

WATER, RECYCLED WATER & WASTEWATER RATE STUDY REPORT 2017

El Toro Water District

Final April 25, 2017





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April 25, 2017

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Subject: Water, Recycled Water and Wastewater Rate Study Report 2017

Dear Mr. Cafferty:

As part of the annual cost of service and rate update process, El Toro Water District (ETWD or District) engaged Raftelis Financial Consultants, Inc. (RFC) to conduct a cost of service study for the development of its water, wastewater, and recycled water rates that comply with Proposition 218 and other legal requirements. As part of the Study, RFC reviewed the latest operating budget, including purchased water costs, referenced previously conducted cost of service analyses, and calculated the water, wastewater and recycled water rates for the District in fiscal year (FY) 2017-18. The updated rates, scheduled to be effective on July 1, 2017, reflect projected changes in net revenue requirements for each enterprise and projected water sales for FY 2017-18.

This *Water, Recycled Water and Wastewater Rate Study Report* (Report) summarizes the key findings and recommendations related to the development of the respective rates.

It has been a pleasure working with the District. We would like to thank you for your assistance during the course of the study. If we can be of further assistance, please call me at 626-583-1894 or Khanh Phan at 626-233-6762.

Sincerely,

A blue ink signature of Sudhir Pardiwala, written in a cursive style.

Sudhir Pardiwala
Executive Vice President

A black ink signature of Khanh Phan, written in a cursive style.

Khanh Phan
Sr. Consultant

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Glossary

AF	Acre foot / acre feet
AWWA	American Water Works Association
CCF	100 cubic feet = 748 gallons
CII	Commercial / Industrial / Institutional (i.e. Commercial and Public Authority)
COS	Cost of Service
DF	Drought Factor (see Section 4 for details)
EDU	Equivalent dwelling unit
ET₀	reference Evapotranspiration (see Section 4 for details)
ETAF	ET Adjustment Factors (see Section 4 for details)
FY	Fiscal year
GPCD	Gallons per capita per day
IRR	Irrigation
IWB	Indoor Water Budget (see Section 4 for details)
M1 Manual	M1 Manual, Principles of Water Rates, Fees and Charges, Sixth Edition published by AWWA
MFR	Multi-Family Residential
MWD	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
O&M	Operations & Maintenance
OWB	Outdoor Water Budget (see Section 4 for details)
R&R	Replacement and Refurbishment
RFC	Raftelis Financial Consultants, Inc.
RW	Recycled Water
SFR	Single Family Residential
SQ FT	Square feet
TWB	Total Water Budget = Indoor Water Budget + Outdoor Water Budget
V_{indoor} / V_{outdoor}	Indoor Variance / Outdoor Variance (see Section 4 for details)
WB	Water Budget
WRP	Water Recycling Plant

1 Executive Summary

Utility rates, especially water rates, are coming under increasing scrutiny as supplies tighten, costs and rates increase, and organized groups and customers question the equitability of rates. The El Toro Water District (District) proactively wants to ensure that its rates are consistent with regulatory requirements and are a fair and equitable means of distributing the costs of providing service.

The entire state of California experienced one of the most severe droughts in 2016, prompting statewide conservation. In response to the Drought Emergency, the District reduced the outdoor drought factor and the corresponding allocation for outdoor use (Tier 2) to 50%. The resulting water sales in FY 2016 dropped 20% from the actual FY 2015 sales.

In May 2016, California Governor Brown issued Executive Order B-37-16 directing actions aimed at using water wisely, reducing water waste, and improving water use efficiency for the years and decades ahead and making water conservation a way of life in California. The mandatory cutback set by the Governor's Executive Order B-29-15 was extended to October 2016 by Executive Order B-35-15, and was lifted in November 2016. The District Board of Directors subsequently approved the increase of the outdoor drought factor and corresponding allocation for outdoor use to 75%. The rainy winter of 2016-17 significantly improved the water supply conditions in California. The District restored the outdoor drought factor to 100% in May 2017. The rates calculated in this study are based on projected sales considering continued conservation.

The District engaged Raftelis Financial Consultants, Inc. (RFC) to conduct the Water, Recycled Water (RW) and Wastewater Rate Study (Study) to develop rates for all three enterprises that are equitable and in compliance with Proposition 218. This *Water, Recycled Water and Wastewater Rate Study Report 2017* (Report) summarizes the key findings and recommendations related to the development of the respective rates.

1.1 Legal Framework

The legal framework that supports the proposed rates and the equitable distribution of Costs of Service among Customer Classes in accordance with applicable Constitutional and Statutory Mandates is described in detail within Section 3.1.

1.2 Water, Wastewater, and Recycled Water Rate Structure Overview

The District's current water and wastewater rate structure consists of the following components to ensure that rates are charged equitably to all customers, provide adequate revenues to fund operating and capital costs, and are simple to administer and implement while continuing to promote water efficiency and conservation.

- Water
 - Monthly Service Charges by meter size to recover a portion of operating costs
 - Variable Rates: Tiered Residential Rates, and Uniform Commercial Rates, comprised of the following rate components:
 - Water Supply Rate to pay for purchased water supply costs
 - Delivery Rate to recover the remaining operating costs
 - Revenue Offset to provide a rate incentive and affordability for essential water use in Tier 1, the offset is provided from non-rate revenues
 - Conservation and Recycled Water Program costs applied to inefficient and excessive water use to fund the District's conservation and supplemental water supply (i.e., Recycled Water expansion) programs
 - Capital Replacement and Refurbishment (R&R) Charges by meter size to pay for capital replacement and refurbishment of the existing water system
- Wastewater
 - O&M Charges (by dwelling units for residential customers and by usage for non-residential customers) by customer classes
 - Capital R&R Charges by meter size to pay for capital R&R of the existing wastewater system

To ensure compliance with Proposition 218, we recommend retaining the same defensible methodology from the 2015 Rate Study to determine justified water rates. The methodology is as follows:

1. Water usage is grouped based on usage and peaking characteristics:
 - Tier 1 – Efficient Indoor or domestic use
 - Tier 2 – Efficient outdoor use
 - Tier 3 – Inefficient use
 - Tier 4 – Excessive use
 - Commercial use will include domestic indoor use, efficient outdoor use, and inefficient use but is combined into a uniform rate since commercial usage varies widely among customers and fixed tiers are not fair to users with widely varying usage characteristics.
2. Water systems are designed to accommodate the peak use of any class or type of customer. Since the system is designed to meet peak conditions, and different uses have different peaks, rates for the different usages can be based on peaking characteristics. Indoor or domestic use has the lowest peaking since this use occurs year-round, therefore Tier 1, comprised of residential (Single Family Residential [SFR] and Multi-Family Residential [MFR]) domestic use will have the lowest rates. Efficient outdoor or irrigation use has higher peaking characteristics, so Tier 2 has rates based on higher peaking factors. Inefficient and excessive uses have the highest peaking factors and the rates reflect the higher peaking and other costs. In the cost of service analysis, peaking costs are included in the delivery charges. Indoor or domestic use has the lowest peaking factors; therefore, all indoor use (residential and commercial) is assigned a lower delivery cost. Outdoor Irrigation is associated with higher peaking factors, so outdoor use including residential irrigation

and the current irrigation class will have higher delivery costs. Inefficient and excessive uses have even higher peaking factors and are assigned the highest delivery costs.

3. The Commercial class rates will continue to be a uniform rate based on domestic use and inefficient use. Based on Senate Bill x7-7 (SB x7-7), which requires commercial users to cut back by 10 percent, we define 10 percent of commercial use as inefficient use, which is subject to higher peaking, conservation, and supplemental water supply costs as explained below. The remaining 90 percent of use is defined as efficient indoor and other efficient commercial use.

Of the 90 percent of efficient use —

- 10 percent is estimated for efficient outdoor use (9% of overall commercial use)
 - 90 percent is estimated for indoor use (81% of overall commercial use).
4. Only the inefficient and excessive usage is targeted for conservation, therefore conservation costs are applied only to inefficient and excessive use.
 5. Supplemental water programs are required to meet the demands of inefficient and excessive usage and those costs are assigned to inefficient and excessive usage.
 6. Finally, based on the District's current policy objective to provide rate incentives for essential and efficient indoor use, revenues from cell tower leases (aka site lease income) and a portion of the property taxes received by the District are used to offset the indoor use (Tier 1), which benefits residential customers, and efficient commercial indoor use.

In summary, to ensure compliance with Proposition 218, we have identified and allocated the costs and provided conservation incentives to different uses and customer classes in proportion to the service they receive. We have also developed tiers for residential and irrigation customers to meet conservation requirements and to harmonize with Article X, Section 2, of the State Constitution:

- Usage will be classified as efficient indoor/domestic, efficient outdoor, inefficient and excessive;
- All customers will benefit from property tax and miscellaneous revenue offsets;
- All inefficient and excessive usage will bear the costs of conservation programs and supplemental water sources (aka Recycled Water [RW] Program Funding);
- Peaking or delivery costs will be assigned to the different usages based on the individual peaking characteristics of each type of usage; and
- Residential rates will continue to be tiered and commercial rates will be uniform.

In FY 2015, the District completed the expansion of its RW system, including Water Recycling Plant (WRP) upgrades to tertiary treatment and RW transmission pipeline expansion and started the customer conversion process from potable to recycled water to increase its RW sales and reduce potable water sales. During FY 2016 the District completed the conversion process and increased delivery by 245 acre feet (AF) per year to a projected 1,275 AF per year in FY 2017 to 211 irrigation accounts converted to RW accounts. As part of the Study, RFC developed the recycled water rates that recover the operations and maintenance (O&M) of the recycled water system after the expansion to supply 1,275 AF to 211 RW customers.

1.3 Proposed Water Rates

The recommended rate structure consists of the monthly fixed service and the volumetric commodity rates which are determined as follows (Table 1-1). For more information and detailed analyses, refer to Section 4 for Water Budget and Tier Definitions, Section 5 for Purchased Water Supply Cost, and Section 6 for Cost of Service and Proposed Water Rates.

Table 1-1: Cost Categories and Water Rate Structure

Cost Components	Service Charges	Tier 1 Essential Use	Tier 2 Efficient Use	Tier 3 Inefficient Use	Tier 4 Excessive Use	Commercial Use
Billing & Customer Service	x					
Meters	x					
Fixed Base Costs	x					
Delivery Peaking Costs	x	x	xx	xxx	xxx	x
Water Supply		x	x	x	x	x
RW Program Funding				xx	xxx	x
Conservation				x	x	x
Rev Offset		x				x

The proposed water operations and maintenance monthly service charges for each meter size are shown in Table 1-2. Detail calculations for the proposed charges are shown in Section 6.

Table 1-2: Monthly Service Charges

Meter Size	Billing & Customer Service (A)	Meters & Capacity (B)	Proposed FY 2018 (C = A+B)	Current FY 2017 (D)	\$ Change (E = C – D)	% Change (F = E/D)	Number of Accounts ¹ (G)
5/8"	\$3.77	\$8.03	\$11.80	\$10.93	\$0.87	8.0%	2,383
¾"	\$3.77	\$12.05	\$15.82	\$14.58	\$1.24	8.5%	4,855
1"	\$3.77	\$20.08	\$23.85	\$21.86	\$1.99	9.1%	444
1 ½"	\$3.77	\$40.15	\$43.92	\$40.06	\$3.86	9.6%	692
2"	\$3.77	\$80.30	\$84.07	\$76.48	\$7.59	9.9%	1,408
Projected Revenues			\$3,171,337	\$2,903,319	\$268,018	9.2%	9,782

¹ Includes accounts converting to recycled water system

Water capital R&R charges will remain unchanged from FY 2017 levels and are shown in Table 1-3.

Table 1-3: Water Capital R&R Charges

Capital R&R Charges Meter Size	Current FY 2017	Proposed FY 2018	# of Water Accounts	RW Accts	# of Accounts (including RW)
5/8"	\$4.66	\$4.66	2,383	0	2,383
3/4"	\$4.66	\$4.66	4,855	0	4,855
1"	\$7.78	\$7.78	444	0	444
1 1/2"	\$18.91	\$18.91	682	10	692
2"	\$47.47	\$47.47	1,207	201	1,408
Projected Revenues	\$1,405,283	\$1,405,283	\$1,288,516	\$116,767	9,782

The proposed water commodity rates are shown in dollars per hundred cubic feet (ccf²), by usage type for FY 2018 in Table 1-4 in the first column. The components that make up the charge are shown in the subsequent columns. For further details, refer to Sections 4 to 6 of the Report.

Table 1-4: Proposed Water Commodity Rates

Commodity Rates	FY 2017 Rates	FY 2018 Rates	Water Supply	Peak Delivery	RW Program	Conservation	Revenue Offsets
	A	B = C + ...+G	C	D	E	F	G
Tier 1	\$2.46	\$2.52	\$2.58	\$0.15	\$0.00	\$0.00	-\$0.21
Tier 2	\$2.83	\$2.91	\$2.58	\$0.33	\$0.00	\$0.00	\$0.00
Tier 3	\$5.61	\$6.08	\$2.58	\$0.46	\$2.55	\$0.49	\$0.00
Tier 4	\$7.18	\$7.82	\$2.58	\$0.67	\$4.08	\$0.49	\$0.00
Uniform	\$2.79	\$2.89	\$2.58	\$0.17	\$0.26	\$0.05	-\$0.17

² 1 ccf=100 cubic feet = 748 gallons

1.4 Proposed Wastewater Rates

Revenue requirements for the Wastewater Enterprise are projected to increase 2.23 percent. The rates listed in Table 1-5 vary slightly from this percentage due to rounding. For further details, refer to Section 7 of the Report.

Table 1-5: Wastewater Rates by Customer Classes

Wastewater Rates	Current FY 2017 (A)	Proposed FY 2018 (B)	\$ Change (C)	% Change (D)
Residential Unrestricted	\$23.11 / EDU	\$23.63 / EDU	\$0.52	2.25%
Multi-Family Restricted	\$18.33 / EDU	\$18.74 / EDU	\$0.41	2.24%
Multi-Family Unrestricted	\$21.79 / EDU	\$22.28 / EDU	\$0.49	2.25%
Animal Kennel/Hospital	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Car Wash	\$3.77 / ccf	\$3.86 / ccf	\$0.09	2.39%
Department/Retail Store	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Dry Cleaners	\$3.32 / ccf	\$3.40 / ccf	\$0.08	2.41%
Golf Course/Camp/Park	\$3.31 / ccf	\$3.39 / ccf	\$0.08	2.42%
Health Spa	\$3.78 / ccf	\$3.87 / ccf	\$0.09	2.38%
Hospital/Convalescent Home	\$3.32 / ccf	\$3.40 / ccf	\$0.08	2.41%
Hotel	\$5.74 / ccf	\$5.87 / ccf	\$0.13	2.26%
Market	\$7.53 / ccf	\$7.70 / ccf	\$0.17	2.26%
Mortuary	\$7.50 / ccf	\$7.67 / ccf	\$0.17	2.27%
Nursery/Greenhouse	\$3.36 / ccf	\$3.44 / ccf	\$0.08	2.38%
Professional/Financial Office	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Public Institution	\$3.73 / ccf	\$3.82 / ccf	\$0.09	2.41%
Repair/Service Station	\$3.78 / ccf	\$3.87 / ccf	\$0.09	2.38%
Restaurant	\$3.58 / ccf	\$3.66 / ccf	\$0.08	2.23%
Schools	\$3.92 / ccf	\$4.01 / ccf	\$0.09	2.30%
Theater	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Warehouse/Storage	\$3.00 / ccf	\$3.07 / ccf	\$0.07	2.33%
Basic Commercial	\$3.32 / ccf	\$3.40 / ccf	\$0.08	2.41%

The wastewater capital R&R charges are projected to remain unchanged for FY 2017 (shown in Table 1-6).

