



# Olivenhain Municipal Water District

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*Water Financial Plan and Cost of Service Rates*

*Final Report | December 1, 2014*

December 1, 2014

Ms. Rainy Selamat  
Finance Manager  
Olivenhain Municipal Water District  
1966 Olivenhain Road  
Encinitas, CA 92024

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

Dear Ms. Selamat:

Raftelis Financial Consultants, Inc. (RFC) is pleased to provide this Water Cost of Service Rate Study Report (Report) for the Olivenhain Municipal Water District (District) to address current financial challenges the District is facing and to establish water rates that are equitable and in compliance with Proposition 218.

The major objectives of the study include the following:

1. Develop a financial plan for the water enterprise to ensure financial sufficiency, meet operation and maintenance (O&M) costs, ensure sufficient funding for capital needs, and improve the financial health of the enterprise
2. Develop sound and sufficient reserves and targets
3. Review current water rate structure
4. Develop a cost-of-service analysis
5. Develop fair and equitable water rates

The Report summarizes the key findings and recommendations related to the development of the updated water rates.

It has been a pleasure working with you, and we thank you and the District staff for the support provided during the course of this study.

Sincerely,

***RAFTELIS FINANCIAL CONSULTANTS, INC.***



**Sudhir Pardiwala**  
Executive Vice President



**Hannah Phan**  
Senior Consultant

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# 1. EXECUTIVE SUMMARY

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## 1.1 SYSTEM DESCRIPTION

Olivenhain Municipal Water District (OMWD) is a Municipal Water District organized and operating pursuant to Water Code Sections 71000 et seq., and was incorporated on April 9, 1959, to develop an adequate water supply for landowners and residents. On June 14, 1960, residents of OMWD voted to become a member of the San Diego County Water Authority (SDCWA), thus becoming eligible to purchase water transported into San Diego County via the massive aqueducts of SDCWA and its wholesaler, Metropolitan Water District of Southern California. At over 48 square miles, OMWD currently serves a population of approximately 80,000 residents in northern San Diego County.

The District treats approximately 34 million gallons of water per day, has a storage capacity of 68.1 million gallons in its 13 treated water reservoirs and maintains a 419 mile long potable water distribution system. In addition, the District's 4S water reclamation facility produces up to 2 million gallons of recycled water per day, which is transmitted through 48 miles of pipelines throughout the District for non-potable uses such as irrigation.

The existing rate structure consists of consists of fixed monthly infrastructure access charges and volumetric charges. Residential and Commercial/Irrigation customers pay tiered rates, which increase as monthly usage crosses certain thresholds. The remaining classes — Agriculture, Construction and Recycled Water — pay uniform rates.

## 1.2 FINANCIAL PLAN

In order to determine water rates, RFC produced forecasts of the District's operation and maintenance expenditures (O&M), capital expenditures and reserve levels for the study period.

O&M expenses include the cost of purchasing water, operating and maintaining water supply, treatment, storage, and distribution facilities, as well as the costs of providing technical services such as laboratory services and other administrative costs of the water system such as meter reading and billing. The O&M projections are based on the District's fiscal year (FY) 2015 adopted budget, using an inflationary factor of three percent per year to project all O&M expenditures, except water purchased costs, which are calculated separately. Water supply costs are projected to increase based on SDCWA staff high rate forecast in FY 2013.

The District has developed a comprehensive water Capital Improvement Program (CIP) to address current water system needs. The total estimated water CIP for the study period of FY 2015 to FY 2024 is \$89.9 million. Capital cost inflation is assumed to increase at four percent annually. The majority of the ten year CIP plan is projected to be funded from rate revenues and capacity fees. However, a \$17 million revenue bond issue is projected in FY 2018. The District's existing debt

service payments are approximately \$6 million annually and are projected to increase to approximately \$7 million following the FY 2018 issue.

The District is approximately at 90 percent build out. The financial plan assumes a one percent rate growth in the number accounts at the 1" and ¾" meter sizes, until ultimate build out in 2030. Growth in the remaining sizes is assumed to be flat. While residential and agricultural customers are assumed to have consumption growth equivalent to the growth in overall customer account, consumption for agricultural customers receiving credits, construction customers and recycled water customers is assumed to be flat overall, or slightly declining on a per account basis. Growth in commercial and irrigation consumption is assumed equivalent to overall account growth, but adjustments have been made to reflect the conversion of some larger customers to recycled water. Accordingly, recycled water consumption reflects the conversion of these customers to recycled water use, but is otherwise forecast to be flat throughout the remainder of the forecast period. Potable water sales are projected at the FY 2015 levels, which represents a five percent reduction due to conservation efforts.

The District's financial plan indicates that revenue adjustments of five percent per year in each year of the study period are needed to meet the operating and capital expenses as well as meet reserve targets. The District currently has three separate reserves: an operating fund, a capital improvement fund, and a rate stabilization fund. The target for the operating fund is increased to 120 days of O&M expenses based on Board direction. Under the proposed financial plan, each fund is projected to be above its minimum target but below the maximum amount per District policy.

### **1.3 COST OF SERVICE ANALYSIS**

To calculate fair and equitable rates so that customers pay in proportion to the cost of providing service, RFC performed a cost allocation of the total revenue requirements consistent with industry standards. The District currently has six classes of customers – Residential, Agricultural, Agricultural w/ Credit, Commercial/Irrigation, Construction and Recycled Water.

The water system is designed to meet the peak demands of all customers. Different customer classes have different peaking characteristics depending on their water usage behaviors. For example, residential customers have significant irrigation demands which increase their summer peaks. Commercial customers tend to use water more uniformly and thus have lower peaks. Irrigation customers have the highest peaks as their usage during the winter month drops off and irrigation typically requires high demands in summer time. Rates for the different customer classes are designed to equitably capture these peaking costs.

Based on the analysis of peaking factors for different customer classes, shown in Section 3 – Allocation of Costs to Customer Classes, RFC recommends the District make adjustments to the level of customer class rates so that revenues recovered from each customer class more closely comport with the cost of water service for that class.



## 1.4 PROPOSED WATER RATES

**Table 1-1** shows the proposed water rates for FY 2015, effective April 1, 2015. Based on discussions with District staff and our understanding of the District's operations and customer base, RFC recommends the following rate structure adjustments:

First, RFC proposes that the District retain the tiered rate structures for residential customers, but that the second tier cut-off be reduced and that a fourth tier be added. The first tier would provide for essential indoor use at a rate slightly lower than the current rate, due to the use of a portion of the property tax revenues<sup>1</sup> to offset a portion of the costs. All residential users benefit from the lower first tier rate. The second tier captures average usage and the rates for the final two tiers accounting for the very largest users are designed to promote conservation.

