
5. Restructuring Private Fire Service rates (see Section 5)
6. Two-tiered increasing block structure. The first tier includes locally produced groundwater, the second tier is imported water, at a 75%/25% ratio
7. Retaining the Low-Water User discount
8. Adding a proposed Low Income/Senior discount

The Division's proposed rate structure retains the Bi-Monthly Minimum Charge, but increases it to provide a more financially stable utility. Table 3-6 shows the proposed charges for each meter size.

**Table 3-6: Proposed Bi-Monthly Minimum Charges**

Line No	Meter Size	Meter	Proposed Bi-Monthly Minimum Charges					
		Equivalent Ratio	Current	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	5/8 x 3/4"	1.0	\$12.74	\$18.02	\$28.15	\$29.63	\$31.95	\$33.85
2	1"	2.5	\$33.99	\$38.11	\$46.03	\$47.18	\$49.00	\$50.48
3	1 1/2"	5.0	\$65.82	\$68.92	\$74.86	\$75.72	\$77.09	\$78.20
4	2"	8.0	\$99.79	\$102.71	\$108.30	\$109.12	\$110.40	\$111.45
5	3"	16.0	\$165.62	\$174.25	\$190.83	\$193.24	\$197.04	\$200.15
6	4"	25.0	\$229.32	\$246.97	\$280.86	\$285.80	\$293.57	\$299.92
7	6"	50.0	\$524.45	\$537.61	\$562.87	\$566.55	\$572.34	\$577.08
8	8"	80.0	\$819.60	\$842.12	\$885.35	\$891.66	\$901.56	\$909.67
9	10"	120.0	\$1,114.74	\$1,174.34	\$1,288.76	\$1,305.45	\$1,331.67	\$1,353.13
10	Note: Proposed Minimum Charges rounded off to the nearest \$0.01.							

Currently, the Division charges a Bi-Monthly Capital Improvement Charge, based on meter size. Table 3-7 shows the current and proposed charges, for each meter connection size. The Capital Improvement Charge is increased to provide additional funds to complete the CFP. However, even at the proposed FY 21/22 charges, the Capital Improvement Charge does not fully fund the CFP; a portion of the other water rate revenues will also provide the needed revenue. This is evidenced by the continued transfers from Fund 601 (Water Operations) to Fund 603 (Water Replacement), and by the use of revenue bond proceeds in Fund 602 (Water Capital) (see Tables 2-9 and 2-10).

**Table 3-7: Proposed Bi-Monthly Capital Improvement Charge**

Line No	Meter Size	Meter Equivalent Ratio	Current Charge	Proposed Bi-Monthly Capital Improvement Charge				
				FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	5/8 x 3/4"	1.0	\$1.47	\$3.00	\$4.00	\$5.00	\$6.00	\$7.00
2	1"	2.5	\$2.07	\$7.50	\$10.00	\$12.50	\$15.00	\$17.50
3	1 1/2"	5.0	\$2.64	\$15.00	\$20.00	\$25.00	\$30.00	\$35.00
4	2"	8.0	\$4.27	\$24.00	\$32.00	\$40.00	\$48.00	\$56.00
5	3"	16.0	\$16.19	\$48.00	\$64.00	\$80.00	\$96.00	\$112.00
6	4"	25.0	\$20.60	\$75.00	\$100.00	\$125.00	\$150.00	\$175.00
7	6"	50.0	\$30.90	\$150.00	\$200.00	\$250.00	\$300.00	\$350.00
8	8"	80.0	\$42.68	\$240.00	\$320.00	\$400.00	\$480.00	\$560.00
9	10"	120.0	\$54.45	\$360.00	\$480.00	\$600.00	\$720.00	\$840.00

Table 3-8 shows the proposed Commodity Charges. The current rate structure is a four-tier structure, with a single pass-through charge applied to all water consumption. The proposed rate structure has two tiers, and each tier has a pass-through charge.