Table 1-6: Wastewater Capital R&R Charges

Wastewater Capital R&R	Current FY 2017 (A)	Proposed FY 2018 (B)	\$ Change (C)	% Change (D)
Residential				
Single Family Residential	\$4.93 / EDU	\$4.93 / EDU	\$0.00	0.0%
Multi-Family Restricted	\$3.91 / EDU	\$3.91 / EDU	\$0.00	0.0%
Multi-Family Unrestricted	\$4.65 / EDU	\$4.65 / EDU	\$0.00	0.0%
Commercial				
5/8" Meter	\$4.34 / month	\$4.34 / month	\$0.00	0.0%
3/4" Meter	\$7.34 / month	\$7.34 / month	\$0.00	0.0%
1" Meter	\$13.55 / month	\$13.55 / month	\$0.00	0.0%
1-1/2" Meter	\$24.07 / month	\$24.07 / month	\$0.00	0.0%
2" Meter	\$70.96 / month	\$70.96 / month	\$0.00	0.0%
Public Authority				
1" Meter	\$4.93 / month	\$4.93 / month	\$0.00	0.0%
1-1/2" Meter	\$24.65 / month	\$24.65 / month	\$0.00	0.0%
2" Meter	\$39.71 / month	\$39.71 / month	\$0.00	0.0%

1.5 Proposed Recycled Water Rates

With the completion of the Recycled Water Expansion Project, all RW customers (existing and converted customers) are now supplied with higher quality tertiary RW, and are subject to the corresponding rates that support the annual cost of providing tertiary RW. The proposed RW rate for FY 2018 is \$2.62/ccf³, which is approximately 90 percent of the Tier 2 potable water rate. All RW customers connected to the new recycled water distribution system will be assessed monthly service charges (Table 1-7) and capital R&R charges (Table 1-8), the same as potable meters to recover the customer service, meter service, a portion of capacity and other RW related fixed costs and to pay for capital R&R of the expanded RW system.

³ Refer to Section 8 of the Report for further details

Table 1-7: FY 2017 Recycled Water Monthly Service Charges

Monthly Service Charges Meter Size	Current FY 2017	Proposed FY 2018
5/8"	\$10.93	\$11.80
3/4"	\$14.58	\$15.82
1"	\$21.86	\$23.85
1 1/2"	\$40.06	\$43.92
2"	\$76.48	\$84.07

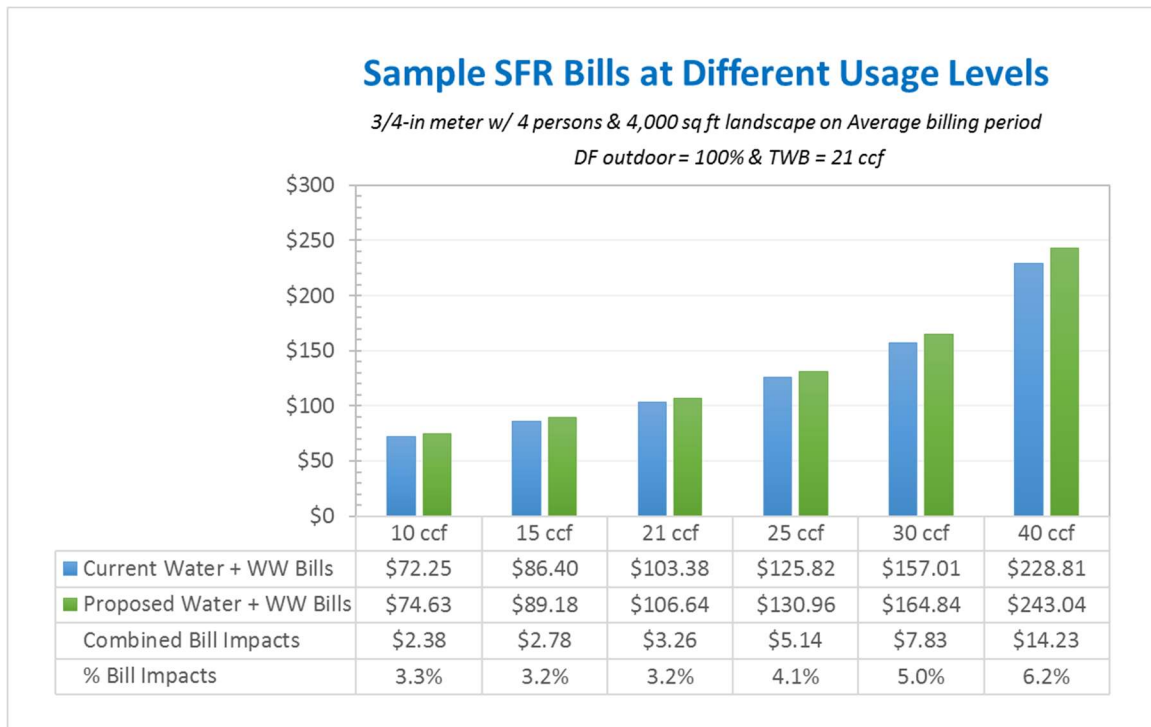
Table 1-8: FY 2017 Recycled Water Capital R&R Charges

Capital R&R Charges Meter Size	Current FY 2017	Proposed FY 2018
5/8"	\$4.66	\$4.66
3/4"	\$4.66	\$4.66
1"	\$7.78	\$7.78
1 1/2"	\$18.91	\$18.91
2"	\$47.47	\$47.47

1.6 Customer Impacts Analysis

Figure 1-1 shows a breakdown of water and wastewater bills at various water usage levels for a single family residential user with 4 occupants and 4,000 square feet (sq ft) of landscape area serviced by a 3/4-in meter, assuming the outdoor Drought Factor has been restored back to 100%. The combined water and wastewater bill increase for a typical single residential user consuming 15 ccf water per month will be \$2.78per month resulting from the increases in monthly water and wastewater fixed service charges and water supply costs. Note that the impacts for recycled water are not shown because residential users do not purchase recycled water.

Figure 1-1: SFR Total Monthly Bill at Different Usage Levels



2 Introduction

As part the annual cost of service and rate update process, the District engaged Raftelis Financial Consultants, Inc. (RFC) to conduct the Water, Recycled Water (RW) and Wastewater Rate Study (Study) to develop rates for all three enterprises that are equitable and in compliance with Proposition 218.

The major objectives of the study include the following:

1. Determine the revenue requirements from water, wastewater, and recycled water rates in FY 2017
2. Update the cost-of-service analysis for the Water Enterprise;
3. Update the water rates to meet the District's goals and objectives, including defensibility, affordability for essential use and promoting efficiency and conservation;
4. Update tertiary RW rates;
5. Update the wastewater rates; and
6. Conduct customer impact analyses for the proposed water and wastewater rates.

This *Water, Recycled Water and Wastewater Rate Study Report 2017* (Report) summarizes the key findings and recommendations related to the development of the respective rates.

2.1 About El Toro Water District

The El Toro Water District (District), located within the southern portion of Orange County, was formed in 1960 under provisions of California Water District Law, Division 13 of the Water Code of the State of California, commencing with Section 34,000, for the purposes of providing water and wastewater services to the service area. The District is governed by a publicly elected Board of Directors. The District is nearly built out and encompasses the entirety of the City of Laguna Woods and portions of four other cities: Lake Forest, Aliso Viejo, Laguna Hills, and Mission Viejo.

The District provides water, wastewater, and recycled water services to a population of approximately 48,500 in a service area of approximately 8.5 square miles. Constructed in phases since 1960, the District's potable water system is relatively modern. It contains 6 reservoirs with a combined capacity of 287 million gallons, over 170 miles of water lines, and 8 booster pump stations with 12 pressure zones to deliver water to approximately 10,000 metered water accounts.

The District's wastewater system is comprised of 142 miles of collection system pipeline, 3,400 manholes, and 11 pump stations which pump to the District's treatment plant with a rated capacity of 6 million gallons per day. Much of the District's effluent is reused through RW sales. The District has undertaken significant efforts to upgrade its Water Recycling Plant (WRP) to produce higher quality tertiary RW (completed in FY 2015). To make RW available to more customers, the District increased its RW distribution by adding 19 miles of RW distribution pipeline. The distribution expansion enabled RW sales to 211 irrigation accounts. The conversion of 211 accounts to RW was completed in June 2016 and has increased FY 2017 RW estimated sales to 1,275 AF.

2.2 Background of the Study

Prior to FY 2017, the District purchased 100% of its potable water supply from Municipal Water District of Orange County (MWDOC), a wholesale customer of Metropolitan Water District of Southern California (MWD), to meet residential, potable irrigation, commercial/public authority and fire protection demands. Wholesale water costs are driven by continued investment in regional water treatment/delivery system infrastructure, increased water importation costs, securing higher cost water supplies and water storage arrangements due to Northern California Bay-Delta (Bay-Delta) importation regulatory restrictions and increased funding to aggressively pursue near term and long term Bay-Delta solutions that will ensure more future water supply reliability to Southern California. The amount paid by the District to MWDOC for wholesale water is the exact amount usually “passed through” to the District’s customers in the form of a Water Supply Rate component of the Water Commodity Rates.

The District participated in a five-agency collaboration to fund and construct a local water treatment plant (Baker Water Treatment Plant) located in the City of Lake Forest to improve water treatment and water supply reliability for ETWD’s customers and South Orange County. The Baker Water Treatment Plant (Baker WTP) allows the participating agencies to purchase untreated water from MWDOC at a lower cost than the treated water, reducing the financial burden on the District’s customers. The costs for wholesale imported water from MWD via MWDOC increased approximately 5 percent from FY 2016-17 to FY 2017-18. As Baker WTP will operate at full capacity in FY 2017-18, providing a source of water which costs less than fully treated MWD water, the District overall water supply costs are projected to increase approximately 3 percent.

The entire state of California experienced one of the most severe droughts in 2016, prompting statewide conservation. In response to the Drought Emergency, the District reduced the outdoor drought factor and the corresponding allocation for outdoor use (Tier 2) to 50%. The resulting water sales in FY 2016 dropped 20% from the actual FY 2015 sales.

In May 2016, California Governor Brown issued Executive Order B-37-16 directing actions aimed at using water wisely, reducing water waste, and improving water use efficiency for the years and decades ahead and making water conservation a way of life in California. The mandatory cutback set by the Governor’s Executive Order B-29-15 was extended to October 2016 by Executive Order B-35-15, and was lifted in November 2016. The District Board of Directors subsequently approved the increase of the outdoor drought factor and corresponding allocation for outdoor use to 75%. The rainy winter of 2016-17 significantly improved the water supply conditions in California. The District proposes to restore the outdoor drought factor to 100% for FY 2017-18. The rates calculated in this study are based on projected sales considering continued conservation.

3 Legal Framework and Rate Setting Methodology

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

3.1 Legal Framework

CONSTITUTIONAL MANDATES AND STATUTORY AUTHORITY

Article XIII D, Section 6 (Proposition 218) and Article X, Section 2 of the California Constitution govern the principles applicable to this Rate Study. This Rate Study equitably implements and harmonizes these constitutional mandates in concert with the authority and principles set forth in Water Code Section 370 et seq. which governs Allocation-Based Conservation Water Pricing (commonly referred to as “Water Budget Rate Structure”).

This Rate Study provides for a water budget four tier Rate Structure designed to implement, in a reasonable manner, the constitutional mandates and statutory authority and principles referenced above.

CALIFORNIA CONSTITUTION - ARTICLE X, SECTION 2

Article X, Section 2 of the California Constitution (established in 1976) provides as follows:

“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 such, public agencies are constitutionally mandated to maximize the beneficial use of water, prevent waste, and encourage conservation which this Rate Study achieves.

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 were reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees, as they relate to public water and wastewater service are as follows:

1. Water and wastewater rates shall not exceed the funds required to provide the 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.

The rates developed in this Rate Study use a methodology to establish an equitable system of fixed and variable charges that recover the cost of providing service and fairly apportion costs to each customer as required by Proposition 218.

STATUTORY AUTHORITY - GOVERNMENT CODE SECTION 370 ET SEQ. (Allocation-Based Conservation Water Pricing)

In 2000, the California Legislature (AB 2882), consistent with the above-referenced constitutional provisions, adopted a body of law entitled “Allocation-Based Conservation Water Pricing” (Water Code Section 370 et seq.)

Water Code Section 370 provides in part as follows:

“The Legislature hereby finds and declares all of the following:

(a) The use of allocation-based conservation water pricing by public entities that sell and distribute water is one effective means by which waste or unreasonable use of water can be prevented and water can be saved in the interest of the people and for the public welfare, within the contemplation of Section 2 of Article X of the California Constitution.

(b) It is in the best interest of the people of California to encourage public entities to voluntarily use allocation-based conservation water pricing, tailored to local needs and conditions, as a means of increasing efficient uses of water, and further discouraging wasteful or unreasonable use of water under both normal and dry-year hydrologic conditions.”

Water Code Section 372 provides as follows:

“(a) A public entity may employ allocation-based conservation water pricing that meets all of the following criteria.

(1) Billing is based on metered water use.

(2) A basic use allocation is established for each customer account that provides a reasonable amount of water for the customer’s needs and property characteristics. Factors used to determine the basic use allocation may include, but are not limited to the number of occupants, the type or classification of use, the size of lot or irrigated area, and the local climate data for the billing period. Nothing in this chapter prohibits a customer of the public entity from challenging whether the basic use allocation established for that customer’s account is reasonable under the circumstances. Nothing

in this chapter is intended to permit public entities to limit the use of property through the establishment of a basic use allocation.

(3) A basic charge is imposed for all water used within the customer's basic use allocation, except that at the option of the public entity, a lower rate may be applied to any portion of the basic use allocation that the public entity has determined to represent superior or more than reasonable conservation efforts.

(4) A conservation charge shall be imposed on all increments of water use in excess of the basic use allocation. The increments may be fixed or may be determined on a percentage or any other basis, without limitation on the number of increments, or any requirement that the increments or conservation charges be sized, or ascend uniformly, or in a specified relationship. The volumetric prices for the lowest through the highest priced increments shall be established in an ascending relationship that is economically structured to encourage conservation and reduce the inefficient use of water, consistent with Section 2 of Article X of the California Constitution.

(b) ---

(1) Except as specified in subdivision (a), the design of an allocation-based conservation pricing rate structure shall be determined in the discretion of the public entity.

(2) The public entity may impose meter charges or other fixed charges to recover fixed costs of water service in addition to the allocation-based conservation pricing rate structure.

(c) A public entity may use one or more allocation-based conservation water pricing structures for any class of municipal or other service that the public entity provides."

As noted in the referenced statutes, "Allocation-Based Conservation Water Pricing Rate Structure" is a form of increasing block rates where the amount of water within the first block or blocks is based on the estimated, efficient water needs of the individual customer. Water-budget rates differ from other metered water rate designs in two key ways. First, the blocks are established based on water budgets that represent varying levels of each customer's efficient water use. Second, water-budget rates require the public agency to set specific standards for what is, and what is not, considered efficient water use for an individual customer.

This Rate Study in conjunction with ETWD's findings and determinations for individual customers establishes a standard for efficient usage and then establishes a budget for each individual customer. That defines how much water is considered efficient. Customers with usage above this efficient usage budget

pay a higher rate for their “inefficient” or “wasteful” usage in accordance with Section 372 of the Water Code.