Second, RFC also recommends separating the current commercial/irrigation class into two separate classes. In general, commercial customers use water more consistently, and place lesser demands on the water system, than irrigation users. Separating commercial and irrigation customers will increase equity in the District's rate structure and may encourage responsible water use on the part of irrigation customers.

Finally, RFC recommends that the District maintain its current 25 percent fixed charge revenue recovery for revenue stability purposes, since approximately 53 percent of the City's costs are fixed. In the current fiscal year, the District will collect 25 percent of total rate revenue from fixed charges. The fixed charge proposed is still under the 30 percent maximum recommended by the California Urban Water Conservation Council (CUWCC) Best Management Practice (BMP) # 1.4 and maintains an appropriate balance between revenue stability and signaling conservation.

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<sup>1</sup> Property taxes revenues are used to offset costs for all customer classes in proportion to each class total water usage. For residential customers, the total allocated offset amount is used to reduce Tier 1 rate.

**Table 1-1: Proposed Base Rates FY 2015 through FY 2019**

Effective	April 1, 2015	April 1, 2016	April 1, 2017	April 1, 2018	April 1, 2019	
<b>Monthly OMWD Access Charge</b>						
Meter Size						
5/8"	\$24.11	\$25.32	\$26.59	\$27.92	\$29.32	
3/4"	\$31.97	\$33.57	\$35.25	\$37.02	\$38.88	
1"	\$55.58	\$58.36	\$61.28	\$64.35	\$67.57	
1-1/2"	\$87.05	\$91.41	\$95.99	\$100.79	\$105.83	
2"	\$136.88	\$143.73	\$150.92	\$158.47	\$166.40	
2-1/2"	\$249.65	\$262.14	\$275.25	\$289.02	\$303.48	
3"	\$273.25	\$286.92	\$301.27	\$316.34	\$332.16	
4"	\$454.21	\$476.93	\$500.78	\$525.82	\$552.12	
6"	\$949.87	\$997.37	\$1,047.24	\$1,099.61	\$1,154.60	
8"	\$1,710.41	\$1,795.94	\$1,885.74	\$1,980.03	\$2,079.04	
<b>Monthly CWA Infrastructure Access Charge (IAC)*</b>						
Meter Size						
5/8"	\$2.75	TBD	TBD	TBD	TBD	
3/4"	\$2.75	TBD	TBD	TBD	TBD	
1"	\$5.20	TBD	TBD	TBD	TBD	
1-1/2"	\$8.50	TBD	TBD	TBD	TBD	
2"	\$13.71	TBD	TBD	TBD	TBD	
2-1/2"	\$25.51	TBD	TBD	TBD	TBD	
3"	\$27.95	TBD	TBD	TBD	TBD	
4"	\$46.86	TBD	TBD	TBD	TBD	
6"	\$98.63	TBD	TBD	TBD	TBD	
8"	\$177.96	TBD	TBD	TBD	TBD	
<b>Monthly Fire Meter Charges</b>						
Meter Size						
5/8"	\$3.59	\$3.77	\$3.96	\$4.16	\$4.37	
3/4"	\$3.59	\$3.77	\$3.96	\$4.16	\$4.37	
1"	\$4.23	\$4.45	\$4.68	\$4.92	\$5.17	
1-1/2"	\$5.09	\$5.35	\$5.62	\$5.91	\$6.21	
2"	\$6.45	\$6.78	\$7.12	\$7.48	\$7.86	
2-1/2"	\$9.52	\$10.00	\$10.50	\$11.03	\$11.59	
3"	\$10.17	\$10.68	\$11.22	\$11.79	\$12.38	
4"	\$15.10	\$15.86	\$16.66	\$17.50	\$18.38	
6"	\$28.60	\$30.03	\$31.54	\$33.12	\$34.78	
8"	\$49.33	\$51.80	\$54.39	\$57.11	\$59.97	
<b>Volumetric Rates (\$/HCF)</b>						
Residential						
Tier 1	0-6 HCF	\$2.25	\$2.37	\$2.49	\$2.62	\$2.76
Tier 2	7-25 HCF	\$3.74	\$3.93	\$4.13	\$4.34	\$4.56
Tier 3	26-80 HCF	\$4.23	\$4.45	\$4.68	\$4.92	\$5.17
Tier 4	80 + HCF	\$4.73	\$4.97	\$5.22	\$5.49	\$5.77
Agriculture		\$3.74	\$3.93	\$4.13	\$4.34	\$4.56
Agriculture w/ Credit		\$3.03	TBD	TBD	TBD	TBD
Commercial		\$3.20	\$3.36	\$3.53	\$3.71	\$3.90
Irrigation						
Tier 1	"B" Base	\$3.43	\$3.61	\$3.80	\$3.99	\$4.19
Tier 2	"C" Over Base	\$4.24	\$4.46	\$4.69	\$4.93	\$5.18
Construction		\$5.72	\$6.01	\$6.32	\$6.64	\$6.98
Recycled Water		\$3.18	\$3.34	\$3.51	\$3.69	\$3.88

\*Note: A fixed charge imposed by SDCWA. Subject to change every year.

## 1.5 WATER SUPPLY SHORTAGE RATES

The rates at different shortage levels are updated using the District’s existing methodology, which recovers the revenue loss due to reduced consumptions at each shortage level. **Table 1-2** shows the proposed rates at each level.