**Table 3-8: Proposed Commodity Charges and Estimated Pass-Through Charge**

	Two-Tier Commodity Delivery Charge, \$/ccf				
	FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
Tier 1 Commodity Charge, Excluding Pass Through	\$2.94	\$2.94	\$2.92	\$2.89	\$2.86
Tier 1 Estimated Pass Through		\$0.07	\$0.15	\$0.20	\$0.29
Tier 2 Commodity Charge, Excluding Pass Through	\$3.65	\$4.06	\$4.15	\$4.28	\$4.40
Tier 2 Estimated Pass Through		\$0.08	\$0.17	\$0.25	\$0.28

Tier 1 is based on the cost of locally-produced groundwater. Tier 2 is based on the cost of imported water. Additional detail on rate tier calculations is included in Appendix C. Table 3-9 defines the amount of water in the first tier, for each meter connection size. The Division uses a 75% locally produced ground water and 25% imported water ratio. The amount of water included in Tier 1 was determined with the intent of having 75% of metered water consumption fall into Tier 1. The remaining 25% of water consumption would fall in Tier 2.

**Table 3-9: Define Amount of Water in First Tier**

Line No	Meter Size	Meter Equivalent Ratio	hcf Included in First Tier, per Billing Period
1	5/8 x 3/4"	1.0	33
2	1"	2.5	83
3	1 1/2"	5.0	165
4	2"	8.0	264
5	3"	16.0	528
6	4"	25.0	825
7	6"	50.0	1,650
8	8"	80.0	2,640
9	10"	120.0	3,960

The consumption data was then used to develop the 75%/25% two tier rate structure. The proposed rate structure is intended to be consistent with the requirements of Proposition 218.

### 3.3 Low Income/Senior Discount and Low Water User Discount

The Division currently has a Low-Water User Discount in place. Currently, customers that use 3 hcf or less per month, or 6 hcf or less per billing period, only pay the minimum charge. They do not pay the Commodity Charge or the

Capital Improvement Fee. The Low-Water User Discount program will be retained, and customers using 6 hcf or less per billing period will not pay Commodity Charges. However, the program is being modified to require the Low-Water Use customer to pay the Capital Improvement Charge.

The Division has proposed a Low-Income/Senior Discount, intended to partially mitigate the financial impacts of the higher fixed charges. This proposed discount program would have the following eligibility criteria:

1. Resident must live at the billing address
2. The water bill must be in the resident's name
3. The resident must be 65 years of age or older
4. The resident must be enrolled in Southern California Edison's CARE program

Initially, if adopted by City Council, the \$10 per billing period discount would be offered. The Low-Income/Senior Discount program would be funded using non-rate revenues, such as late fees.

## Section 4

# Example Monthly Water Bill Comparison

### 4.1 Introduction

In this Section, Example Monthly Water Bills are shown for the typical single-family household consuming 15 hcf per month, or 30 hcf per billing period. An example bill for a high water user with a 5/8" x 3/4" meter connection.

Table 1-1 in Section 1 shows existing Bi-Monthly Minimum Charges and Capital Recovery Charge. All rates are based on meter connection size. A Bi-Monthly water bill includes a minimum charge, a Capital Recovery charge, plus a Commodity Pass-Through Charge, per number of hcf used per billing period. All rates are current, as of July 1, 2017.

All example bills are shown using the proposed rate schedules in Section 3. Table 3-6, Proposed Bi-Monthly Minimum Charges, Table 3-7 Proposed Bi-Monthly Capital Improvement Charge, and Table 3-8, Proposed Two-Tier Commodity Delivery Charges, \$/hcf. Table 3-9 Define Amount of Water in First Tier is also used to show the number of hcf to be included in the first tier, per billing period.

### 4.2 Example Bill for a typical 5/8" x 3/4" Meter Connection

Table 4-1 shows proposed Bi-Monthly rates that include the Minimum Charge, Capital Recovery Charge, and Commodity Charges, for a typical 5/8" x 3/4" meter connection.

**Table 4-1. Proposed Rate Structure for a Typical 5/8" x 3/4" Meter**

Line No		Current	5/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022
1	Proposed Monthly Rates						
2	Bi-Monthly Min Charge	\$12.74	\$18.02	\$28.15	\$29.63	\$31.95	\$33.85
3	Bi-Monthly Capital Recovery Charge	\$1.47	\$3.00	\$4.00	\$5.00	\$6.00	\$7.00
4	Commodity Charge, \$/hcf						
5	1st Tier	\$3.07	\$2.94	\$2.94	\$2.92	\$2.89	\$2.86
6	Estimated 1st Tier Pass-Through		\$0.00	\$0.07	\$0.15	\$0.20	\$0.29
7	2nd Tier	\$3.15 - \$3.33	\$3.65	\$4.06	\$4.15	\$4.28	\$4.40
8	Estimated 2nd Tier Pass-Through		\$0.00	\$0.08	\$0.17	\$0.25	\$0.28

Table 4-2 shows an example water bill for a single-family customer with a 5/8" x 3/4" meter, using 15 hcf per month, or 30 hcf per bi-monthly billing period. For a customer that uses approximately 15 hcf per month, all of the commodity charges will be in the first tier.