This Rate Study conforms to the principles set forth in the enabling statutes for Water Budget Rate Structures.

TIERED RATES

“Inclining” Block-Rate Structures, (which are synonymous with “Increasing Block-Rate Structures”) when properly designed and differentiated by customer class as this Rate Study does, allow a water agency to send consistent price incentives for conservation to customers. For this reason, the heightened interest in water conservation, “Increasing Block-Rates” have been increasingly favored, especially in relatively water-scarce regions, such as Southern California.

PROPORTIONALITY – Proposition 218’s Requirement That Fees Be Proportionate to the Cost of Service for Each Parcel

There is a fair amount of ambiguity in the way that Proposition 218 was drafted – none more so than the issue of “proportionality.” It has taken a succession of court rulings over several years to clarify the substantive requirement of Proposition 218.

The recent Appellate case of *Griffith v. Pajaro Valley Water Management Agency* (2013) California Court of Appeal, Sixth District has provided much guidance on several important Proposition 218 issues, including the issue of proportionality. In Pajaro, the Appellate Court held in part as follows:

1. That Pajaro’s costs of using supplemental water along the coast to prevent salt water intrusion benefited all of Pajaro’s customers, including inland customers, using the groundwater basins.
2. That proportionality is not measured on an individual parcel basis, but instead is measured collectively, considering all customer classes. As such, the Appellate Court in Pajaro confirmed the common practice of grouping customers into classes with comparable service costs and setting rates by class rather than parcel by parcel met the Prop 218 requirement that fees be proportionate to the cost of providing service to each parcel.

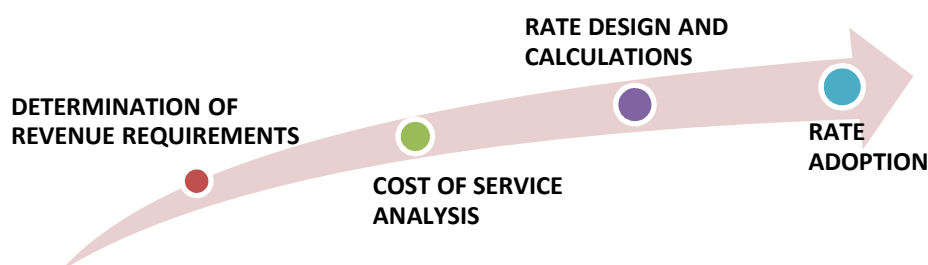
Under Item 1 noted above, water utilities can reasonably justify that the addition of recycled water to the water resource mix, frees up water for potable uses and therefore all customers should share in the costs of recycled water so that recycled water can be put to beneficial use as required by Article X, Section 2. This clarification by the appellate court allows agencies to harmonize the mandates of Proposition 218 and Article X, Section 2.

Under Item 2 noted above, utilities can develop rates by customer class and meet the requirements of Proposition 218, as opposed to the strict interpretation which would require cost proportionality for each parcel receiving service. This was another major clarification of Proposition 218 since cost proportionality for individual parcels is almost impossible to achieve in the strict sense.

The Pajaro case rulings provided for the harmonizing of the proportionality requirements of Prop 218 with the efficient use and conservation requirements of Article X, Section 2 by accepting that the supplemental costs of water used by one group of customers should be shared by all users, based on the concept that all users receive benefit from the overall water resources. In the District's case, recycled water adds a water resource that provides benefit to all users by freeing up potable water and therefore the costs of recycled water can be shared by all inefficient potable water users. Due to non-essential usage's demand on the system, the District allocates the cost of funding recycled water system development to Tiers 3 and 4 residential/irrigation usage as well as to commercial use at a smaller rate based on the assumption that 10 percent of CII water use is non-essential. See Section 6.2.1.2 for further detail.

3.2 Cost-Based Rate Setting Methodology

As stated in the Manual M1, the methodology put forth by the AWWA Rates and Charges Subcommittee is consistent with the Proposition 218 requirement that "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 as shown in the figure below:



1. **DETERMINATION OF REVENUE REQUIREMENT.** The rate-making process starts with the determination of future revenue requirements to sufficiently fund the utility's operation and maintenance (O&M), capital replacement and refurbishment (R&R), capital improvement and perpetuation of the system and to ensure preservation of the utility's financial integrity. The basic revenue requirements of a utility include O&M expenses, debt service payments, contributions to specified reserves and the cost of capital expenditures that are not debt financed.
2. **COST OF SERVICE ANALYSIS.** The annual costs of providing water services (cost of service), determined in the financial plan development, should be allocated among the customers commensurate with their service requirements. In this step, costs are identified and allocated to cost causation components and distributed to respective customer classes according to the industry standards provided in the Manual M1 published by AWWA.
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, revenue stability, etc. and should work as a public information tool in communicating these objectives to customers.

4. **RATE ADOPTION.** In the last step of the rate-making process, to comply with the Proposition 218 requirements, the results of the analyses are documented in a Study Report that clearly identifies the nexus between costs and rates to help educate the public about the proposed changes, the rationale and justifications behind the changes and their anticipated financial impacts in layman's terms. At least 45 days after sending out the public notices, at a public hearing, the agency shall consider all written protests against the proposed rates. If there is no majority protest, the agency can officially adopt the new rates.

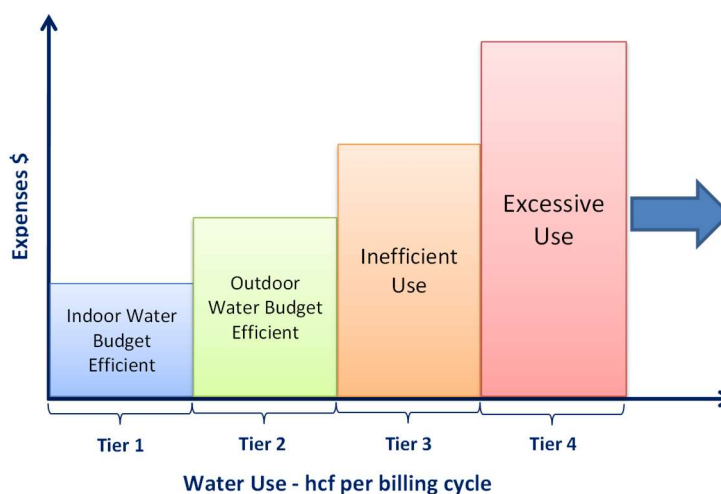
4 Water Budget and Tier Definitions

Since July 1, 2010, the District has implemented a water budget rate structure to incentivize conservation and efficient water use.. The description of the allocations to individual customers and the development of water budgets is described here for completeness of this report.

4.1 Water Budget Definitions

The American Water Works Association Journal defines water budget as “the quantity of water required for an efficient level of water use by that customer” (Source: *American Water Works Association Journal*, May 2008, Volume 100, Number 5). Therefore, each customer has their own allocation or water budget as shown in the following figures. Figure 4-1 shows an example of how the tier breaks are set for water budget customers. Tier 1 is defined by the allotment for indoor use and Tier 2 is defined by the allotment for outdoor use. Tier 3 is set to a percentage of the total water budget (or Tiers 1 and 2) combined. Any use beyond Tier 3 is considered excessive and falls into Tier 4.

Figure 4-1: Water Budget Tiers



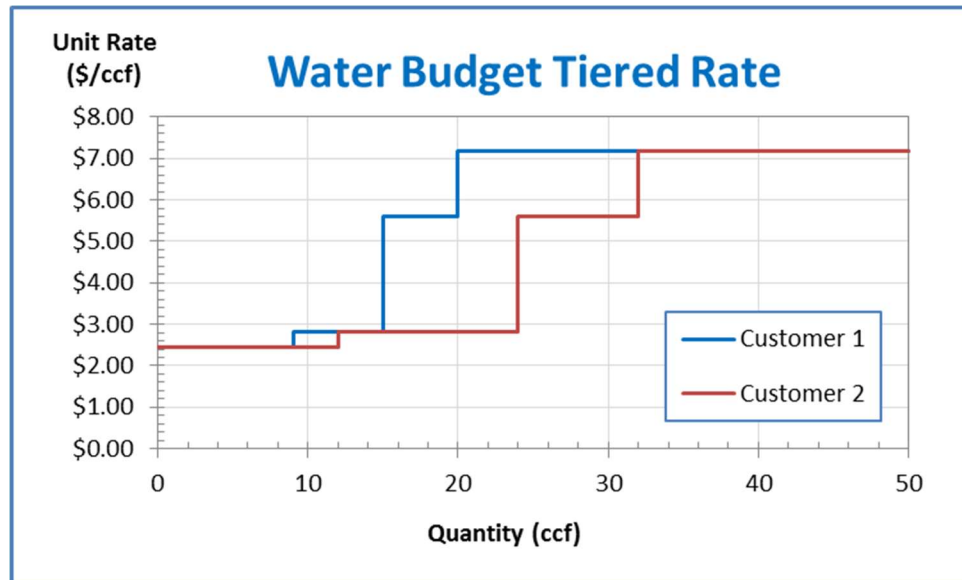
It is worth noting that water budget rate structures are customized for each customer, which results in different tier breaks for different customers. For example, as illustrated by Figure 4-2⁴, the first 9 units consumed by Customer 1 is charged at Tier 1 rate, whereas Customer 2 has 12 units at Tier 1 rate (\$2.46/ccf) for indoor use. The next 6 units (10 – 15 units) consumed by Customer 1 is reserved for outdoor use, which is charged at Tier 2 rate (\$2.83/ccf), and any usage exceeding 20 units⁵ will be deemed excessive and charged at the Tier 4 Rate (\$7.18/ccf). Similarly, for Customer 2, Tier 2 spans

⁴ For illustrative purposes only, not actual rates of the District

⁵ Tier 3 = 30% of Total Water Budget (TWB) whereas TWB = Indoor WB + Outdoor WB

from 13-24 units, and usage exceeding 32 units will be charged at Tier 4 Rate (\$7.18/ccf). Customer 2, with larger indoor and outdoor water budget (or allotment), represents a residential customer with larger family and bigger irrigated landscape area than Customer 1.

Figure 4-2: Customized Water Budget Tiers⁶



Similar to the Water Budget Rate Study in 2010, the water budget allocations and tiered rate structure are designed for residential and irrigation accounts only; all other customer types will retain the current uniform rate structure.

Indoor Water Budget

The indoor water budget (IWB) is determined by a customer's household size and a standard consumption per person. The proposed IWB formula is as follows:

$$IWB = \frac{GPCD * HouseholdSize * DwellingUnits * Days of Service * DF_{indoor}}{748} + V_{indoor}$$

where

- GPCD – Gallons per capita per day.
 - SB x7-7⁷, Section 10608 of the Water Code, established the provisional standard for indoor residential water use at 55 gallons per capita per day.
- Household Size – Number of residents per dwelling unit. The 2010 census lists the average household size at 2.91 persons, which includes single and multi-family housing. Typically, single

⁶ For illustrative purposes only, not actual rates of the District

⁷ The language from SB x7-7 setting the 55 GPCD performance standard: (2) The per capita daily water use that is estimated using the sum of the following performance standards: (A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard.

family household size is greater than 3 persons and multi-family household size is less than 3.0 persons. The District policy is to provide adequate water for the health and sanitation needs and minimize customer complaints and requests for variances. The default values for household size are set as follows based on customer characteristics.

- Single Family: Household Size = 4 persons
- Apartment: Household Size = 2 persons
- Multi-Family:
 - Restricted: Household Size = 2 persons (senior citizen housing typically 1 to 2 residents per dwelling unit)
 - Unrestricted: Household Size = 3 persons
- Dwelling units – Number of dwelling units served by the meter / account
- Days of Service. The number of days of service varies with each billing cycle for each customer. The actual number of days of service will be applied to calculate the indoor water budget for each billing cycle.
- DF_{indoor} – Indoor drought factor. The percentage of indoor water budget allotted during drought conditions. The drought factor is subject to the approval of the District’s Board of Directors. The indoor drought factor is currently set at 100 percent.
- V_{indoor} – Indoor variance. The additional water allotment to be granted for extenuating circumstances is subject to District’s approval or verification as outlined in the District’s variance program. Variances can be requested by submitting a “Variance/Adjustment Request Form” found on the District’s website.
- 748 is the conversion unit from gallons to billing unit of hundred cubic feet (ccf).

Outdoor Water Budget

The outdoor water budget (OWB) is determined by three main variables: irrigable landscape area, weather data and evapotranspiration (ET) Adjustment Factor. The irrigable landscape area, measured as square footage of landscape surface on a customer’s property, is estimated using the Orange County Assessors’ parcel data - lot size, building size and number of floors - where the actual irrigable landscape area data is not available. The weather data is based on the reference Evapotranspiration (ET_0), which is the amount of water loss to the atmosphere over a given time period under local atmospheric conditions. ET_0 is the amount of water (in inches of water) needed for a hypothetical reference crop to maintain its health and appearance. The ET Adjustment Factor (ETAF) is a coefficient that adjusts ET_0 values based on plant factor and irrigation system efficiency. The updated California Department of Water Resources’ Model Water Efficient Landscape Ordinance (Landscape Ordinance) provides the following ETAF for different landscapes:

- Existing landscape (Functional): $ETAF_{\text{Existing}} = 80\%$
- New development / redevelopment landscape (Functional): $ETAF_{\text{New}} = 70\%$
- Special landscape (Recreational): $ETAF_{\text{Recreational}} = 100\%$

The formula to calculate outdoor water budget is as follows:

$$OWB = \left(\frac{\text{Landscape Area} * ET_0 * ETAF}{1200} + V_{\text{outdoor}} \right) * DF_{\text{outdoor}}$$

where

- ET_0 is measured in inches of water during the billing period based on daily data acquired from the California Irrigation Management Information System (CIMIS) Station 75, which is the closest station to the District's service area.
- ETAF (% of ET_0) is defined using the updated Landscape Ordinance as shown above.
- Landscape Area (or Irrigable Landscape Area) (in square feet) is the measured irrigable landscape area served by a customer's meter.

Where the measured irrigable landscape area is not available, the landscape area will be estimated by the following formula using the Orange County Assessors' parcel data.

$$\blacksquare \text{ Landscape Area (sq ft)} = 70\% * \left(\text{Lot Size} - \frac{\text{Building Size}}{\text{Number of Floors}} \right)$$

- For accounts dedicated for domestic use only, such as multi-family units, 25 square feet of irrigable landscape area is provided for each dwelling unit for patio plants.
- DF_{outdoor} – Outdoor drought factor. The percentage of outdoor water budget allotted during drought conditions. The drought factor is subject to the approval of the District's Board of Directors. The drought factor was previously set at 50% effective July 2016, and subsequently increased to 75%. The District restores the outdoor drought factor to 100% in May 2017 with the declaration of the end of drought emergency.
- V_{outdoor} – Outdoor variance. The additional water allotment to be granted for extenuating circumstances is subject to District's approval or verification as outlined in the variance program. Outdoor variance is subject to outdoor drought factor.
- 1,200 is the conversion unit from $\text{inch} * \text{ft}^2$ to billing unit of hundred cubic feet (ccf).

Water Budget Allocations by Customer Type

The table below summarizes the water budget allocation by customer type. Both Single Family and Multi-Family (restricted and unrestricted) customers will receive an indoor and outdoor water budget. Irrigation accounts will only receive an outdoor budget. Commercial and Public Authority (CII) customers will continue with the current uniform water rate structure.