**Table 1-2: Proposed Shortage Rates FY 2015**

Customer Type	NON-SHORTAGE	WATCH	ALERT	CRITICAL	EMERGENCY
	(Base) Rates	Level 1	Level 2	Level 3	Level 4
	4/1/2015	Voluntary 4/1/2015	Mandatory 4/1/2015	Mandatory 4/1/2015	Mandatory 4/1/2015
Residential					
0-6 units	\$2.25	\$2.25	\$2.36	\$2.48	\$2.70
7-25 units	\$3.74	\$3.93	\$4.11	\$4.68	\$5.42
26-80 units	\$4.23	\$4.65	\$5.29	\$6.35	\$7.40
Over 80 units	\$4.73	\$5.44	\$5.91	\$7.10	\$9.46
Agricultural	\$3.74	\$3.93	\$4.02	\$4.49	\$5.24
Commercial	\$3.20	\$3.36	\$3.44	\$3.84	\$4.48
Irrigation					
"B" Base	\$3.43	\$3.60	\$3.77	\$4.29	\$4.97
"C" Over Base	\$4.24	\$4.88	\$5.30	\$6.36	\$8.48
Construction	\$5.72	\$6.58	\$7.15	\$8.58	\$11.44
Recycled Water	\$3.18	SHORTAGE RATES NOT APPLICABLE			

## 1.6 CUSTOMER IMPACTS

**Table 1-3**, shows the impacts to a Residential customer at different levels of usage, assuming a 3/4” meter. The proposed rates would lower the second tier cut-off and add a fourth tier for all consumption for residential customers. This means that, for a rate revenue increase of five percent, high and very high users would see slightly larger bill increases. For *high* users this is due to more consumption falling into third tier. *Very high* users will see slightly higher increases due to the addition of the fourth tier, whose rate is approximately 14 percent higher than the existing Tier 3 rate. Residential users account for approximately 60 percent of the customer base.

**Table 1-3: Rate Impacts (3/4” Residential User)**

Usage Level	Monthly Usage (hcf)	Current Bill - Base Rate	Proposed Bill - Base Rate	Difference (\$)	Difference (%)
Very Low	4	\$42.72	\$43.72	\$1.00	2.3%
Low	12	\$68.66	\$70.66	\$2.00	2.9%
Average	22	\$104.16	\$108.06	\$3.90	3.7%
High	50	\$207.69	\$225.03	\$17.34	8.3%
Very High	90	\$373.29	\$399.23	\$25.94	6.9%

**Table 1-4** shows the impacts to a Commercial customer at different levels of usage, assuming a 1” meter. **Table 1-5** shows the impacts to an Irrigation customer at different levels of usage, assuming a 1 1/2” meter.

**Table 1-4: Rate Impacts (1” Commercial User)**

Usage Level	Monthly Usage (hcf)	Current Bill - Base Rate	Proposed Bill - Base Rate	Difference (\$)	Difference (%)
Low	20	\$126.82	\$119.58	(\$7.24)	-5.7%
Average	55	\$256.32	\$231.58	(\$24.74)	-9.7%
High	100	\$422.82	\$375.58	(\$47.24)	-11.2%

**Table 1-5: Rate Impacts (1 1/2” Irrigation User)**

Usage Level	Monthly Usage (hcf)	Current Bill - Base Rate	Proposed Bill - Base Rate	Difference (\$)	Difference (%)
Low - Winter	20	\$156.18	\$155.65	(\$0.53)	-0.3%
Avg - Winter	41	\$233.88	\$227.68	(\$6.20)	-2.7%
High - Winter	80	\$378.18	\$385.75	\$7.57	2.0%
Low - Summer	50	\$267.18	\$258.55	(\$8.63)	-3.2%
Avg - Summer	103	\$463.28	\$440.34	(\$22.94)	-5.0%
High - Summer	200	\$822.18	\$845.95	\$23.77	2.9%

## 2. FINANCIAL PLAN

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### 2.1 WATER SYSTEM BACKGROUND

Olivenhain Municipal Water District (District) is a Municipal Water District organized and operating pursuant to Water Code Sections 71000 et seq., and was incorporated on April 9, 1959, to develop an adequate water supply for landowners and residents. On June 14, 1960, residents voted to become a member of the San Diego County Water Authority (SDCWA), thus becoming eligible to purchase water transported into San Diego County via the massive aqueducts of SDCWA and its wholesaler, Metropolitan Water District of Southern California. At over 48 square miles, OMWD currently serves a population of approximately 80,000 residents in northern San Diego County.

The District treats approximately 34 million gallons of water per day, has a storage capacity of 68.1 million gallons in its 13 treated water reservoirs and maintains a 419 mile long potable water distribution system. In addition the District's 4S water reclamation facility produces up to 2 million gallons of recycled water per day, which is transmitted through 48 miles of pipelines throughout the District for non-potable uses such as irrigation.

### 2.2 EXISTING WATER RATES

**Tables 2-1** and **2-2** below indicate the existing water fixed and volumetric rate structures respectively.

Currently, District customers pay two types of monthly fixed charges, the District monthly access charge and the SDCWA Infrastructure Access Charge (IAC). While the District monthly access charge is designed to recover a portion of the fixed costs incurred by the District to provide water service, the SDCWA IAC is a charge accessed by the SDCWA to recover a portion of debt service costs associated with the construction of county-wide water infrastructure. An additional charge, by meter size, is levied on those customer with private fire connections.

The District recovers the variable costs of providing potable and recycled water services via volumetric charges. Residential rates are based on a three tiered inclining block rate structure, under which the volumetric rate increases as consumption crosses certain thresholds. Commercial and irrigation rates are also based on an inclining block structure, whose allotment is set by meter size and increases in the summer months. Finally, agriculture, construction and recycled water rates are based on a uniform structure for customers receiving those services.

**Table 2-1: Existing Fixed Charge Water Rate Structure**

**Monthly OMWD Access Charge**

Meter Size	
5/8"	\$22.87
3/4"	\$30.09
1"	\$51.67
1-1/2"	\$80.39
2"	\$125.90
2-1/2"	\$180.69
3"	\$250.41
4"	\$415.62
6"	\$868.20
8"	\$1,562.66

**Monthly CWA Infrastructure Access Charge (IAC)**

Meter Size	
5/8"	\$2.66
3/4"	\$2.66
1"	\$5.04
1-1/2"	\$8.24
2"	\$13.29
2-1/2"	\$24.73
3"	\$27.11
4"	\$45.45
6"	\$95.66
8"	\$172.62

**Monthly Fire Meter Charges**

Meter Size	
5/8"	\$1.50
3/4"	\$1.50
1"	\$2.50
1-1/2"	\$3.50
2"	\$6.00
2-1/2"	\$6.00
3"	\$10.00
4"	\$16.00
6"	\$34.00
8"	\$70.00

**Table 2-2: Volumetric Water Rates**

Volumetric Rates (\$/HCF)		
Residential		
Tier 1	0-6 HCF	\$2.32
Tier 2	7-43 HCF	\$3.55
Tier 3	43+ HCF	\$4.14
Agriculture		
		\$3.54
Agriculture w/ Credit		
		\$3.06
Commercial/Irrigation		
Tier 1	"B" Base	\$3.70
Tier 2	"C" Over Base	\$4.32
Construction		
		\$4.81
Recycled		
		\$3.03
Commercial/Irrigation Unit Allotment		
Meter Size	Winter (Dec-May)	Summer (Jun-Nov)
5/8"	12	22
3/4"	23	47
1"	78	140
1-1/2"	170	360
2"	240	550
3"	750	1,600
4"	1,475	5,600