**Table 4-2. Example Water Bill for a 5/8" x 3/4" Meter, 30 hcf Typical Customer**

	Single Family, 30 hcf Bi-Monthly Water Use						5-Year Cumulative
Current	5/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022		
\$106.31	\$109.22	\$120.35	\$122.23	\$124.65	\$126.65	\$20.34	
% Change	2.7%	10.2%	1.6%	2.0%	1.6%	19.1%	

(does not include estimated pass-thru charges)

Table 4-3 shows an example water bill for a single-family customer with a 5/8" x 3/4" meter, using 30 hcf per month, or 60 hcf per bi-monthly billing period. This customer would be considered a high water user. For this customer, some of the commodity charges will be in Tier 1, and some in Tier 2. Refer to Table 3-8 and 3-9.

**Table 4-3. Example Water Bill for a 5/8" x 3/4" Meter, High Water Use Customer**

Current	Single Family, 60 hcf Bi-Monthly Water Use					5-Year
	5/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022	Cumulative
\$200.33	\$216.47	\$238.07	\$241.94	\$247.64	\$251.80	\$51.47
% Change	8.1%	10.0%	1.6%	2.4%	1.7%	25.7%

(does not include estimated pass-thru charges)

Table 4-4 shows an example bill for a Multi-Family customer with a 3" meter. This example is for a 50 unit building, where each unit consumes 12 hcf per unit. On a bi-monthly bill, this comes to 600 hcf per month, or 1,200 hcf per billing period.

**Table 4-4. Example Water Bill for a 3" Meter, Multi-Family Water Customer**

Current	Multi-Family 50-Units, 12 hcf/month per unit					5-Year
	5/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022	Cumulative
\$4,107.53	\$4,227.37	\$4,535.47	\$4,603.80	\$4,695.12	\$4,779.03	\$671.50
% Change	2.9%	7.3%	1.5%	2.0%	1.8%	16.3%

(does not include estimated pass-thru charges)

Table 4-5 shows an example bill for typical Commercial customer with a 2" meter, using 500 hcf per bi-monthly billing period. For this customer, 500 hcf per billing period is divided into two tiers. Tier 1 water use is 264 hcf and Tier 2 water use is 236 hcf.

**Table 4-5. Example Water Bill for a 2" Meter, Commercial Water Customer**

Current	Example Commercial, 500 hcf Bi-Monthly Water Use					5-Year
	5/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022	Cumulative
\$1,698.68	\$1,764.27	\$1,874.62	\$1,899.40	\$1,931.44	\$1,960.89	\$262.21
% Change	3.9%	6.3%	1.3%	1.7%	1.5%	15.4%

(does not include estimated pass-thru charges)

### 4.3 Comparison with Other Utilities

Figure 2 shows a comparison of monthly water bills for Garden Grove and six other local utilities. This graph shows the water bill for a single-family residence with a 5/8" x 3/4" water meter, at monthly consumption ranging from 0 to 30 hcf/month. This graph shows that Garden Grove's water rates are in the middle of the pack, compared with these six other utilities.

Proposed water bills are not shown in Figure 2. This is because it can be misleading to compare future rates with other utilities current rates. Additionally, some utilities are in the process of revising rates. For example, the City of Orange adopted a rate increase in December 2017, and the City of Santa Ana is expected to begin a Water Rate Study in 2018.