Table 4-1: FY 2017 Water Budget Allocations by Customer Type

Customer Type	Water Budget Allocations	Default Values
Single Family	IWB + OWB	Household Size = 4 persons; GPCD = 55 ETAF _{New} = 70%; ETAF _{Existing} = 80%; DF _{outdoor} = 100%
Multi-Family – Restricted	IWB + OWB	Household Size = 2 persons; GPCD = 55 ETAF _{New} = 70%; ETAF _{Existing} = 80%; DF _{outdoor} = 100%
Multi-Family – Unrestricted	IWB + OWB	Household Size = 3 persons; GPCD = 55 ETAF _{New} = 70%; ETAF _{Existing} = 80%; DF _{outdoor} = 100%
Irrigation – Functional*	OWB	ETAF _{New} = 70%; ETAF _{Existing} = 80%; DF _{outdoor} = 100%
Irrigation – Recreational**	OWB	ETAF _{Recreational} = 100%; DF _{outdoor} = 100%
*Irrigation – Functional: landscape that is ornamental in nature		
**Irrigation – Recreational: landscape that is used mostly for recreational purposes (schools, parks, golf courses, etc...)		

4.2 Tier Definitions

Based on the information in Table 4-1, the tier definitions are developed as shown in Table 4-2 below. The main difference between Single Family/Multi-Family and Irrigation accounts is that Irrigation accounts do not have a Tier 1 allotment which is reserved for indoor use. All three customer types have their Tier 3 allotment defined as 30 percent of their respective total water budget (TWB) and usage exceeding 130% TWB falls in Tier 4.

Table 4-2: Tier Definitions by Customer Types

Tiers	Single Family	Multi-Family	Irrigation
Tier 1 – Indoor Use	100% IWB	100% IWB	N/A
Tier 2 – Outdoor Use	100% OWB	100% OWB	100% OWB
Tier 3 – Inefficient Use	100% to 130% TWB	100% to 130% TWB	100% to 130% OWB
Tier 4 – Excessive Use	Above Tier 3	Above Tier 3	Above Tier 3
TWB = Total Water Budget = IWB + OWB			

The tier definitions are tailored to the unique consumption patterns of the District's customers and subject to the District's policy decisions. The tier definitions are based on RFC's usage and impact analysis and numerous policy discussions with the Board. The first priority for water use is essential indoor water use for health, safety, and sanitary purposes. Based on the Board's direction, indoor water use is eligible for revenue offsets from site leases and property tax revenues. Maintaining a healthy landscape at efficient water use is non-essential, yet important; thus, efficient outdoor water use is required to pay the Tier 2 rate. The total water budget is the sum of the indoor and outdoor water budgets.

Tier 3 was designed to account for inefficient use and/or customers with non-climate appropriate landscapes. Tier 3 is set to thirty percent (30%) of the total water budget and was determined based on the 2009 analysis which indicated that a customer with high water use plants would require 30% more water than an identical customer with climate-appropriate plants. Any use beyond Tier 3 is considered excessive and falls into Tier 4. Tiers 3 and 4 allow individuals to use additional water above their total water budget while providing a signal to each customer on their inefficient and excessive water usage. Tier 3 provides usage up to 30 percent of the total water budget and usage exceeding 130% TWB is considered to be excessive.

Any usage above an efficient level is subject to higher charges to fund conservation programs and any other supplemental water supply program. The current water supply is reserved for efficient indoor, outdoor, and commercial use within the District. The higher Tier 3 rate serves as a signal for conservation and efficient use, whereas excessive use in Tier 4 incurs the highest marginal costs of providing service.

The Commercial class will continue to be a billed at a uniform rate; however, this rate will encompass domestic use and inefficient use. Based on SB x7-7 (i.e. Water Conservation Act of 2009), which requires commercial users to cut back by 10 percent, we define indoor and efficient outdoor (or process) use at 90 percent of total use and the remaining 10 percent use as inefficient. Additionally, indoor use is defined as 90 percent of the efficient use ($90\% \times 90\% = 81\%$) and the remainder is defined as efficient outdoor use ($10\% \times 90\% = 9\%$). The uniform rate charged to commercial customers will then be a blend of the usage defined here.

In response to the Executive Order B-37-17 issued by Governor Brown in May 2016 “making water conservation a way of life in California”, the District expects customers to continue to conserve water. Based on the tier definitions shown in Table 4-2 above, the budgeted water usage for FY 2017-18⁸ is shown in Table 4-3 below.

Table 4-3: Budgeted Potable Water Usage by Tiers

Tiers	FY 2018	% of Total Use
Tier 1 – Indoor Use	1,600,000 ccf	52.5%
Tier 2 – Outdoor Use	874,353 ccf	28.7%
Tier 3 – Inefficient Use	87,230 ccf	2.9%
Tier 4 – Excessive Use	79,617 ccf	2.6%
Uniform – CII Use	408,000 ccf	13.4%
Total (ccf)	3,049,200 ccf	100%
Total (AF)	7,000 AF	

⁸ Estimated by District staff

5 Pass-through Water Supply Costs

The District purchases water from the Municipal Water District of Orange County (MWDOC), a member agency of Metropolitan Water District of Southern California (MWD). MWD rates are scheduled to increase in January 2018. The MWD rate increases, along with MWDOC's other costs, will be included in the blended rates charged to the District. As shown in Table 5-1, total combined water supply costs from the MWDOC purchased water (\$4.715M) plus the Baker Water Cost (\$3.144M) are partially offset by capital charge revenue funding of \$0.500M. The resulting \$7.859M in total water supply costs (Table 5-1) would create a water supply unit cost of \$2.58 per ccf, an increase of eight cents from the current cost, as shown in Table 5-2. See Appendix 1 for detailed breakdown of water supply costs.

Table 5-1: Water Supply Revenue Requirements

	Water Supply Revenue Requirements	Budget FY 2017	Notes
1	MWD/MWDOC Fixed Costs	\$0.695M	
2	MWD/MWDOC Variable Costs	\$4.020M	
3	MWDOC Water Purchased Costs	\$4.715M	[1] + [2]
4	Baker WTP Raw Water Cost	\$2.217M	
5	Baker WTP O&M Annual Cost	\$0.743M	
6	Baker Capital Cost (Debt Service)	\$0.684M	
7	Less Capital Charge Revenue Funding	-\$0.500M	
8	Baker WTP Water Costs	\$3.144M	
9	Total Water Supply Costs	\$7.859M	[3] + [8]
10	Projected Water Sales	3,049,200 ccf	
11	Water Supply Unit Cost	\$2.58 /ccf	[9] / [10]

Table 5-2: Current and Projected Water Supply Unit Cost

Water Supply Unit Rate ⁹ (\$ / Unit Sold)	
Current – FY 2017	\$2.50 / ccf
Projected – FY 2018	\$2.58 / ccf
Increase / Change	\$0.08 / ccf

Table 5-3: Water Supply Cost Component of the Water Rates (\$/ccf)

Tiers	Descriptions	Current FY 2017	Proposed FY 2018
Tier 1 – Indoor Use	MWDOC + Baker Blended	\$2.50	\$2.58
Tier 2 – Outdoor Use	MWDOC + Baker Blended	\$2.50	\$2.58
Tier 3 – Inefficient Use	MWDOC + Baker Blended	\$2.50	\$2.58
Tier 4 – Excessive Use	MWDOC + Baker Blended	\$2.50	\$2.58
Uniform – CII Use	MWDOC + Baker Blended	\$2.50	\$2.58

⁹ Includes 300 AF water loss. Refer to Appendix 1 for detailed water supply cost calculations.

6 Water Cost of Service and Proposed Rates

This section details the revenue requirements and explains the allocation methodology consistent with Proposition 218 behind the cost of service (COS) calculations of the rates.

6.1 Water Revenue Requirements

The first step in rate-setting is determining a revenue requirement from water rates (Table 6-1). RFC based its determination of the revenue requirements and cost of service for FY 2018 on the Financial Plan developed by District Staff as explained here. The District's total budgeted expenses excluding depreciation and interest expenses to provide water service for FY 2018 are \$12.759M (Appendix 2). Non-operating revenues such as cell-site leases, property taxes, investment revenues (\$1.502M, Appendix 3) along with fire service charges revenues (\$110K) reduce the revenue requirements by \$1.612M. In FY 2018, the District will begin debt payment totaling \$0.684M for its share to the construction cost of the Baker Water Treatment Plant. This expense is added to the Water O&M Expenses. The District Board directed District staff to increase revenue offset incentives for essential use by using an additional \$40K from property tax revenues starting in FY 2018. To further reduce the revenue requirement, the District plans on using an additional \$0.724M of operating reserves, producing a revenue requirement from unrestricted rates of \$11.106M. Then, funding for the RW program (\$0.650M) and Conservation Program (\$0.100M) are added for a total of \$11.856M (Table 6-1). The RW and conservation program funding are collected in restricted reserves for appropriate future use.

Details of the figures presented in Table 6-1 can be found in Appendix 3, in the Cash Flow Analysis for the Water Funds. The Cash Flow Analysis is part of the Financial Plan developed by District staff to determine the long-term financial needs of the District.

Table 6-1: Water Operating Revenue Requirements from Rates¹⁰

Water Operating Revenue Requirements	Budget FY 2018	Notes
Total Water O&M Expenses	\$12.759M	
Less (-) Non-Operating Revenues	-\$1.502M	Appendix 3
Less (-) Fire Service Charge	-\$0.110M	Estimated by District staff
Plus (+) Debt Service	\$0.684M	Appendix 3
Plus (+) Operating Reserve Funding	-0.724M	Appendix 3
Total Rev Req from Unrestricted Rates	\$11.106M	
Plus (+) Restricted Reserve Funding for RW	\$0.650M	Appendix 6
Plus (+) Conservation Program Funding	\$0.100M	Appendix 6
Total Rev Req from Rates, excluding Fire SC	\$11.856M	

¹⁰ May include some rounding errors

6.2 Cost of Service Analysis

Water systems are designed to accommodate the peak use of any class or type of customer. Different parts of a water system are designed to handle different peaks and there are significant costs associated with meeting peak requirements. For example, the District's maximum day usage is estimated to be two times the average usage and facilities such as reservoirs are designed twice as large to ensure that maximum day requirements are met (reservoirs also are designed to meet fire flows). To allocate costs appropriately amongst the different type of usage, an analysis of the peaking costs is provided in Section 6.2.1.1.

6.2.1.1 Peaking Factor Analysis

In the 2014 Rate Study, RFC performed usage analyses for single family customers to determine the monthly peaking factors for each tier using 3-year average consumption (2009-2011) data for the 5,630 single family accounts. The results are shown in Table 6-2. The peaks in each tier are compared to the average for the class to establish the comparative peaking relationship among the tiers.

Table 6-2: Peaking Factor Analysis for Different Usage Types

Tiers	Individual Max Month Average Usage (per unit) ¹¹	Average Usage per account / unit	Peaking factors (among tiers)
Indoor Use	7.91	18.09	0.44
Outdoor Use	18.00	18.09	1.00
Inefficient Use	25.12	18.09	1.39
Excessive Use	36.92	18.09	2.04

The proposed peaking factors are shown in Table 6-3 for each usage type. The tiers for residential customers are defined based on each usage class as shown in Table 6-3. Commercial use includes both indoor and outdoor use and therefore peaks more than indoor use but less than outdoor. Typical indoor use for commercial is estimated at 90 percent and outdoor use at 10 percent, thus an average of the indoor and outdoor peaking factors was used to approximate the commercial peaking factor ($90\% \times 0.44 + 10\% \times 1.00$) of 0.50. Note that the purpose of this analysis is to define the relative difference in the peaking factors for the different usage classes so that the costs are appropriately allocated.

¹¹ Individual max month usage (per unit) = Max month usage per dwelling unit in the 12 month period for each account
 Individual Max Month Average Usage (per unit) = average of the individual max month usage

Table 6-3: Peaking Factors by Usage Class

Tiers	Relative Peaking Factors
Indoor Use	0.44
Outdoor Use	1.00
Inefficient Use	1.39
Excessive Use	2.04
Commercial Use	0.50

The different peaking factors, increasing in the direction of the arrow, may be conceptually represented on the scale shown below



6.2.1.2 Cost of Service Analysis

To allocate costs appropriately to the different usage classes and determine the cost of service rates, revenue requirements are allocated to the following cost causation categories (shown in Table 6-4)¹² consistent with the Base Extra Capacity methodology of the American Water Works Association (AWWA) *M1 Manual, Principles of Water Rates, Fees, and Charges* (M1 Manual):

1. Water supply costs: Imported water supply costs, allocated to all users in proportion to their usage (See Section 5).
2. Base fixed costs: fixed costs associated with operating and maintaining water system to deliver water to meet average demand.
3. Billing & customer service costs including billing, meter reading and customer service.,
4. Meter service covering the cost of meter maintenance and a portion of the peaking or capacity costs.
5. Peaking costs: fixed costs associated with operating and maintaining water system to deliver water to meet peak demand.
6. RW Funding: The use of RW for non-potable needs releases potable supply for inefficient and excessive use. RW is the least expensive supplemental source of water available to the District and creates supply for potable needs. The revenues collected under this category will be collected in restricted reserves to assist the RW fund to pay for debt services used to finance the RW expansion project completed in FY 2015.
7. Conservation: Conservation program cost, allocated to inefficient and excessive use to help them conserve water.

¹² See Appendix 6 for details about cost allocations

8. Revenue Offsets: Property taxes and cell tower lease revenues to provide incentive for indoor/domestic use.

The cost causation categories above are then assigned to each rate component as shown in Table 6-4 below:

Fixed Rate Components (i.e. Monthly Service Charges)

- To recover billing & customer service, meter service, administration and other base fixed costs and a portion of the peaking costs.

Commodity Rate Components

- Water supply: to recover imported water supply costs.
- Delivery / Peaking: to recover remaining peaking costs associated with operating and maintaining water system to deliver water to meet peak demand. These costs are allocated based on the peaking characteristics of each class of use.
- Recycled Water (RW): to generate supplemental funding sources to pay for RW expansion projects.
- Conservation: to recover the conservation program cost, allocated to inefficient and excessive users, to help encourage water conservation.
- Revenue offsets: A portion of the property taxes and cell tower lease revenues to provide incentive for indoor/domestic use.

Capital R&R Charges:

- Funds for the capital replacement and refurbishment of the existing water and RW system.

Table 6-4 below summarizes the revenue requirement for each cost category. The Total Cost of Service Excluding Fire Service of \$11.856M, found in Table 6-1, is divided among the various cost components. The costs for RW Funding and Conservation are also found in Table 6-1. The District Board directed District staff to increase the revenue offset for essential use by \$0.02/ccf for FY 2018. The revenue offset requires the use of \$190K of cell site lease revenue and \$218K from property tax¹³ revenues, totaling \$408 for the revenue offset component. The revenue requirements for water supply, base fixed, and peaking were determined using COS allocation methods recommended by the AWWA. Details of how the revenue requirements for these three cost causation categories were determined can be found in Appendix 6.

The total revenue requirement for each cost causation category is then assigned to a rate component. For example, it is appropriate that the entirety of the water supply revenue requirement is assigned to the water supply rate component. RW Funding, Conservation, and the Revenue Offset are all assigned entirely to their respective cost causation components.

¹³ Remaining property tax is used to offset base fixed costs. Refer to Appendix 6 for details.

The AWWA M1 Manual describes a cost of service approach to setting water rates which results in the distribution of costs to each customer or customer class based on the costs that each incurs. A split set of fees—fixed and variable—results from this cost causation theory. For example, a utility incurs some costs associated with serving customers irrespective of the amount or rate of water they use, such as billing and customer service costs. These types of costs are referred to as customer-related costs and typically are costs that would be recovered through a fixed monthly service charge. These costs are usually recovered on a per-customer basis or some other non-consumptive basis. Regardless of the level of a customer's consumption, a customer will be charged this minimum amount on each bill.