### 2.3 WATER ACCOUNTS AND USAGE CHARACTERISTICS

**Table 2-3** below indicates the projected number of accounts, at each class and meter size, in each year of the forecast period. The financial plan assumes a one percent rate growth in the number accounts at the 1" and 3/4" meter sizes. Growth in the remaining sizes is assumed to be flat. **Table 2-4** below indicates the projected water sales by customer class. Residential and agricultural customers are assumed to have consumption growth equivalent to the growth in overall customer accounts, or less than one percent per year. As account growth is assumed to be one percent per year, the result is a slightly increasing consumption per account for these classes. Consumption for agricultural customers receiving credits, construction customers and recycled water customers is assumed to be flat overall, or slightly declining on a per account basis. Growth in commercial and irrigation consumption is assumed equivalent to overall account growth, but adjustments have been made to reflect the conversion of some larger customers to recycled water.

**Table 2-3: Projected Water Accounts**

	Revised* FY 2014	Budgeted FY 2015	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019
<b>Residential</b>						
Meter Size						
5/8"	1,907	1,907	1,907	1,907	1,907	1,907
3/4"	16,069	16,230	16,392	16,556	16,722	16,889
1"	2,289	2,312	2,335	2,358	2,382	2,406
1-1/2"	474	474	474	474	474	474
2"	144	144	144	144	144	144
2-1/2"	0	0	0	0	0	0
3"	12	12	12	12	12	12
4"	9	9	9	9	9	9
6"	1	1	1	1	1	1
8"	0	0	0	0	0	0
<b>Total Residential</b>	<b>20,905</b>	<b>21,089</b>	<b>21,274</b>	<b>21,461</b>	<b>21,651</b>	<b>21,842</b>
<b>Agricultural</b>						
Meter Size						
5/8"	1	1	1	1	1	1
3/4"	18	18	18	18	18	18
1"	37	37	37	37	37	37
1-1/2"	40	40	40	40	40	40
2"	43	43	43	43	43	43
2-1/2"	0	0	0	0	0	0
3"	1	1	1	1	1	1
4"	2	2	2	2	2	2
6"	0	0	0	0	0	0
8"	0	0	0	0	0	0
<b>Total Agricultural</b>	<b>142</b>	<b>142</b>	<b>142</b>	<b>142</b>	<b>142</b>	<b>142</b>
<b>Commercial/Irrigation</b>						
Meter Size						
5/8"	34	34	34	34	34	34
3/4"	86	87	87	87	87	87
1"	213	215	215	215	215	215
1-1/2"	394	394	394	394	394	394
2"	218	218	218	218	218	218
2-1/2"	1	1	1	1	1	1
3"	10	10	10	10	10	10
4"	9	9	9	9	9	9
6"	3	3	3	3	3	3
8"	0	0	0	0	0	0
<b>Total Commercial/Irrigation</b>	<b>968</b>	<b>971</b>	<b>971</b>	<b>971</b>	<b>971</b>	<b>971</b>
<b>Recycled Water</b>						
Meter Size						
5/8"	1	1	1	1	1	1
3/4"	1	1	1	1	1	1
1"	21	21	21	21	21	21
1-1/2"	105	105	105	105	105	105
2"	122	122	122	122	122	122
2-1/2"	0	0	0	0	0	0
3"	4	4	4	4	4	4
4"	3	3	3	3	3	3
6"	4	4	4	4	4	4
8"	0	0	0	0	0	0
<b>Total Recycled Water</b>	<b>261</b>	<b>261</b>	<b>261</b>	<b>261</b>	<b>261</b>	<b>261</b>
<b>TOTAL METERS</b>	<b>22,276</b>	<b>22,463</b>	<b>22,648</b>	<b>22,835</b>	<b>23,025</b>	<b>23,216</b>