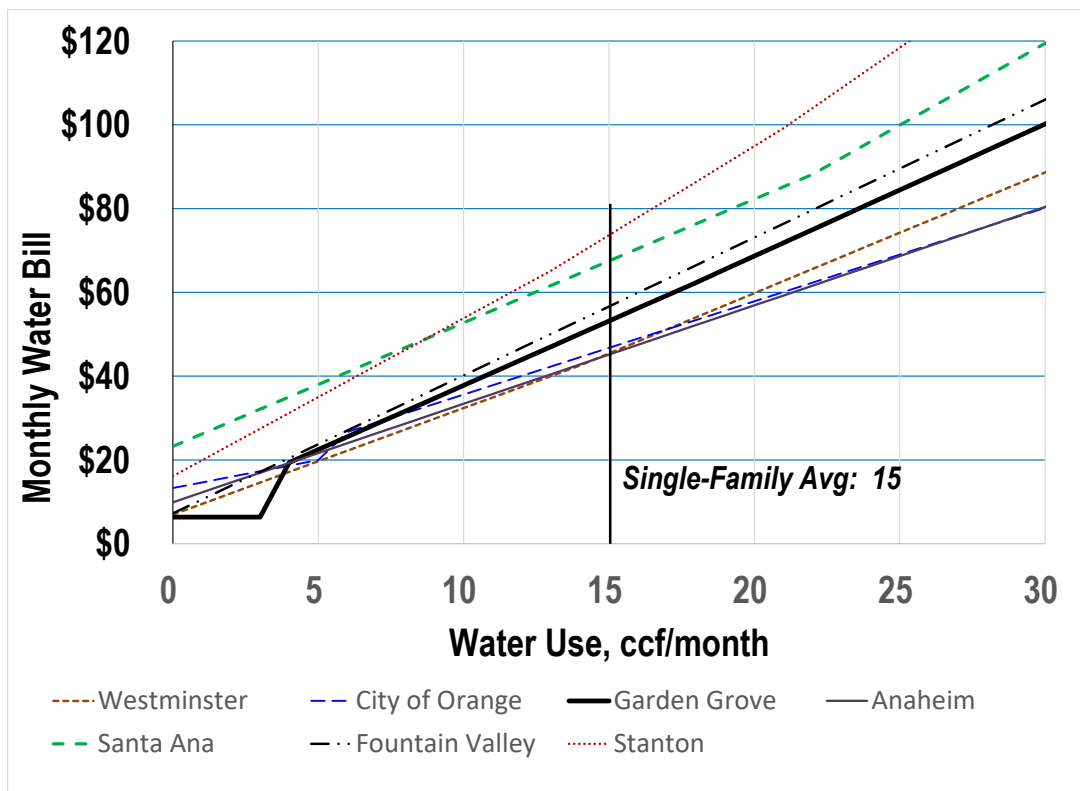


Figure 2: Water Bill Comparison of Local Utilities





## Section 5

# Fire Service Rates

### 5.1 Introduction

Fire Service rates are charged to private fire service connections. Updating Fire Service rates was done to equitably distribute the costs of providing fire protection. The methodology for revising Fire Service rates is discussed in the AWWA M1 Manual.

### 5.2 Existing Fire Service Rates

Table 5-1 shows the existing Fire Service rates for each meter size. The majority of Fire Service customers have a 4", 6", or 8" meter. Currently, Fire Service customers also pay the Capital Improvement Charge. Table 5-1 shows the total paid, per meter size, for both the bi-monthly rate and the Capital Improvement Charge.

**Table 5-1: Existing Bi-Monthly Fire Service Rates**

Connection Size (in)	Current Capital		
	Current Rates Fire Service	Improvement Charge	Current Rates Total
5/8 x 3/4"	\$11.00	\$1.47	\$12.47
1"	\$11.00	\$2.07	\$13.07
1 1/2"	\$11.00	\$2.64	\$13.64
2"	\$11.00	\$4.27	\$15.27
3"	\$14.00	\$16.19	\$30.19
4"	\$19.00	\$20.60	\$39.60
6"	\$29.00	\$30.90	\$59.90
8"	\$38.00	\$42.68	\$80.68
10"	\$48.00	\$54.45	\$102.45

### 5.3 Proposed Fire Service Rates

The Cost-of-Service analysis described in Section 3 includes an assessment of the cost to provide Fire Service. Table 3-4 in Section 3 shows the key aspects of defining the costs of providing Fire Service. It shows that a portion of storage and transmission and distribution costs are assigned to Fire Service, recognizing that an important function of reservoirs and pipes is providing sufficient quantities of water throughout the system for fire protection.