Utilities invest in and continue to maintain facilities to provide capacity to meet all levels of desired consumption including the peak demand plus fire protection, and these costs also must be recovered regardless of the amount of water used during a given period. Thus, capacity or peaking costs along with base costs are generally considered as fixed water system costs. Ideally an agency could recover 100% of the fixed costs in the fixed charges, therefore providing revenue stability; however, this approach reduces the variable rate that signals the need for conservation. It impacts small users and affordability for essential use. To balance between these competing objectives, a portion of the base costs and peaking costs are recovered in the fixed charges along with the customer-related costs and meter-related costs. Revenue requirements for the District's fixed monthly service charges include 100 percent of base fixed costs, inclusive of billing and customer service costs and other fixed costs to meet average demand, and a portion of the peaking costs. The remaining peaking costs (\$692K) are recovered in the delivery rate component of the commodity rates.

Table 6-4: Revenue Requirements by Cost Categories

Revenue Requirements	FY 2017-18	Monthly Service Charges	Water Commodity Rates	Water Capital R&R
Water Supply	\$7,859,019		\$7,859,019	
Billing & CS	\$433,448	\$433,448		
Base Fixed	\$1,831,740	\$1,831,740		
Peaking	\$1,390,020	\$698,020	\$692,000	
RW	\$650,000		\$650,000	
Conservation	\$100,000		\$100,000	
Rev Offset	(\$408,160)		(\$408,160)	
Capital R&R	\$1,288,516			\$1,288,516
NET REVENUE REQUIREMENTS	\$13,144,743	\$2,963,208	\$8,893,019	\$1,288,516

No increases are necessary to fund the District's programmed capital expenditures in FY 2017 (Table 6-5). At current Capital R&R charges, the District projects to collect \$1.404M in total water and recycled water

capital revenues, with programmed capital expenditures of \$1.173M. An additional \$0.500M is reserved for funding of the Baker Water Treatment Plant Facility. The total deficit of \$0.270M is to be funded from capital reserves. See Appendix 3 and Appendix 6 for further details.

Table 6-5: Water & RW Capital Revenue Requirements

Water & RW Capital Revenue Requirements	Budget FY 2018	Water	RW
Water Capital Expenditures	\$1,173,438	\$1,058,438	\$115,000
Plus (+) Restricted Reserve Funding	\$500,000	\$500,000	\$0
Plus (+) Capital Reserve Funding	-\$269,922	-\$269,922	\$0
Total Water Capital R&R Revenue Requirement	\$1,403,516	\$1,288,516	\$115,000
Current Water Capital R&R Revenues	\$1,403,516	\$1,288,516	\$115,000
% Rate Increase	0.0%	0.0%	0.0%

The rate structure remains unchanged and consists of the monthly fixed service and the volumetric commodity rates which are determined as follows (Table 6-6):

- The monthly service charge includes customer service, fixed base costs and a portion of the peaking costs (shown in Table 6-6 and Table 6-7).
- The volumetric water commodity rates include water supply (to recover total purchased water costs from MWDOC and Baker Water Treatment Plant water costs), delivery/peaking (to recover the District's remaining peaking costs shown in Table 6-4), RW funding, conservation, and revenue offsets components.

Table 6-6: Cost Categories and Water Rate Structure

Cost Components	Service Charges	Tier 1 Essential Use	Tier 2 Efficient Use	Tier 3 Inefficient Use	Tier 4 Excessive Use	Commercial Use
Billing & Customer Service	x					
Meters	x					
Fixed Base Costs	x					
Delivery Peaking Costs	x	x	xx	xxx	xxx	x
Water Supply		x	x	x	x	x
RW Program Funding				xx	xxx	x
Conservation				x	x	x
Rev Offset		x				x

Extra capacity costs representing the demand placed on the system are related to the capacity of the meters. The capacity of the meters is determined by comparing the hydraulic capacity of the meters to

the smallest meter in the system which is assigned a capacity of one. Thus, a 1-inch meter that can continuously deliver 50 gallons per minute ("gpm") is considered to have a capacity of 2.5 times greater than a 5/8-inch meter which can deliver 20 gpm. Because of the unique characteristics of the District's service area, the maximum of the hydraulic capacity or the actual usage characteristics were used to determine the capacity of the meters. For example, a 2-inch meter, on the average, used 10 times the water of the 5/8-inch meter. The meter capacity ratios representing the maximum of the hydraulic ratio or the actual usage are used to calculate the equivalent meter units to recover the meters & capacity costs (based on ETWD Cost of Service Study Report for Water, Wastewater and Recycled Water prepared in April 2009).

Table 6-7: Proposed Monthly Service Charges Calculations

Meter Size	Water Accounts A	Bills / year B = A x 12	Meter Capacity Ratios C	EMU ¹⁴ s D = B x C
5/8"	2,383	28,596	1.00	28,596
3/4"	4,855	58,260	1.50	87,390
1"	444	5,328	2.50	13,320
1 1/2"	682	8,184	5.00	40,920
2"	1,207	14,484	10.00	144,840
Total	9,571	114,852 bills		315,066 EMUs

	Billing & Customer Service	Meters & Capacity
Revenue Requirements (Table 6-4)	\$433,448	\$2,529,760 ¹⁵
Units of Service	114,852 bills / yr	315,066 EMUs / yr
Unit Cost of Service	\$3.77	\$8.03

Meter Size	Billing & CS A	Meters & Capacity B ¹⁶	Proposed FY 2018 C = A + B	Current FY 2017 D	\$ Change E = C - D	% Change F = E / D
5/8"	\$3.77	\$8.03	\$11.80	\$10.93	\$0.87	8.0%
3/4"	\$3.77	\$12.05	\$15.82	\$14.58	\$1.24	8.5%
1"	\$3.77	\$20.08	\$23.85	\$21.86	\$1.99	9.1%
1 1/2"	\$3.77	\$40.15	\$43.92	\$40.06	\$3.86	9.6%
2"	\$3.77	\$80.30	\$84.07	\$76.48	\$7.59	9.9%

¹⁴ EMUs = equivalent meter units

¹⁵ 100% Base Fixed Cost + 50% of Peaking Cost = \$1,831,740 + \$698,020 = \$2,529,760 (Table 6-4)

¹⁶ \$8.03 x Meter Capacity Ratio for each meter size

Peak Delivery Rates (shown in Table 6-8) are applied to all rates based on peaking characteristics for each usage class (shown in Table 6-3). Indoor or domestic use has the lowest peaking factor; consequently, all indoor use (residential and commercial) is assigned a lower delivery cost. Outdoor irrigation is associated with higher peaking factors, so outdoor use comprising of residential irrigation and the current dedicated irrigation classes (both functional and recreational) will have higher delivery costs. Inefficient and excessive use has even higher peaking factors and is assigned the highest delivery costs.

Table 6-8: Peak Delivery Rate Calculations

Peak Delivery Rate Calculations	Budgeted Water Sales	Peaking Factors	Equiv Units	Unit Rate ¹⁷ (\$/ccf)
	A	B	C = A x B	D = \$0.33 x B
Tier 1 - Essential Use	1,600,000 ccf	0.44	704,000 ccf	\$0.15
Tier 2 - Efficient Use	874,353 ccf	1.00	874,353 ccf	\$0.33
Tier 3 - Inefficient Use	87,230 ccf	1.39	121,250 ccf	\$0.46
Tier 4 - Excessive Use	79,617 ccf	2.04	162,419 ccf	\$0.67
Uniform - Commercial Use	408,000 ccf	0.50	204,000 ccf	\$0.17
Total / Projected Rev	3,049,200 ccf		2,066,021 ccf	\$691,366
Revenue Requirements (Table 6-4)	\$692,000			
Units of Service	2,066,021 ccf			
Unit Peak Delivery Rate¹⁸	\$0.33 / ccf			

The RW program is associated with meeting the demands of inefficient and excessive use and RW program costs are therefore allocated to inefficient and excessive use only (usage in Tiers 3 and 4 and 10 percent of commercial use, which is considered to be inefficient and is allocated at the same rate as residential inefficient usage). The RW program provides recycled water and offsets potable water use which is then available for Tiers 3 and 4. To determine the recycled water costs to be assigned to Tiers 3 and 4, RFC obtained the costs of the recycled water system from the 1994 Recycled Water Master Plan. The cost of most efficient conversion is \$892/AF and the system-wide conversion cost is \$1,430/AF in 1994 dollars, which gives a ratio of 1:1.60. This ratio is utilized for the RW Program funding ratio between Tier 3 and Tier 4 to reflect that Tier 4, excessive usage, should carry the burden of the higher costs to fund the more extensive RW program and should pay more to fund this alternative source of water required to meet Tier 4 demands. Revenues from this cost component are collected in a restricted reserve used to meet the debt service requirements associated with the recycled water system which provides supplemental water and frees up valuable potable water resources to offset the demand imposed by inefficient and excessive use. The rates for the recycled water program to Tiers 3 and 4 are shown in Table 6-9.

¹⁷ Rounded to the nearest cent

¹⁸ Rounded to the nearest cent

Table 6-9: RW Program Funding Rate Calculations

RW Funding Rate Calculations	Budgeted Water Sales	Equivalent Factors	Equiv Units	Unit Rate ¹⁹ (\$/ccf)
	A	B	C = A x B	D = \$2.55 x B
Tier 1 - Essential Use	1,600,000 ccf	0.00	0 ccf	\$0.00
Tier 2 - Efficient Use	874,353 ccf	0.00	0 ccf	\$0.00
Tier 3 - Inefficient Use	87,230 ccf	1.00	87,230 ccf	\$2.55
Tier 4 - Excessive Use	79,617 ccf	1.60	127,387 ccf	\$4.08
Uniform - Commercial Use	408,000 ccf	0.10	40,800 ccf	\$0.26
Total / Projected Rev	3,049,200 ccf		255,417 ccf	\$653,354
Revenue Requirements (Table 6-4)	\$650,000			
Units of Service (column C total)	255,417 ccf			
Unit RW Funding Rate²⁰	\$2.55 / ccf			

Conservation programs are targeted to inefficient and excessive use and therefore conservation costs are applied only to inefficient and excessive use as shown in Table 6-10.

Table 6-10: Conservation Program Funding (aka Conservation) Rate Calculations

Conservation Rate Calculations	Budgeted Water Sales	Equivalent Factors	Equiv Units	Unit Rate ²¹ (\$/ccf)
	A	B	C = A x B	D = \$0.49 x B
Tier 1 - Essential Use	1,600,000 ccf	0.00	0 ccf	\$0.00
Tier 2 - Efficient Use	874,353 ccf	0.00	0 ccf	\$0.00
Tier 3 - Inefficient Use	87,230 ccf	1.00	87,230 ccf	\$0.49
Tier 4 - Excessive Use	79,617 ccf	1.00	79,617 ccf	\$0.49
Uniform - Commercial Use	408,000 ccf	0.10	40,800 ccf	\$0.05
Total / Projected Rev	3,049,200 ccf		207,647 ccf	\$102,155
Revenue Requirements (Table 6-4)	\$100,000			
Units of Service (column C total)	207,647 ccf			
Unit Conservation Rate²²	\$0.49 / ccf			

Finally, based on the District's current policy objective to provide rate incentives for essential and efficient indoor use, revenues from cell tower leases (site lease income) and a portion of the property taxes

¹⁹ Rounded up to the nearest cent

²⁰ Rounded up to the nearest cent

²¹ Rounded up to the nearest cent

²² Rounded up to the nearest cent

received by the District are used to offset the essential and efficient usage rate. The offset applies to indoor/domestic use in Tier 1 and commercial indoor use (shown in Table 6-11).

- To minimize customer impacts and provide incentives for essential and efficient use, \$408K from cell tower lease revenues and a portion of property tax revenues are used to provide a revenue offset for efficient indoor and efficient commercial indoor use.
- Note that it is assumed that efficient usage for commercial is 90 percent of total use and of that 90 percent, the indoor usage is 90 percent. Therefore, the indoor usage is 81 percent (90 percent x 90 percent) of the total commercial use. The revenue offset is applied to 81 percent of total commercial use to determine the revenue offset for the commercial class.
- Note that \$0.21 /ccf is applied to the efficient indoor use; and, since commercial rates are uniform, the incentive becomes \$0.17 /ccf when applied to the full commercial use. The remaining property tax revenue is used to offset revenue requirements for fixed service charges. Note that all user classes benefit from this offset. Most irrigation customers have associated domestic usage which also benefits from the revenue offset.

Table 6-11: Revenue Offset Rate Calculations

Rev Offset Rate Calculations	Budgeted Water Sales	Peaking Factors	Equiv Units	Unit Rate ²³ (\$/ccf)
	A	B	C = A x B	D = -\$0.21 x B
Tier 1 - Essential Use	1,600,000 ccf	1.00	1,600,000 ccf	(\$0.21)
Tier 2 - Efficient Use	874,353 ccf	0.00	0 ccf	\$0.00
Tier 3 - Inefficient Use	87,230 ccf	0.00	0 ccf	\$0.00
Tier 4 - Excessive Use	79,617 ccf	0.00	0 ccf	\$0.00
Uniform - Commercial Use	408,000 ccf	0.81	330,480 ccf	(\$0.17)
Total / Projected Rev	3,049,200 ccf		1,930,480 ccf	(\$405,360)²⁴
Revenue Requirements <i>(Table 6-4)</i>	(\$408,000)			
Units of Service	1,930,480 ccf			
Unit Rev Offset Rate²⁵	(\$0.21)			

In summary, the cost allocation methodology developed herein allocates the costs to customers, meters, and usage. Customer costs are the same for each account and other base fixed costs and a portion of peaking costs are allocated proportionally to the capacity of each meter. The remaining costs are allocated to each usage class in accordance with the demand they place on the system. The usage of each customer class is defined and the costs associated with the usage of each customer type provides the revenue to be recovered from that customer class. The rationale for allocating conservation costs and supplemental water costs allows the development of inclining tiered rates to provide incentives for

²³ Rounded down to the nearest cent

²⁴ Projected Revenues = Rates in D x budgeted water sales (column A)

²⁵ Rounded down to the nearest cent

conservation in the inefficient and excessive water usage tiers identified within each customer class. This methodology meets the requirements of Proposition 218 and Article X of the California Constitution.

6.3 Proposed Rates

Based on the revenue requirements as shown in Table 6-4 and the monthly service charge calculations shown in Table 6-7, the proposed monthly service charges for FY 2018 are shown in Table 6-12.

Table 6-12: Monthly Service Charges

Meter Size	Billing & CS (A)	Meters & Capacity (B)	Proposed FY 2018 (C = A+B)	Current FY 2017 (D)	\$ Change (E = C – D)	% Change (F = E/D)	Water Accounts (G)
5/8"	\$3.77	\$8.03	\$11.80	\$10.93	\$0.87	8.0%	2,389
¾"	\$3.77	\$12.05	\$15.82	\$14.58	\$1.24	8.5%	4,877
1"	\$3.77	\$20.08	\$23.85	\$21.86	\$1.99	9.1%	447
1 ½"	\$3.77	\$40.15	\$43.92	\$40.06	\$3.86	9.6%	691
2"	\$3.77	\$80.30	\$84.07	\$76.48	\$7.59	9.9%	1,248
Projected Revenues²⁶	\$432,992	\$2,530,298	\$2,963,290	\$2,714,043	\$249,247	9.2%	9,571

Water capital R&R charges will remain unchanged from FY 2017 levels and are shown in Table 6-13.