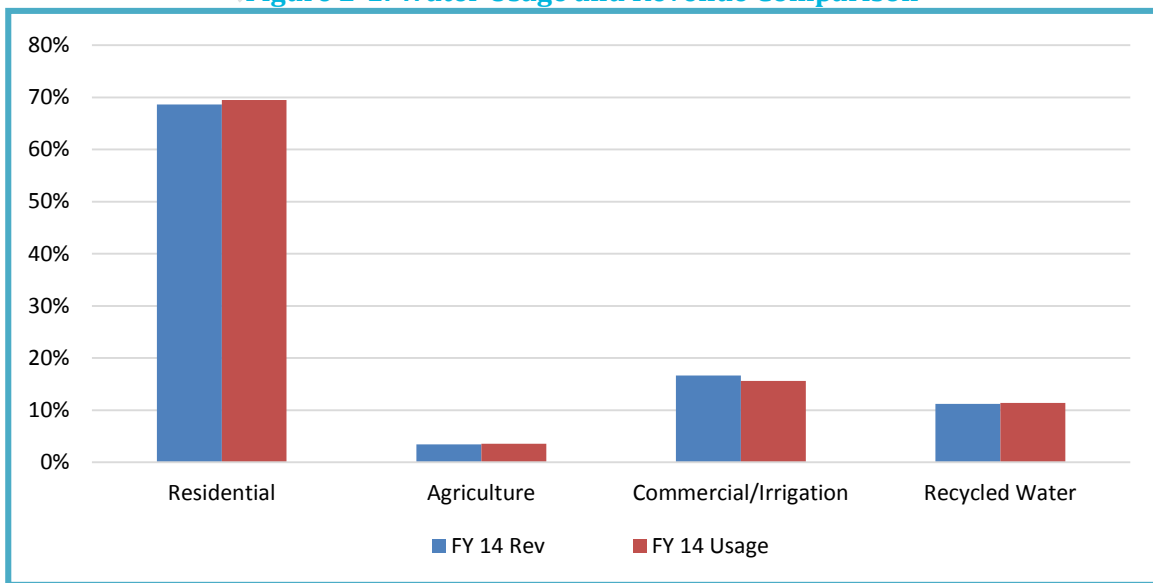


**Table 2-4: Projected Water Usage**

Sales in AF	Revised FY 2014	Budgeted FY 2015	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019
Residential	15,659	14,707	14,828	14,951	15,075	15,200
Tier 1 0-6 HCF	4,698	4,412	4,448	4,485	4,522	4,560
Tier 2 7-43 HCF	8,612	8,089	8,155	8,223	8,291	8,360
Tier 3 43+ HCF	2,349	2,206	2,224	2,243	2,261	2,280
Agriculture	668	632	637	642	648	653
Agriculture w/ Credit	128	121	121	121	121	121
Commercial/Irrigation	3,512	3,338	3,134	3,008	2,814	2,838
Tier 1 "B" Base	2,985	2,837	2,664	2,557	2,392	2,412
Tier 2 "C" Over Base	527	501	470	451	422	426
<b>Subtotal</b>	<b>19,967</b>	<b>18,798</b>	<b>18,720</b>	<b>18,722</b>	<b>18,658</b>	<b>18,812</b>
Construction	167	159	159	159	159	159
Recycled Water	2,565	2,430	2,660	2,810	3,027	3,027
<b>Subtotal</b>	<b>2,733</b>	<b>2,589</b>	<b>2,819</b>	<b>2,969</b>	<b>3,186</b>	<b>3,186</b>
<b>TOTAL</b>	<b>22,699</b>	<b>21,387</b>	<b>21,539</b>	<b>21,691</b>	<b>21,844</b>	<b>21,998</b>

**Figure 2-1** below indicates the proportion of total usage and revenue associated with each customer class in fiscal year (FY) 2014. Currently Residential and Commercial/Irrigation customers all account for a higher proportion of revenue than consumption, while Agricultural and Recycled Water customers account for a lower proportion of revenue than consumption. The District’s existing rates and associated revenue recovery are based on the service demand characteristics of that class, which are typically not proportional to usage. The cost of service analysis in Section 3 provides further insight into how these determinations are made.

**Figure 2-1: Water Usage and Revenue Comparison**



## 2.4 EQUIVALENT METERS

To allocate meter-related costs appropriately, the concept of “equivalent meters” is utilized. Most rate studies calculate equivalent meters based on meter hydraulic capacity. The ratio of hydraulic capacity is calculated by dividing large meter capacities by the base meter capacity. The actual number of meters by size is multiplied by the corresponding capacity ratio to calculate equivalent meters. By using equivalent meters instead of a straight meter count, the analysis reflects the fact that larger meters impose larger demands, are more expensive to install, maintain, and replace than smaller meters and commit a greater capacity in the system.

Equivalent meters are used in calculating meter service costs. The equivalent meter ratios used for this study are shown in **Table 2-5** below and are based on the District’s data reflecting demand from the different meter sizes. As indicated in **Table 2-2** above, the majority of District customers are served through ¾” meters. Consequently, the ¾” meter is the base capacity against which all other meter ratios are scaled. For the purposes of the SDCWA monthly charge, the 5/8” and ¾” meters are assumed to be equivalent.

**Table 2-5: Equivalent Meter Ratios**

Meter Size	OMWD Meter SDCWA Meter	
	Ratio	Ratio
5/8"	0.70	1.00
3/4"	1.00	1.00
1"	1.90	1.90
1-1/2"	3.10	3.10
2"	5.00	5.00
2-1/2"	9.30	9.31
3"	10.20	10.20
4"	17.10	17.10
6"	36.00	35.99
8"	65.00	64.94

## 2.5 WATER REVENUES

**Table 2-6** below summarizes the projected water revenues under the District’s existing water rates<sup>2</sup>. The majority of the District’s revenues are derived from charges for water service including the monthly OMWD access charge and the customer class volumetric charges. Other operating revenues include the SDCWA infrastructure access charge, delinquency charges and other miscellaneous operating revenues. Non-operating revenues include the District’s share of property tax revenues and investment income.

At current rates, the District’s revenues are projected to decline from an estimated \$48.9 million in FY 2014 to an estimated \$46.8 million in FY 2015. The majority of this decline is associated with

<sup>2</sup> District is currently at Level 1 water rates.

reduced usage on the part of residential customers. Revenues derived from Construction and Recycled water customers are also anticipated to decrease. These revenues are anticipated to rebound beginning in FY 2016 and continue modestly increasing as the number of District accounts increases. Other operating revenues are anticipated to decline in FY 2015 and pick up in FY 2016 and 2017 and increase at around four percent per year for the remainder of the forecast period. Non-operating revenues are assumed to increase at two percent per year throughout the forecast period.

Under the District’s existing rate structure, approximately 25 percent of annual operating revenues are recovered via the fixed monthly access charges with the remaining 75 percent recovered via the volumetric charges. Generally, higher fixed charge revenue recovery is associated with greater revenue stability, but can have a larger financial impact on lower usage customers, and may discourage conservation. Conversely, higher volumetric revenue recovery may encourage responsible water usage, but increases the variability of the District’s revenue stream.

**Table 2-6: Water Revenues under Existing Rates**

	Revised* FY 2014	Budgeted FY 2015	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019
<b>Operating Revenues</b>						
OMWD Access Charge Revenue - Potable Meters	\$9,534,000	\$9,937,957	\$10,012,332	\$10,087,446	\$10,163,933	\$10,240,788
OMWD Access Charge Revenue - Recycled Meters	\$405,000	\$376,113	\$376,113	\$376,113	\$376,113	\$376,113
OMWD Access Charge Revenue - Fire Meters	\$167,000	\$167,316	\$167,316	\$167,316	\$167,316	\$167,316
Residential Revenue	\$22,055,000	\$20,945,624	\$22,350,368	\$22,534,910	\$22,722,414	\$22,910,904
Agricultural	\$943,000	\$974,559	\$1,031,715	\$1,040,233	\$1,048,889	\$1,057,590
Agricultural with Credits	\$167,000	\$161,285	\$169,188	\$169,188	\$169,188	\$169,188
Commercial/Irrigation	\$5,352,000	\$5,515,146	\$5,524,748	\$5,303,721	\$4,962,081	\$5,003,243
Construction	\$420,000	\$333,143	\$383,114	\$383,114	\$383,114	\$383,114
Recycled Water	\$3,606,000	\$3,207,279	\$3,510,849	\$3,708,829	\$3,995,240	\$3,995,240
Other Water Sale	\$60,000	\$0	\$0	\$0	\$0	\$0
<b>Total Operating Revenues</b>	<b>\$42,709,000</b>	<b>\$41,618,422</b>	<b>\$43,525,743</b>	<b>\$43,770,871</b>	<b>\$43,988,287</b>	<b>\$44,303,495</b>
<b>Total Other Operating Revenues</b>	<b>\$2,936,000</b>	<b>\$2,179,000</b>	<b>\$2,363,880</b>	<b>\$3,150,320</b>	<b>\$3,274,819</b>	<b>\$3,407,936</b>
<b>Total Non-Operating Revenues</b>	<b>\$3,243,000</b>	<b>\$3,033,124</b>	<b>\$3,096,755</b>	<b>\$3,158,043</b>	<b>\$3,155,591</b>	<b>\$3,155,971</b>
<b>TOTAL REVENUES</b>	<b>\$48,888,000</b>	<b>\$46,830,546</b>	<b>\$48,986,377</b>	<b>\$50,079,234</b>	<b>\$50,418,697</b>	<b>\$50,867,402</b>