The total cost to provide fire protection is approximately \$2.6M in FY 17/18. This cost is split between public fire services, (i.e. fire hydrants) and private fire service connections by a size-weighted tabulation of "equivalent fire service connections" (see Appendix C for more detail).

In Table 3-4, the cost associated with public fire protection is recovered from water system customers on a per-meter equivalent basis.

Table 5-2 shows the proposed Fire Service Rates. These proposed rates increase with increasing connection size proportional to the Hazen-Williams equation for flow through pressure conduits, as described in the AWWA M1 Manual, 7<sup>th</sup> Edition, page 162.

**Table 5-2: Proposed Bi-Monthly Fire Service Rates**

Line No	Connection Size (in)	Demand Factor	Proposed Bi-Monthly Fire Service Rate				
			FY 17/18	FY 18/19	FY 19/20	FY 20/21	FY 21/22
1	5/8 x 3/4"	1.00	\$0.84	\$0.93	\$0.96	\$0.99	\$1.02
2	1"	1.00	\$0.84	\$0.93	\$0.96	\$0.99	\$1.02
3	1 1/2"	2.90	\$2.43	\$2.70	\$2.79	\$2.89	\$2.99
4	2"	6.19	\$5.17	\$5.75	\$5.95	\$6.16	\$6.38
5	3"	17.98	\$15.02	\$16.72	\$17.31	\$17.92	\$18.55
6	4"	38.32	\$32.01	\$35.63	\$36.88	\$38.17	\$39.51
7	6"	111.31	\$93.00	\$103.51	\$107.13	\$110.88	\$114.76
8	8"	237.21	\$198.18	\$220.57	\$228.29	\$236.28	\$244.55
9	10"	426.58	\$356.40	\$396.67	\$410.55	\$424.92	\$439.79

With these proposed Fire Service rates, Private Fire Service customers will no longer pay a Capital Improvement Charge. The cost of capital improvements attributable to fire protection is already included in the proposed Fire Service changes.

## Section 6

# Ongoing Considerations

This Rate Study and the projected rate schedule shown in Section 3 cover a Rate Study planning period through FY 21/22. There are a number of factors that will change over the next few years that have financial implications. The extent to which these factors change will influence the financial condition of the water system and the Division's next review of water rates.

The Department should continue to monitor its financial status on an ongoing basis, and should continue to monitor the following:

- Water consumption patterns. Financial projections are based on an overall water demand of 23,000 acre-feet per year. Changes in water demand patterns will affect revenues and the overall financial condition of the utility. If water demands differ from 23,000 acre-feet per year, the Division will need to make appropriate adjustments to capital project scheduling, debt issuance, and/or rates.
- Customer growth. This Rate Study assumes no customer growth through FY 21/22. Customer growth increases the size of the customer base and customer growth would result in higher rate revenues.
- Changes in regional water supply availability and pricing. The projected Commodity Pass-Through Charge incorporates anticipated increases in the cost of purchased water and increases in OCWD's Recharge Assessment associated with locally-produced groundwater. The Division will need to monitor these costs and continue to adjust the Commodity Pass-Through Charge on an annual basis.
- Capital project cost certainty. The Capital Facilities Plan contains estimates of future project costs. The actual costs will not be known until the projects are designed, bid, and built.
- Inflation rates. The projected rates are based on a 2.5 percent annual inflation rate for most items, and a 4.0 percent annual inflation rate for salaries and wages. Deviations in inflation rates from these values will have financial implications.
- Interest rates. Interest rates on the proposed Revenue Bond debt that differ from assumptions used in this Study will have financial implications.

Low-Income Senior Discount participation. The Division has dedicated non-rate revenues as the funding source for the proposed Low-Income Senior Discount, if adopted by Council. After the program is implemented, the Division will need to monitor the participation rate and make appropriate adjustments (if needed) to the amount of the discount and/or the funding source.



## Section 7

# Appendix A: Revenue Requirement

---



## Appendix B: Cost-of-Service Analysis

---





## Appendix C: Rate Design

---



## Appendix D: Capital Facilities Plan

---



## Appendix E: Not Used

---



## Appendix F: Budget-Based Rate Structure Analysis

---