Table 6-13: Water Capital R&R Charges

Meter Size	Current FY 2017	Proposed FY 2018	Water Accounts	RW Accts	Water + RW Accounts
5/8"	\$4.66	\$4.66	2,389	0	2,389
¾"	\$4.66	\$4.66	4,877	0	4,877
1"	\$7.78	\$7.78	447	0	447
1 ½"	\$18.91	\$18.91	691	10	701
2"	\$47.47	\$47.47	1,248	206	1,454
Projected Revenues			\$1,288,516	\$116,767	\$1,405,283

Based on the individual water rate components shown in Table 6-8 to Table 6-11 and the water supply rates shown in Table 5-3, the proposed water commodity rates by usage type are shown in Table 6-14.

²⁶ Projected Revenues = Σ (service charges x # of accounts for each meter size) x 12 bills/year

Table 6-14: Proposed Water Commodity Rates by Rate Component

Water Rates	Proposed FY 2018	Water Supply	Delivery	RW Program	Conservation	Rev Offset
Tier 1 – Essential Use	\$2.52	\$2.58	\$0.15	\$0.00	\$0.00	-\$0.21
Tier 2 – Efficient Use	\$2.91	\$2.58	\$0.33	\$0.00	\$0.00	\$0.00
Tier 3 – Inefficient Use	\$6.08	\$2.58	\$0.46	\$2.55	\$0.49	\$0.00
Tier 4 – Excessive Use	\$7.82	\$2.58	\$0.67	\$4.08	\$0.49	\$0.00
Uniform – CII Use	\$2.89	\$2.58	\$0.17	\$0.26	\$0.05	-\$0.17
Projected Revenues	\$8,908,451	\$7,866,936	\$691,366	\$653,354	\$102,155	-\$405,360

Based on the individual rate components shown in Table 6-14, the resulting commodity rates effective July 1, 2017 are shown in Table 6-15.

Table 6-15: Water Commodity Rates

Water Rates	Current FY 2017	Proposed FY 2018	Projected Sales
Tier 1 – Essential Use	\$2.46	\$2.52	1,600,000 ccf
Tier 2 – Efficient Use	\$2.83	\$2.91	874,353 ccf
Tier 3 – Inefficient Use	\$5.61	\$6.08	87,230 ccf
Tier 4 – Excessive Use	\$7.18	\$7.82	79,617 ccf
Uniform – CII Use	\$2.79	\$2.89	408,000 ccf
Projected Revenues	\$8,609,749	\$8,908,451	3,049,200 ccf

7 Wastewater Revenue Requirements and Proposed Rates

The wastewater O&M expenses in FY 2018 are budgeted to be \$7.665M, as shown in Table 7-1 below. In FY 2018, the District projects to use \$360K from non-operating revenues to offset the wastewater O&M expenses. The current debt service is \$256K for the Northline Lift Station. The resulting revenue requirement from rates is \$7.565M, including all the above and \$3K reserve funding. This represents a \$165K increase from FY 2017, which would require a 2.23 percent wastewater rate increase. The line items shown in Table 7-1 below are further detailed in Appendix 5 – Cash Flow Analysis for Wastewater Funds, developed by District Staff and provided to RFC as basis for wastewater rate calculations. The District completed the full cost of service analysis for wastewater services in FY 2009. the District proposes to increase wastewater rates proportionally across the board by the overall revenue requirements increase for FY 2018.

Table 7-1: Wastewater Revenue Requirements from Rates

Wastewater Operating Revenue Requirements	Budget FY 2018	Notes
Total WW O&M Expenses	\$7,665.4K	Appendix 2
Less (-) Non-Operating Revenues	-\$359.6K	Appendix 5
Plus (+) Debt Service	\$256.1K	Appendix 5
Plus (+) Operating Reserve Funding	\$3.1K	Appendix 5
Total Rev Req from WW Rates	\$7,565K	
Current WW Service Revenues	\$7,400K	Appendix 5
Required Revenue Increase	\$165K	Appendix 5
Overall WW Rate Increase	2.23%	

As shown in Table 7-2, the District has \$1.341M in projected capital expenditures for FY 2018. The District also is funding \$270K to the Capital Reserve. Since projected revenues under the current rates meet these revenue requirements, no increase for Wastewater Capital R&R charges is proposed for FY 2018.

Table 7-2: Wastewater Capital R&R Revenue Requirements

Wastewater Revenue Requirement from Rates	Budget FY 2018 (<i>Appendix 5</i>)
Total Capital Expenditure	\$1.341M
Plus (+) Capital Reserve Funding	\$0.270M
Total Wastewater Capital R&R Revenues	\$1.611M
Current Wastewater Capital R&R Revenues	\$1.611M
Overall Capital R&R Rate Increase	0.0%

The Wastewater Capital R&R charges remain unchanged (shown in Table 7-3). Table 7-4 shows the wastewater usage rate changes from FY 2017 to FY 2018. As shown in Table 7-1, the wastewater utility

requires a 2.23 percent rate increase. Table 7-4 shows the resulting rate increases for all classes. Rate increases by class varying from 2.23 percent are due to rounding.

Table 7-3: Wastewater Capital R&R Charges

Wastewater Capital R&R	FY 2016	FY 2017	\$ Change	% Change
Residential				
Single Family Residential	\$4.93 / EDU	\$4.93 / EDU	\$0.00	0.0%
Multi-Family Restricted	\$3.91 / EDU	\$3.91 / EDU	\$0.00	0.0%
Multi-Family Unrestricted	\$4.65 / EDU	\$4.65 / EDU	\$0.00	0.0%
Commercial				
5/8" Meter	\$4.34 / month	\$4.34 / month	\$0.00	0.0%
3/4" Meter	\$7.34 / month	\$7.34 / month	\$0.00	0.0%
1" Meter	\$13.55 / month	\$13.55 / month	\$0.00	0.0%
1-1/2" Meter	\$24.07 / month	\$24.07 / month	\$0.00	0.0%
2" Meter	\$70.96 / month	\$70.96 / month	\$0.00	0.0%
Public Authority				
1" Meter	\$4.93 / month	\$4.93 / month	\$0.00	0.0%
1-1/2" Meter	\$24.65 / month	\$24.65 / month	\$0.00	0.0%
2" Meter	\$39.71 / month	\$39.71 / month	\$0.00	0.0%

Table 7-4: Wastewater Rates by Customer Classes

Wastewater Rates	Current FY 2017 (A)	Proposed FY 2018 (B)	\$ Change (C)	% Change (D)
Residential Unrestricted	\$23.11 / EDU	\$23.63 / EDU	\$0.52	2.25%
Multi-Family Restricted	\$18.33 / EDU	\$18.74 / EDU	\$0.41	2.24%
Multi-Family Unrestricted	\$21.79 / EDU	\$22.28 / EDU	\$0.49	2.25%
Animal Kennel/Hospital	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Car Wash	\$3.77 / ccf	\$3.86 / ccf	\$0.09	2.39%
Department/Retail Store	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Dry Cleaners	\$3.32 / ccf	\$3.40 / ccf	\$0.08	2.41%
Golf Course/Camp/Park	\$3.31 / ccf	\$3.39 / ccf	\$0.08	2.42%
Health Spa	\$3.78 / ccf	\$3.87 / ccf	\$0.09	2.38%
Hospital/Convalescent Home	\$3.32 / ccf	\$3.40 / ccf	\$0.08	2.41%
Hotel	\$5.74 / ccf	\$5.87 / ccf	\$0.13	2.26%
Market	\$7.53 / ccf	\$7.70 / ccf	\$0.17	2.26%
Mortuary	\$7.50 / ccf	\$7.67 / ccf	\$0.17	2.27%
Nursery/Greenhouse	\$3.36 / ccf	\$3.44 / ccf	\$0.08	2.38%
Professional/Financial Office	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Public Institution	\$3.73 / ccf	\$3.82 / ccf	\$0.09	2.41%
Repair/Service Station	\$3.78 / ccf	\$3.87 / ccf	\$0.09	2.38%
Restaurant	\$3.58 / ccf	\$3.66 / ccf	\$0.08	2.23%
Schools	\$3.92 / ccf	\$4.01 / ccf	\$0.09	2.30%
Theater	\$3.79 / ccf	\$3.88 / ccf	\$0.09	2.37%
Warehouse/Storage	\$3.00 / ccf	\$3.07 / ccf	\$0.07	2.33%
Basic Commercial	\$3.32 / ccf	\$3.40 / ccf	\$0.08	2.41%

8 Recycled Water Revenue Requirements and Proposed Rates

8.1 Recycled Water System

Prior to the completion of the Recycled Water Expansion Project, the District had only one recycled water (RW) customer who purchased secondary treated disinfected recycled water - Laguna Woods Village Golf Course, operated by the Golden Rain Foundation (GRF). There was neither a monthly service charge nor a capital R&R charge for this RW customer since all services were provided based on the terms of the service contract. With the completion of the RW expansion project, all RW customers (existing and converted customers) are now supplied with higher quality tertiary RW and all RW customers are subject to the corresponding rates that support the annual cost of providing tertiary RW.

In FY 2015, the District completed the expansion of its recycled water system, including water recycling plant (WRP) upgrades to tertiary treatment and RW distribution system pipeline expansion. The RW expansion capital cost, was financed by the following sources: State Revolving Fund (SRF) Loan, grants, and from the restricted reserve (revenues from Tier 3 and Tier 4 potable usage dedicated to recycled water expansion). The District is currently in the process of converting approximately 211 accounts from potable to recycled water for irrigation purposes.

8.2 Projected Recycled Water Sales

The newly-expanded RW system allows for the conversion of potable irrigation customers to RW, which was completed at the end of FY 2016. The District converted 211 potable irrigation accounts to RW accounts at various times throughout the fiscal year ending June 30, 2016. The projected RW sales for FY 2017 are estimated at 1,275AF. The District is assuming the same level of RW sales for FY 2018. Table 8-1 shows the projected RW sales for FY 2017 and budgeted RW sales for FY 2018.

Table 8-1: Recycled Water Sales

	RW Sales	
FY 2017 Estimated Actual Sales	1,275 AF	555,390 ccf
FY 2018 Budgeted Sales	1,275 AF	555,390 ccf

8.3 Recycled Water Revenue Requirements from Rates

In FY 2015, the District began separating Recycled Water costs into an independent RW Enterprise Fund. Table 8-2 summarizes the RW revenue requirements from rates for FY 2018. RW O&M expenses and supply are budgeted to be \$1.009M, which will be partially offset by non-operating revenues of \$277K. The RW Fund's debt service payment of \$1.603M will be partially covered by restricted reserve funding, in the amount of \$677K. The remaining revenue requirement to be recovered from rates is \$1.658M. The line items shown in Table 8-2 below are further detailed in Appendix 4 – Cash Flow Analysis for RW Funds, developed by District Staff and provided to RFC as basis for the cost of service analysis.

Table 8-2: RW Revenue Requirement from Rates

RW Revenue Requirement from Rates	Budget FY 2017	Notes
Treatment Tertiary Recycled Water	\$190,300	Appendix 2
Other RW O&M	\$818,455	Appendix 2
Revenue Requirement for RW	\$1,008,755	
Less (-) Non-Operating Revenues	-\$276,800	Appendix 4
Less (-) Restricted Reserve Funding	-\$676,913	Appendix 4
Plus (+) Debt Service	\$1,602,958	Appendix 4
Plus (+) Operating Reserve Funding	\$0	Appendix 4
Total Revenue Requirement from Rates	\$1,658,000	

8.4 Proposed RW Rates

All RW customers connected to the recycled water distribution system will be assessed the same monthly service charges (shown in Table 8-3) and capital R&R charges (shown in Table 8-4) as potable customers to recover the customer service, meter service, a portion of capacity (see Section 6.3 for details) and other RW related fixed costs and to pay for capital R&R of expanded RW system. After the completion of the RW expansion in FY 2015, all RW customers (existing and converting customers) are now supplied with higher quality tertiary RW, and will be subject to the corresponding rates (shown in Table 8-5) that support the annual projected cost of providing tertiary RW.

Table 8-3: FY 2018 Monthly Service Charges

Meter Size	Current FY 2017	Proposed FY 2018	# of RW Accounts
5/8"	\$10.93	\$11.80	
¾"	\$14.58	\$15.82	
1"	\$21.86	\$22.85	
1 ½"	\$40.06	\$43.92	10
2"	\$76.48	\$84.07	201
Projected RW Revenues²⁷	\$189,277	\$208,047	211

²⁷ Projected Current RW Revenues = (\$40.06 x 10 accts + \$76.48 x 201 accts) x 12 bills/year = \$189,277

Table 8-4: FY 2018 Capital R&R Charges

Capital R&R Charges	Current FY 2017	Proposed FY 2018
5/8	\$4.66	\$4.66
3/4	\$4.66	\$4.66
1	\$7.78	\$7.78
1 1/2	\$18.91	\$18.91
2	\$47.47	\$47.47

Table 8-5 adjusts the “Total Revenue Requirements from RW rates” from Table 8-2 with the projected Monthly Service Charges paid by all RW accounts in FY 2018. The unit RW commodity rate is calculated using the net revenue requirements from RW commodity rates divided by projected RW sales of 555,390 ccf or 1,275 AF. The RW commodity rate for FY 2018 is \$2.62 / ccf or \$1,141 / AF, which is approximately 90% of Tier 2 Potable Water Commodity Rate for FY 2018 and provides an economic incentive for irrigation customers to convert to RW.

Table 8-5: Unit RW Commodity Rate Calculation

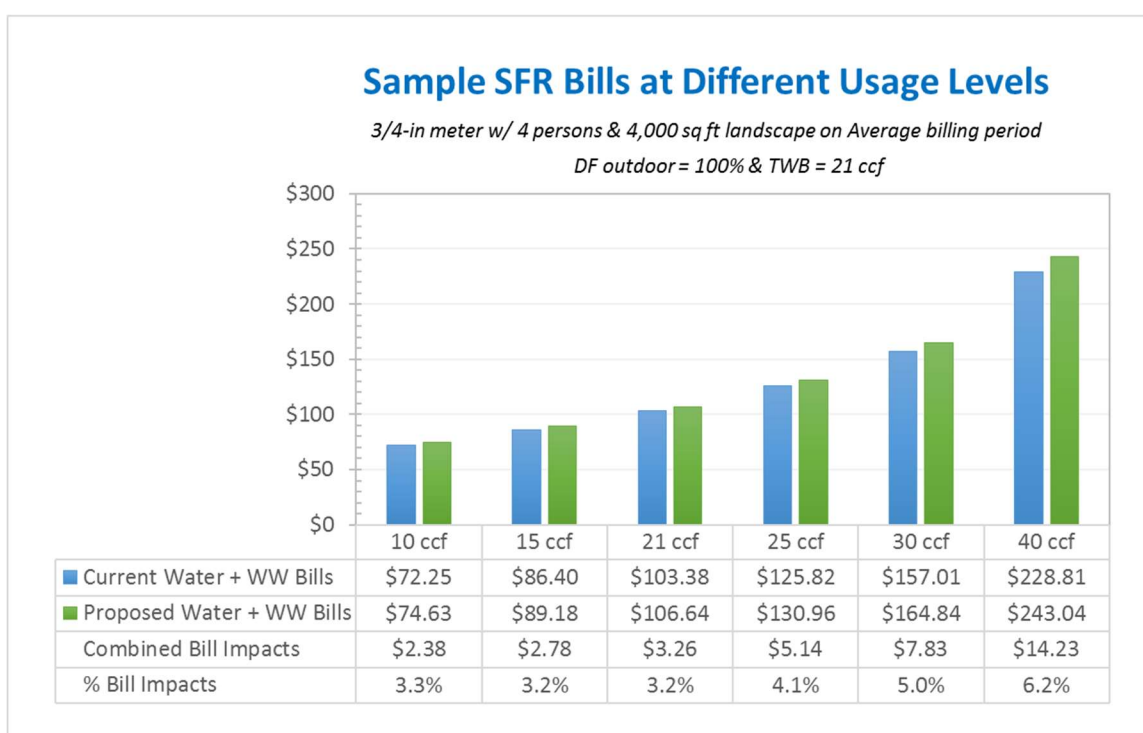
Unit Commodity Rate Calculation	Budget FY 2017
Total Revenue Requirement from RW Rates	\$1,658,000
Less (-) Monthly Service Charge	-\$208,047
Net Revenue Requirements from RW Commodity Rates	\$1,449,953
Projected RW Sales	555,390 ccf
Unit RW Commodity Rate²⁸	\$2.62/ ccf \$1,141/AF
Percent of Tier 2 Potable Water Rate	90%

²⁸ Rounded up to the nearest cent

9 Customer Impacts

Figure 9-1 shows a breakdown of water and wastewater bills at various water usage levels for a single family residential user with 4 occupants and 4,000 sq. ft. landscape area serviced by a 3/4-in meter, assuming the outdoor drought factor is increased to 100% from 75% from as per the recent drought factor adopted by the District Board. The combined water and wastewater bill increase for a typical single residential user consuming 15 ccf water per month would be \$2.78 per month, resulting from increases in water and wastewater monthly fixed service charges and water supply cost increases. Note that the impacts for recycled water are not shown because residential users do not purchase recycled water.