## 2.6 WATER EXPENDITURES

For sound financial operation of the District’s water system, the revenues generated must be sufficient to meet the revenue requirements or cash obligations of the system. Revenue requirements include water purchase costs, O&M expenses, capital improvement program (CIP) expenditures, principal and interest payments on existing debt, and other obligations.

### 2.6.1 Operation and Maintenance Expenditures

Table 2-7 below indicates the projected O&M expenditures. O&M expenditures include the cost of operating and maintaining water supply, treatment, storage, and distribution facilities. O&M expenses also include the costs of providing technical services such as laboratory services and other administrative costs of the water system such as meter reading and billing. These costs are a

normal obligation of the system, and are met from operating revenues as they are incurred. The comprehensive forecasted annual O&M expenditures for the study are based upon the District's long-range financial plan, using an inflationary factor of two percent per year to project all O&M expenditures, except water purchase costs, which are calculated separately.

Purchased water costs account for approximately 63 percent of total O&M expenditures. Purchased water costs increase from \$23.3 million to \$34.3 million from FY 2014 through FY 2019. This represents an average increase of approximately seven percent per year over the next six years, based on SDCWA staff high rate forecast in FY 2013. As of the writing of this report, SDCWA staff is still working on its cost of service study to determine purchased water wholesale cost to incorporate Carlsbad desalinated water. Melded purchased water wholesale rates (with desal) is expected to be released in mid-2015.

**Table 2-7: Projected O&M Expenditures**

Description	Revised FY 2014	Budgeted FY 2015	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019
Purchased Water - Potable & Recycled	\$23,255,000	\$24,349,944	\$27,312,003	\$30,729,672	\$32,347,769	\$34,281,887
Operations and Maintenance	\$9,009,000	\$9,744,000	\$10,012,820	\$10,312,365	\$10,620,896	\$10,938,682
GM and Public Affairs	\$1,025,000	\$1,229,000	\$1,265,870	\$1,303,846	\$1,342,961	\$1,383,250
Engineering	\$1,161,000	\$1,135,000	\$1,169,050	\$1,204,122	\$1,240,245	\$1,277,452
Finance and Customer Service	\$1,003,000	\$979,000	\$1,108,370	\$1,093,092	\$1,183,155	\$1,218,650
Human Resources	\$115,000	\$149,000	\$153,470	\$165,500	\$170,465	\$175,579
Park	\$509,000	\$493,000	\$507,790	\$523,024	\$538,714	\$554,876
Recycled	\$931,000	\$936,000	\$961,300	\$990,139	\$1,019,843	\$1,050,438
<b>TOTAL O&amp;M EXPENSES</b>	<b>\$37,008,000</b>	<b>\$39,014,944</b>	<b>\$42,490,673</b>	<b>\$46,321,760</b>	<b>\$48,464,050</b>	<b>\$50,880,815</b>

### 2.6.2 Capital Improvements Program

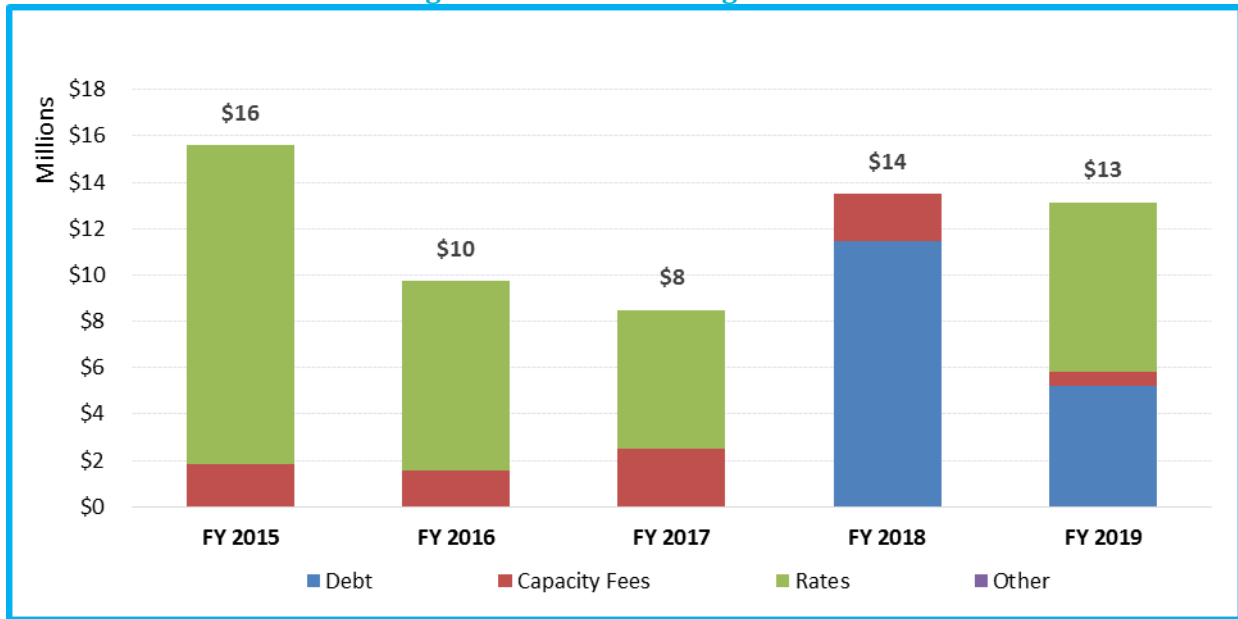
The District has developed a comprehensive water CIP to address ongoing water system needs. As **Table 2-8** below indicates, the total estimated water CIP for the study period of FY 2015 to FY 2024 is \$89.9 million. Capital cost inflation is assumed to be four percent annually. This inflation rate is a conservative estimate and ensures that the District has adequate resources reserved to complete the necessary projects. In general the capital program is fairly higher in FY 2015 due to the NW Quadrant project, reduces somewhat in the following two years and then increases again due to the development of additional groundwater supply.

**Table 2-8: Capital Improvements Program**

	Budgeted FY 2015	Budgeted FY 2016	Budgeted FY 2017	Budgeted FY 2018	Budgeted FY 2019
<b>WATER - POTABLE:</b>					
Pipelines Replacement Project	\$500,000	\$1,560,000	\$2,163,200	\$2,249,728	\$1,169,859
Wiegand Tank Conversion	\$194,000	\$0	\$0	\$0	\$0
Finance and Utility Billing ERP System	\$1,002,000	\$0	\$0	\$0	\$0
San Elijo Valley Groundwater	\$595,000	\$1,040,000	\$2,163,200	\$8,099,021	\$8,422,982
NW Quadrant - Phase II	\$5,500,000	\$1,560,000	\$0	\$0	\$0
Meter Replacement, Upgrades and AMI	\$500,000	\$520,000	\$540,800	\$562,432	\$584,929
Valve Replacement Project	\$900,000	\$728,000	\$540,800	\$562,432	\$584,929
Condition Assessment Program	\$261,000	\$228,800	\$216,320	\$0	\$0
Hypochlorite Generation System Upgrades	\$34,000	\$0	\$0	\$0	\$0
Meter Anode Replacement	\$200,000	\$104,000	\$108,160	\$89,989	\$93,589
WTP 34 MGD Membrane Replacement	\$528,000	\$1,015,040	\$1,468,813	\$1,415,079	\$900,791
Replacement of Deep Well Anodes	\$250,000	\$156,000	\$162,240	\$168,730	\$0
Pump and Motor Replacement	\$50,000	\$52,000	\$54,080	\$56,243	\$58,493
Cathodic Test Station Replacement	\$25,000	\$26,000	\$27,040	\$56,243	\$116,986
Security for District Facilities	\$20,000	\$20,800	\$21,632	\$22,497	\$23,397
CUP Modifications	\$30,000	\$0	\$0	\$0	\$0
Headquarters Site Improvements	\$400,000	\$0	\$0	\$0	\$0
Admin Building Renovations	\$361,000	\$0	\$0	\$0	\$0
DCM WTP Post-LT2 Landscape	\$96,000	\$0	\$0	\$0	\$0
EAM Upgrades	\$33,000	\$0	\$0	\$0	\$0
DCM WTP SCADA and WiFi Project	\$25,000	\$0	\$0	\$0	\$0
Esfera Street Pressure Reducing Station	\$0	\$0	\$346,112	\$0	\$0
Encinitas Blvd. Replacement - Design	\$50,000	\$156,000	\$0	\$0	\$0
Dove Hollow Pipeline Replacement	\$60,000	\$208,000	\$0	\$0	\$0
DCM WTP Office Construction	\$100,000	\$0	\$0	\$0	\$0
Wide Area Network (WAN) Upgrade	\$42,000	\$43,680	\$0	\$0	\$0
Distribution System PLC Replacements	\$75,000	\$104,000	\$59,488	\$0	\$0
Distribution System Network Monitoring Project	\$175,000	\$182,000	\$135,200	\$0	\$0
Residuals Handling Building Canopy	\$145,000	\$0	\$0	\$0	\$0
Surveillance System Upgrade	\$97,000	\$93,600	\$0	\$0	\$0
DCM WTP Solenoid Valve Replacement	\$105,000	\$0	\$0	\$0	\$0
Hanging Meters GeoViewer Project	\$0	\$0	\$0	\$0	\$0
SD Connection #1 - Purchase Capacity	\$0	\$130,000	\$135,200	\$0	\$0
La Costa Vales #2 PRS & Ext. 250	\$0	\$127,920	\$129,792	\$0	\$0
Maryloyd Pump Station Replacement	\$0	\$0	\$0	\$0	\$0
Palms I Reservoir Demolition	\$4,000	\$0	\$0	\$0	\$777,956
Harris Ranch Right-of-Way Acquisition	\$0	\$0	\$0	\$0	\$175,479
Gaty I Decommissioning	\$45,000	\$260,000	\$0	\$0	\$0
9th Street (#11) Replacement	\$0	\$0	\$0	\$0	\$0
El Camino Real Pipeline (#'s 19 A & B) Replacement	\$0	\$0	\$0	\$0	\$0
Rancho Santa Fe Road Pipeline (#15) Replacement	\$0	\$0	\$0	\$0	\$0
Lone Jack Road Pipeline (#17) Replacement	\$0	\$0	\$0	\$0	\$0
ICCP System Maintenance Program	\$0	\$0	\$0	\$0	\$0
Facilities Expansion - Building D	\$2,500,000	\$1,040,000	\$0	\$0	\$0
<b>WATER - RECYCLED:</b>					
Facilities expansion - Building D	\$350,000	\$156,000	\$0	\$0	\$0
Wet Weather Storage Access Road*	\$207,000	\$0	\$0	\$0	\$0
Recycled Water Quality Improvements	\$125,000	\$208,000	\$216,320	\$224,973	\$233,972
<b>TOTAL CAPITAL PROJECTS</b>	<b>\$15,584,000</b>	<b>\$9,719,840</b>	<b>\$8,488,397</b>	<b>\$13,507,367</b>	<b>\$13,143,361</b>

As **Figure 2-2** below indicates, the majority of the ten year CIP plan is projected to be funded from rate revenues and capacity fees. If approved by the Board, a \$17 million revenue bond issue to finance new local water supply project is expected to be issued in FY 2018 at an assumed term of 30 years and five percent interest rate.

**Figure 2-2: CIP Financing Sources**



## 2.7 REVENUE ADJUSTMENTS

To adequately fund O&M expenditures, allow for necessary recapitalization of the water system, meet debt covenants and ensure sufficient reserves, annual rate revenue adjustments of **five percent** are currently projected for the forecast period. These adjustments assume an April 1 revenue increase in each of next five fiscal years. These represent the average increase in rate revenues each year and not necessarily an increase of five percent for each customer class.