Figure 9-1: SFR Total Monthly Bill at Different Usage Levels



10 Appendices

10.1 Appendix 1 – Pass-through Water Supply Cost

Source: Provided by District Staff on March 20, 2017

EL TORO WATER DISTRICT 2017/18 PURCHASED WATER BUDGET							
		2016/17 Budget		2016/17 Projected Actual		2017/18 Budget	
		Jul 2016	Jan 2017	Jul 2016	Jan 2017	Jul 2017	Jan 2018
1	Total Period Demand (AF)	4,000	3,650	3,750	3,250	3,930	3,370
2	Total Annual Demand (AF)		7,650		7,000		7,300
3	Total Water Sales (AF)		7,350		6,700		7,000
4	MWD Period Demand (AF)	3,186	2,021	3,750	1,621	2,301	1,741
5	MWD Annual Demand (AF)		5,207		5,371		4,042
6	MWD Untreated Commodity Rates						
7	System Access Rate	259.00	289.00	257.00	289.00	289.00	299.00
8	System Power Rate	138.00	124.00	126.00	124.00	124.00	132.00
9	Water Stewardship Rate	41.00	52.00	41.00	52.00	52.00	55.00
10	MWD Tier 1 Rate	156.00	201.00	158.00	201.00	201.00	209.00
11	Subtotal Untreated Full Service	594.00	666.00	582.00	666.00	666.00	695.00
12	Treatment Surcharge	348.00	313.00	341.00	313.00	313.00	320.00
13	Total Treated Full Service Rate	942.00	979.00	923.00	979.00	979.00	1,015.00
14	Total Treated Full Service Annual Cost	3,000,776	1,978,632	3,461,250	1,587,032	2,252,752	1,767,190
15	MWD Fixed Charges						
16	Capacity Reservation Charge	84,808	62,246	84,808	66,323	66,323	72,126
17	Readiness To Serve Charge	280,233	247,262	268,235	220,164	220,164	228,318
18	Total MWD Fixed Charges		674,548		639,529		586,931
19	Total MWD Cost		5,653,956		5,687,811		4,606,873
20	Total MWD Unit Cost (\$/AF)		1,086		1,059		1,140
21	MWDOC Connection Rate (\$/meter)	11.30		10.95		11.25	
22	ETWD Meters	9,648		9,648		9,562	
23	MWDOC Connection Charge (\$)		109,022		105,646		107,573
24	Baker Water Treatment Plant						
25	Period Demand (AF)	814	1,629		1,629	1,629	1,629
26	Annual Demand (AF)		2,443		1,629		3,258
27	Baker Raw Water Cost	483,791	1,084,864	-	1,084,864	1,084,864	1,132,103
28	Baker O&M Unit Cost (per AF)	212	147		212	218	218
29	SAC Surcharge				8	8.41	8.41
30	SCP Surcharge				2	1.40	1.40
31	Baker O&M Annual Cost	172,666	239,452	-	362,289	371,672	371,672
32	Baker Capital Cost (Debt Service)	264,412	528,824		342,131	342,131	342,131
33	Total Period Baker Water Treatment Plant Cost	920,869	1,853,140	-	1,789,285	1,798,667	1,845,906
34	Total Annual Baker Water Treatment Plant Cost		2,774,009		1,789,285		3,644,574
35	Baker Water Treatment Plant Unit Cost(\$/AF)		1,135		1,098		1,119
36	Capital Charge Revenue Funding		(500,000)		(250,000)		(500,000)
37	Total Baker Water Treatment Plant Cost		2,274,009		1,539,285		3,144,574
38	Total Purchased Water Cost						
39	MWD		5,653,956		5,687,811		4,606,873
40	MWDOC		109,022		105,646		107,573
41	Baker		2,274,009		1,539,285		3,144,574
42	Total Purchased Water Cost		8,036,987		7,332,741		7,859,019
43	Total Expense (Less Baker Debt Service)		7,743,752		7,240,610		7,674,757
44	Percent Increase Budget to Budget per Unit						2.47%
45	Overall Imported Water Effective Rate						
46	Fiscal Year Cost per Acre Foot Purchased		1,051		1,048		1,077
47	Fiscal Year Cost per CCF Purchased		2.41		2.40		2.47
48	Fiscal Year Rate per CCF Sold		2.51		2.51		2.58

10.2 Appendix 2 – O&M Expenses Allocations to Water, RW, and WW Funds

Source: Provided by District Staff on March 20, 2017

	2017/18 Budget	Water	Sewer	Recycled Water	Total	2017/18 Budget	Water	Sewer	Recycled Water	Total
Source of Supply	7,810,256	7,810,256			7,810,256					
Pumping Water	290,971	290,971			290,971					
Treatment Water	41,866	41,866			41,866					
Transmission & Distribution Water	523,142	523,142			523,142					
Customer Accounts	0	0			0					
Outside Treatment Sewer	986,100		986,100		986,100					
Pumping Sewer	377,832		377,832		377,832					
Treatment Sewer	684,408		684,408		684,408					
Transmission & Distribution Sewer	190,300			190,300	190,300					
Customer Accounts	297,100		297,100		297,100					
Interest Expense	805,729	301,166	85,041	419,521	805,729					
Total	18,342,290	11,501,235	5,724,466	1,116,588	18,342,290					
Other O&M										
Purchased Water	7,674,757	7,674,757			7,674,757					
SOCWA	974,100		974,100		974,100					
Fuel & Power	964,100	201,170	660,250	\$102,680	964,100					
Operations Indirect Costs	61,500	24,600	31,980	4,920	61,500					
Administration	243,000	97,200	126,360	19,440	243,000					
Administration Indirect Costs	1,494,250	597,700	777,010	119,540	1,494,250					
Depreciation & Amortization	4,006,850	1,602,740	2,083,562	320,548	4,006,850					
Interest Expense	805,729	301,166	85,041	419,521	805,729					
Total Other O&M	2,118,004	1,001,902	986,163	129,939	2,118,004					
Labor	7,902,953	3,161,181	4,109,536	632,236	7,902,953					
Total Expense	26,245,243	14,662,417	9,834,002	1,748,825	26,245,243					
Less Depreciation & Interest	21,432,664	12,758,511	7,665,398	1,008,755	21,432,664					

10.3 Appendix 3 – Cash Flow Analysis for Water Funds

Source: Provided and discussed by District Staff on April 17, 2017

WATER CASH FLOW											
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
BEGINNING RESERVE BALANCE	6,023,321	5,648,527	4,654,121	3,465,485	3,096,801	2,245,954	2,272,893	2,249,566	2,234,047	2,200,213	2,176,518
OPERATIONS & MAINTENANCE CASH FLOW											
O&M REVENUES											
Revenue from 15/16 Commodity Rates (Unrestricted)	7,660,232	7,949,166	7,949,166	7,949,166	7,949,166	7,949,166	7,949,166	7,949,166	7,949,166	7,949,166	7,949,166
Revenue from 15/16 Fixed Meter Rates	2,821,615	2,824,043	2,824,043	2,824,043	2,824,043	2,824,043	2,824,043	2,824,043	2,824,043	2,824,043	2,824,043
Additional Service Revenue Required											
Year	Rate Action										
2017-18	MWD Pass Through	236,019	236,019	236,019	236,019	236,019	236,019	236,019	236,019	236,019	236,019
2017-18	Tier 1 Offset Increase	(40,160)	(40,160)	(40,160)	(40,160)	(40,160)	(40,160)	(40,160)	(40,160)	(40,160)	(40,160)
2017-18	COS Rate Increase	247,160	247,160	247,160	247,160	247,160	247,160	247,160	247,160	247,160	247,160
2018-19	MWD Pass Through		304,920	304,920	304,920	304,920	304,920	304,920	304,920	304,920	304,920
2018-19	COS Rate Increase		300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000	300,000
2019-20	MWD Pass Through			335,412	335,412	335,412	335,412	335,412	335,412	335,412	335,412
2019-20	COS Rate Increase			335,000	335,000	335,000	335,000	335,000	335,000	335,000	335,000
2020-21	MWD Pass Through				365,904	365,904	365,904	365,904	365,904	365,904	365,904
2020-21	COS Rate Increase				365,000	365,000	365,000	365,000	365,000	365,000	365,000
2021-22	MWD Pass Through					365,904	365,904	365,904	365,904	365,904	365,904
2021-22	COS Rate Increase					400,000	400,000	400,000	400,000	400,000	400,000
2022-23	MWD Pass Through						365,904	365,904	365,904	365,904	365,904
2022-23	COS Rate Increase						425,000	425,000	425,000	425,000	425,000
2023-24	MWD Pass Through							396,396	396,396	396,396	396,396
2023-24	COS Rate Increase							250,000	250,000	250,000	250,000
2024-25	MWD Pass Through								426,888	426,888	426,888
2024-25	COS Rate Increase								225,000	225,000	225,000
2025-26	MWD Pass Through									426,888	426,888
2025-26	COS Rate Increase									275,000	275,000
2026-27	MWD Pass Through										365,904
2026-27	COS Rate Increase										300,000
Total Unrestricted Water Service Rate Revenue	10,481,847	11,216,228	11,821,148	12,491,560	13,222,464	13,988,368	14,779,272	15,425,668	16,077,556	16,779,444	17,445,348
Other Sources of Cash											
Restricted Reserves Funding of Conservation Program	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Capital Charge Funding of Baker Debt Service	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Property Taxes	491,218	497,062	504,646	512,474	520,377	528,202	536,190	544,293	552,551	560,811	568,405
Miscellaneous Revenue	129,144	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000	55,000
Other Income (Site Leases)	194,821	190,000	193,800	197,676	201,630	205,662	209,775	213,971	218,250	222,615	227,068
Other Income (R-6 Partners)	104,929	110,000	112,200	114,444	116,733	119,068	121,449	123,878	126,355	128,883	131,460
Investment Income	60,172	50,000	20,864	18,166	14,435	11,837	11,144	11,308	11,512	11,623	11,786
Subtotal Other Sources of Cash	1,580,284	1,502,062	1,486,510	1,497,760	1,508,175	1,519,769	1,533,558	1,548,450	1,563,668	1,578,932	1,593,718
TOTAL O&M REVENUES (Unrestricted)	12,062,131	12,718,289	13,307,658	13,989,320	14,730,638	15,508,136	16,312,830	16,974,118	17,641,224	18,358,375	19,039,066
O&M REVENUE REQUIREMENTS											
Total O & M Expense	12,040,376	12,758,511	13,286,881	13,847,550	14,430,691	15,026,265	15,651,894	16,305,375	16,990,795	17,697,809	18,373,522
Debt Service											
Baker Water Treatment Plant	363,039	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262
Subtotal Debt Service	363,039	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262	684,262
TOTAL O&M REVENUE REQUIREMENTS	12,403,415	13,442,773	13,971,143	14,531,812	15,114,953	15,710,527	16,336,156	16,989,637	17,675,057	18,382,071	19,057,784
ANNUAL O&M SURPLUS (DEFICIT)	(341,284)	(724,483)	(663,485)	(542,492)	(384,314)	(202,390)	(23,327)	(15,519)	(33,834)	(23,695)	(18,719)

WATER CASH FLOW											
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM											
CAPITAL EXPENDITURES											
Capital Replacement & Refurbishment Program	822,025	1,058,438	1,313,667	614,707	1,255,049	559,186	843,516	981,016	981,016	981,016	981,016
Baker Pipeline Capacity Purchase											
Baker Water Treatment Plant											
Baker Water Treatment Plant Construction Period Interest											
Capital Charge Funding of Baker Debt Service	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
TOTAL CAPITAL EXPENDITURES	1,322,025	1,558,438	1,813,667	1,114,707	1,755,049	1,059,186	1,343,516	1,481,016	1,481,016	1,481,016	1,481,016
CAPITAL PROGRAM REVENUE											
Revenue from Existing Capital Charge	788,516	788,516	788,516	788,516	788,516	788,516	788,516	788,516	788,516	788,516	788,516
Capital Charge Funding of Baker Debt Service	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Capital Charge Revenue Increase							55,000	55,000	55,000	55,000	55,000
Capital Charge Revenue Increase								137,500	137,500	137,500	137,500
Subtotal Capital Charge Revenue	1,288,516	1,288,516	1,288,516	1,288,516	1,288,516	1,288,516	1,343,516	1,481,016	1,481,016	1,481,016	1,481,016
Loan Proceeds - Baker											
Loan Proceeds - Recycled Water Project- SRF											
Capital Reserves											
TOTAL CAPITAL REVENUE	1,288,516	1,288,516	1,288,516	1,288,516	1,288,516	1,288,516	1,343,516	1,481,016	1,481,016	1,481,016	1,481,016
ANNUAL CAPITAL SURPLUS (DEFICIT)	(33,509)	(269,922)	(525,151)	173,809	(466,533)	229,330	(0)	(0)	(0)	(0)	(0)
TOTAL CASH FLOW											
TRANSFER FROM RECYCLED WATER	0	0	0	0	0	0	0	0	0	0	0
TOTAL ANNUAL RESERVE IMPACT	(374,794)	(994,406)	(1,188,636)	(368,684)	(850,847)	26,939	(23,327)	(15,519)	(33,834)	(23,695)	(18,719)
ENDING RESERVE BALANCE	5,648,527	4,654,121	3,465,485	3,096,801	2,245,954	2,272,893	2,249,566	2,234,047	2,200,213	2,176,518	2,157,799

10.4 Appendix 4 – Cash Flow Analysis for Recycled Water Funds

Source: Provided by District Staff on March 20, 2017

RECYCLED WATER CASH FLOW												
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	
BEGINNING RESERVE BALANCE	0	0	0	0	0	0	0	0	0	0	0	0
OPERATIONS & MAINTENANCE CASH FLOW												
O&M REVENUES												
Revenue from 1516 Commodity Rates	1,416,245	1,450,000	1,505,107	1,560,646	1,621,739	1,677,278	1,738,371	1,805,018	1,877,218	1,943,865	2,004,958	
Revenue from 1516 Fixed Meter Rates	189,000	189,000	189,000	189,000	189,000	189,000	189,000	189,000	189,000	189,000	189,000	
Additional Service Revenue Required												
Year	Rate Action											
2017-18	COS Rate Increase											
2018-19	COS Rate Increase											
2019-20	COS Rate Increase											
2020-21	COS Rate Increase											
2021-22	COS Rate Increase											
2022-23	COS Rate Increase											
2023-24	COS Rate Increase											
2024-25	COS Rate Increase											
2025-26	COS Rate Increase											
2026-27	COS Rate Increase											
Total Recycled Water Service Rate Revenue	1,605,245	1,658,000	1,733,107	1,811,646	1,897,739	1,980,278	2,070,371	2,154,018	2,241,218	2,326,865	2,407,958	
Other Sources of Cash												
Restricted Reserves Funding of Debt Service	584,447	561,913	528,894	494,407	454,407	411,581	359,455	328,633	296,735	268,972	248,391	
Recycled Water Meter Capital Charge Funding of Debt	115,000	115,000	115,000	115,000	115,000	123,500	136,000	136,000	136,000	136,000	136,000	
MWD LRP Rebate	237,500	237,500	237,500	237,500	237,500	237,500	237,500	237,500	237,500	237,500	237,500	
Property Taxes	39,951	39,300	39,936	40,567	41,214	41,894	42,580	43,278	43,983	44,715	45,552	
Restricted Reserve - SRF Loan												
Subtotal Other Sources of Cash	976,898	953,713	921,330	887,475	848,120	814,475	775,535	745,411	714,218	687,187	667,443	
TOTAL O&M REVENUES	2,582,142	2,611,713	2,654,437	2,699,120	2,745,859	2,794,753	2,845,906	2,899,429	2,955,437	3,014,052	3,075,401	
O&M REVENUE REQUIREMENTS												
Total O & M Expense	979,184	1,008,755	1,051,479	1,096,162	1,142,901	1,191,795	1,242,948	1,296,471	1,352,479	1,411,094	1,472,443	
Debt Service												
Recycled Water SRF Loan	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	
Subtotal Debt Service	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	1,602,958	
TOTAL O&M REVENUE REQUIREMENTS	2,582,142	2,611,713	2,654,437	2,699,120	2,745,859	2,794,753	2,845,906	2,899,429	2,955,437	3,014,052	3,075,401	
ANNUAL O&M SURPLUS (DEFICIT)	0	0	0	0	0	0	0	0	0	0	0	0

RECYCLED WATER CASH FLOW												
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM												
CAPITAL EXPENDITURES												
Capital Replacement & Refurbishment Program												
Recycled Water Expansion Project												
Recycled Water Meter Capital Charge Funding of Debt	115,000	115,000	115,000	115,000	115,000	123,500	136,000	136,000	136,000	136,000	136,000	136,000
TOTAL CAPITAL EXPENDITURES	115,000	115,000	115,000	115,000	115,000	123,500	136,000	136,000	136,000	136,000	136,000	136,000
CAPITAL PROGRAM REVENUE												
Revenue from Existing Capital Charge	115,000	115,000	115,000	115,000	115,000	123,500	136,000	136,000	136,000	136,000	136,000	136,000
Subtotal Capital Charge Revenue	115,000	115,000	115,000	115,000	115,000	123,500	136,000	136,000	136,000	136,000	136,000	136,000
Recycled Water Project Grant	0											
Restricted Reserves Funding of Recycled Water Project	0	0										
Loan Proceeds - Recycled Water Project- SRF	0											
Capital Reserves												
TOTAL CAPITAL REVENUE	115,000	115,000	115,000	115,000	115,000	123,500	136,000	136,000	136,000	136,000	136,000	136,000
ANNUAL CAPITAL SURPLUS (DEFICIT)	0	0	0	0	0	0	0	0	0	0	0	0
TRANSFER TO WATER COST CENTER		0	0	0	0	0	0	0	0	0	0	0
TRANSFER TO SEWER COST CENTER		0	0	0	0	0	0	0	0	0	0	0
TOTAL CASH FLOW												
TOTAL ANNUAL RESERVE IMPACT	0	0	0	0	0	0	0	0	0	0	0	0
ENDING RESERVE BALANCE	0	0	0	0	0	0	0	0	0	0	0	0

10.5 Appendix 5 – Cash Flow Analysis for Wastewater Funds

Source: Provided by District Staff on April 17, 2017

SEWER CASH FLOW											
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
BEGINNING RESERVE BALANCE	6,023,321	6,125,571	6,398,593	6,928,160	6,763,279	7,231,103	7,004,588	7,017,298	7,023,510	7,030,939	7,046,649
OPERATIONS & MAINTENANCE CASH FLOW											
O&M REVENUES											
Revenue from 14/15 Service Rates	7,400,000	7,400,000	7,400,000	7,400,000	7,400,000	7,400,000	7,400,000	7,400,000	7,400,000	7,400,000	7,400,000
Additional Service Revenue Required											
Year	Rate Action										
2017-18	COS Rate Increase	165,000	165,000	165,000	165,000	165,000	165,000	165,000	165,000	165,000	165,000
2018-19	COS Rate Increase		325,000	325,000	325,000	325,000	325,000	325,000	325,000	325,000	325,000
2019-20	COS Rate Increase			325,000	325,000	325,000	325,000	325,000	325,000	325,000	325,000
2020-21	COS Rate Increase				325,000	325,000	325,000	325,000	325,000	325,000	325,000
2021-22	COS Rate Increase					350,000	350,000	350,000	350,000	350,000	350,000
2022-23	COS Rate Increase						375,000	375,000	375,000	375,000	375,000
2023-24	COS Rate Increase							375,000	375,000	375,000	375,000
2024-25	COS Rate Increase								400,000	400,000	400,000
2025-26	COS Rate Increase									425,000	425,000
2026-27	COS Rate Increase										425,000
Total Wastewater Service Rate Revenue	7,400,000	7,565,000	7,890,000	8,215,000	8,540,000	8,890,000	9,265,000	9,640,000	10,040,000	10,465,000	10,890,000
Other Sources of Cash											
Release SRF Restricted Reserve											
Restricted Reserve Funding of WRP SRF Debt Service											
Property Taxes	303,971	298,638	302,943	307,197	311,550	316,143	320,762	325,454	330,186	335,096	340,774
MNWD Payment for RW Service to Golf Course	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Capital Facilities Fee	0	0	0	0	0	0	0	0	0	0	0
Investment Income	60,172	50,000	32,828	32,626	34,550	35,448	35,452	35,506	35,527	35,554	35,622
Subtotal Other Sources of Cash	375,143	359,638	346,771	350,823	357,101	362,592	367,215	371,960	376,713	381,649	387,396
TOTAL O&M REVENUES	7,775,143	7,924,638	8,236,771	8,565,823	8,897,101	9,252,592	9,632,215	10,011,960	10,416,713	10,846,649	11,277,396
O&M REVENUE REQUIREMENTS											
Total O & M Expense	7,450,262	7,665,398	7,976,213	8,300,755	8,639,669	8,993,636	9,363,366	9,749,607	10,153,144	10,574,800	11,015,440
Debt Service											
State Revolving Fund Loan											
Northline Lift Station	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140
Subtotal Debt Service	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140	256,140
TOTAL O&M REVENUE REQUIREMENTS	7,706,402	7,921,538	8,232,353	8,556,895	8,895,809	9,249,776	9,619,506	10,005,747	10,409,284	10,830,940	11,271,580
ANNUAL O&M SURPLUS (DEFICIT)	68,741	3,100	4,418	8,928	1,291	2,816	12,709	6,213	7,429	15,710	5,817

SEWER CASH FLOW											
	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
CAPITAL REPLACEMENT & REFURBISHMENT PROGRAM											
CAPITAL EXPENDITURES											
Capital Replacement & Refurbishment Program	1,577,975	1,341,562	1,086,334	1,785,293	1,144,951	1,840,815	1,693,984	1,900,234	1,900,234	1,900,234	1,900,234
TOTAL CAPITAL EXPENDITURES	1,577,975	1,341,562	1,086,334	1,785,293	1,144,951	1,840,815	1,693,984	1,900,234	1,900,234	1,900,234	1,900,234
CAPITAL PROGRAM REVENUE											
Revenue from Existing Capital Charge	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484
Capital Charge Revenue Increase							82,500	82,500	82,500	82,500	82,500
Capital Charge Revenue Increase								206,250	206,250	206,250	206,250
Subtotal Capital Charge Revenue	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,693,984	1,900,234	1,900,234	1,900,234	1,900,234
Loan Proceeds - Northline											
Capital Reserves											
TOTAL CAPITAL REVENUE	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,611,484	1,693,984	1,900,234	1,900,234	1,900,234	1,900,234
ANNUAL CAPITAL SURPLUS (DEFICIT)	33,509	269,922	525,150	(173,809)	466,533	(229,331)	0	0	0	0	0
TOTAL CASH FLOW											
TRANSFER FROM RECYCLED WATER	0	0	0	0	0	0	0	0	0	0	0
TOTAL ANNUAL RESERVE IMPACT	102,250	273,022	529,568	(164,881)	467,824	(226,515)	12,709	6,213	7,429	15,710	5,817
ENDING RESERVE ANALYSIS	6,125,571	6,398,593	6,928,160	6,763,279	7,231,103	7,004,588	7,017,298	7,023,510	7,030,939	7,046,649	7,052,466

10.6 Appendix 6 – Detailed Water Cost of Service Analysis

	Peaking Factors	Base Cost Allocation	Peaking Cost Allocation
Max Day	2.00 x Average Demand	50.0%	50.0%
Max Hour	3.00 x Average Demand	33.3%	66.7%
Average Demand		41.7%	58.3%

The appropriate allocation factors between base and extra capacity vary with system design. The water utility is comprised of various facilities, each designed and operated to fulfill a given function. To provide adequate service to its customers at all times, the utility must be capable of providing the total water demand as well as peak demand.

Different facilities are designed to meet different peaking demands. These characteristics are used to allocate costs to functional cost components. Since all customers do not exert their maximum demand for water at the same time, water facilities are designed to meet coincidental demands for all customers.

Comparison of historical system coincidental maximum day and maximum hour demands to average day demands results in appropriate ratios for allocation of capital costs and operating expenses to base and extra capacity cost components. A maximum day to average day ratio of 2.0 is used based on demands experienced in the District's system. This indicates that 50 percent of the capacity of the facilities designed and operated for maximum day demand is needed for average or base use and 50 percent is used for maximum day extra capacity requirements.

Cost of service is allocated to functional cost components using either water system demand ratios developed above or direct assignment, such as billing costs. The separation of costs into functional components provides a means for distributing such costs to customers based on their respective responsibilities for each type of service.

O&M expenses are generally allocated to the functional cost components that best reflect the design parameter associated with that expense. For example, source of supply meets the average day requirements of the system; thus, related expenses are allocated to the base cost component. The treatment plant and transmission mains are designed to meet maximum day demands of the system and so related expenses are allocated to the base and maximum day cost components. In a similar manner, pump stations and distribution mains are designed to meet the maximum hour demands of the system so related expenses are allocated to the base, maximum day and maximum hour cost components. Customer accounts, general and administration, and operations support expenses are directly associated with the cost of billing customers and is allocated to the billing cost component.

Water Revenue Requirements	2017-18	Water Supply	Billing & CS	Meters	Water Revenue Requirement Components					
					Base Fixed	Peaking	RW	Conservation	Rev Offset	Capital R&R
O&M Expenses (excl. Interest & Depreciation)										
Source of Supply	\$7,810,256	98.3%			1.7%					
Pumping Water	\$290,971				33.3%	66.7%				
Treatment Water	\$41,866				50.0%	50.0%				
Transmission & Distribution Water	\$523,142				50.0%	50.0%				
Customer Accounts	\$0				41.7%	58.3%				
Outside Treatment Sewer	\$0				100.0%					
Operations Support	\$91,644		0%		100.0%					
Operations Support Power	\$4,400		0%		100.0%					
Fleet	\$100,070				100.0%					
Operations Indirect Costs	\$24,600		0%		100.0%					
Administration	\$97,200		30%		70.0%					
Admin Power	\$15,480		30%		70.0%					
Administration Indirect Costs	\$597,700		30%		70.0%					
Labor	\$3,161,181		7.0%		64.1%	28.9%				
Subtotal O&M Expenses (excl. Interest & Depreciation)	\$12,758,511	\$7,674,757	\$433,448	\$0	\$3,260,285	\$1,390,020	\$0	\$0	\$0	\$0
Other Revenue Requirements										
Conservation Program (Restricted)	\$100,000							100.0%		
RW Program Funding (Restricted)	\$650,000						100.0%			
Debt Service	\$684,262	100.0%								
Unrestricted Capital R&R Funding	\$1,058,438									100.0%
Restricted Capital R&R Funding (Baker WTP)	\$500,000									100.0%
Subtotal Other Revenue Requirements	\$2,992,700	\$684,262	\$0	\$0	\$0	\$0	\$650,000	\$100,000	\$0	\$1,558,438
Less Other Revenues										
Fire Service Charges	(\$110,000)				100.0%	0.0%				
Restricted Reserves Funding of Conservation Program	(\$100,000)				100.0%	0.0%				
Capital Charge Funding of Baker Debt Service	(\$500,000)	100.0%				0.0%				
Property Taxes	(\$497,062)				56.1%	0.0%			43.9%	
Miscellaneous Revenue	(\$55,000)				100.0%	0.0%				
Other Income (Site Leases)	(\$190,000)					0.0%			100.0%	
Other Income (R-6 Partners)	(\$110,000)				100.0%	0.0%				
Investment Income	(\$50,000)				100.0%	0.0%				
Subtotal Other Revenues	(\$1,612,062)	(\$500,000)	\$0	\$0	(\$703,902)	\$0	\$0	\$0	(\$408,160)	\$0
Plus Operating Reserve Funding	(\$724,483)				100%					
Plus Capital Reserve Funding	(\$269,922)									100%
NET REV REQUIREMENTS FROM RATES, EXC. FIRE SC	\$13,144,743	\$7,859,019	\$433,448	\$0	\$1,831,900	\$1,390,020	\$650,000	\$100,000	(\$408,160)	\$1,288,516

Water		Water Rate Components							
Revenue Requirements	2017-18	Billing & CS	Meters & Capacity	Water Supply	Peak Delivery	RW	Conservation	Rev Offset	Capital R&R
Water Supply	\$7,859,019			\$7,859,019					
Billing & CS	\$433,448	\$433,448							
Meters	\$0								
Base Fixed	\$1,831,900		\$1,831,900						
Peaking	\$1,390,020		\$698,020		\$692,000				
RW	\$650,000					\$650,000			
Conservation	\$100,000						\$100,000		
Rev Offset	(\$408,160)							(\$408,160)	
Capital R&R	\$1,288,516								\$1,288,516
NET REVENUE REQUIREMENTS	\$13,144,743	\$433,448	\$2,529,920	\$7,859,019	\$692,000	\$650,000	\$100,000	(\$408,160)	\$1,288,516
Rev from Current Rates		\$2,714,043		\$7,623,000	\$691,366	\$582,530	\$78,053	(\$365,200)	\$1,288,516
Units of Service		114,852 bills	315,066 EMUs						
Unit Cost of Service		\$3.77	\$8.03						