## 2.8 DEBT SERVICE REQUIREMENTS

Debt service requirements consist of principal and interest payments on existing and proposed debt. The District currently has debt service obligations associated with the outstanding 2006A Refunding Bonds, the 2009 Revenue Bonds, the 2012 SRF Loan. The District also has an outstanding lease funding obligation. The existing debt service payments are approximately \$6.0 million annually. **Table 2-9** indicates the District’s existing and proposed debt service obligations.

**Table 2-9: Existing and Proposed Debt Schedule**

		Budgeted FY 2014	Budgeted FY 2015	Budgeted FY 2016	Budgeted FY 2017	Budgeted FY 2018	Budgeted FY 2019
<b>2006A Refunding Bond</b>							
22800-560-000-000	Principal	\$1,455,000	\$1,510,000	\$1,570,000	\$1,640,000	\$1,700,000	\$1,770,000
59750-560-000-000	Interest	\$1,216,000	\$1,158,000	\$1,097,000	\$1,034,000	\$968,000	\$900,000
<b>Total 2006A Refunding Bond</b>		<b>\$2,671,000</b>	<b>\$2,668,000</b>	<b>\$2,667,000</b>	<b>\$2,674,000</b>	<b>\$2,668,000</b>	<b>\$2,670,000</b>
<b>2009 Revenue Bonds</b>							
22800-580-000-000	Principal	\$385,000	\$400,000	\$415,000	\$430,000	\$445,000	\$465,000
59750-580-000-000	Interest	\$803,000	\$803,000	\$790,000	\$775,000	\$758,000	\$740,000
<b>Total 2009 Revenue Bonds</b>		<b>\$1,188,000</b>	<b>\$1,203,000</b>	<b>\$1,205,000</b>	<b>\$1,205,000</b>	<b>\$1,203,000</b>	<b>\$1,205,000</b>
<b>2012 SRF Loan</b>							
29800-510-000-000	Principal	\$789,000	\$808,000	\$826,000	\$845,000	\$865,000	\$885,000
59750-510-000-000	Interest	\$328,000	\$309,000	\$291,000	\$272,000	\$252,000	\$232,000
<b>Total 2012 SRF Loan</b>		<b>\$1,117,000</b>	<b>\$1,117,000</b>	<b>\$1,117,000</b>	<b>\$1,117,000</b>	<b>\$1,117,000</b>	<b>\$1,117,000</b>
<b>Total Existing Debt Service</b>		<b>\$4,976,000</b>	<b>\$4,988,000</b>	<b>\$4,989,000</b>	<b>\$4,996,000</b>	<b>\$4,988,000</b>	<b>\$4,992,000</b>
<b>2012 CB&amp;T Lease Funding</b>							
29800-511-000-000	Principal	\$985,000	\$1,003,000	\$1,022,000	\$518,000	\$0	\$0
59750-511-000-000	Interest	\$60,000	\$42,000	\$24,000	\$5,000	\$0	\$0
<b>Total 2012 CB&amp;T Lease Funding</b>		<b>\$1,045,000</b>	<b>\$1,045,000</b>	<b>\$1,046,000</b>	<b>\$523,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Total Existing Lease Payment</b>		<b>\$1,045,000</b>	<b>\$1,045,000</b>	<b>\$1,046,000</b>	<b>\$523,000</b>	<b>\$0</b>	<b>\$0</b>
<b>Total Proposed Debt</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$552,937</b>	<b>\$1,105,874</b>

## 2.9 DEBT SERVICE COVERAGE

The District must meet debt service coverage requirements on its outstanding bond issues. The District's required debt coverage is 115 percent, which means that the District's Adjusted Net System Revenues shall amount to at least 115 percent of the Annual Debt Service. The system revenues include funds derived from the ownership and operation of the system including water service charges from the District's customers, miscellaneous service charges, revenues received from contracts, and interest income. Annual Debt Service includes annual principal and interest payments on outstanding debt. With the proposed revenue adjustments, the District exceeds the coverage requirement during each year of the study's planning period.

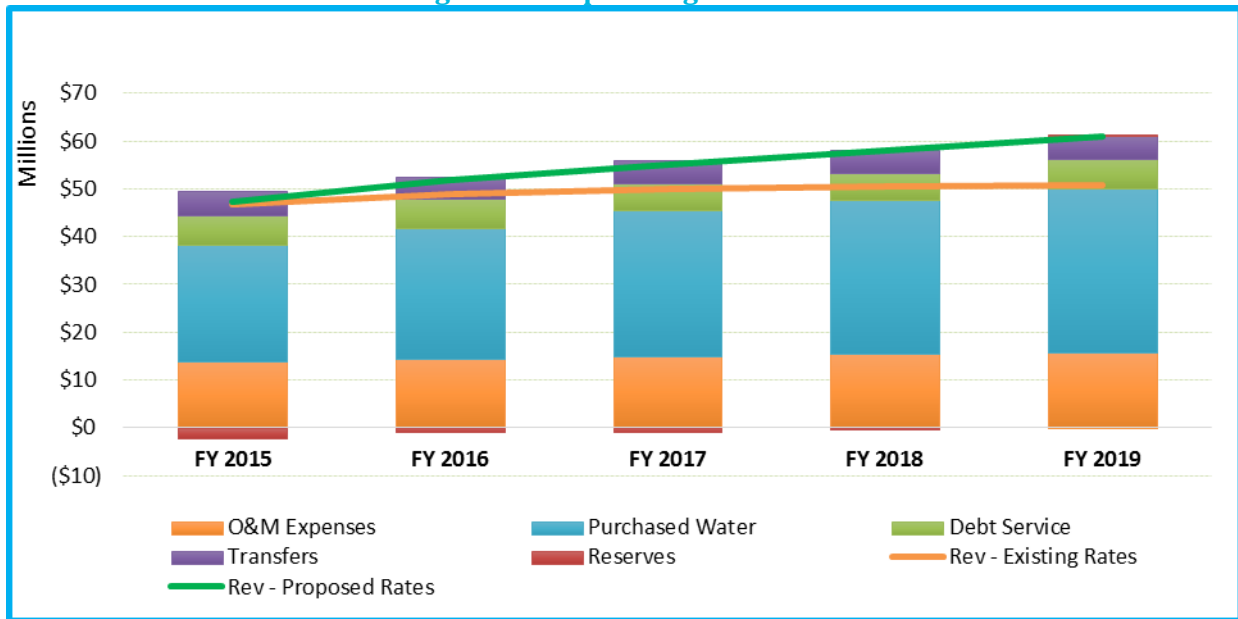
**Table 2-10 and Figure 2-3** show the operating financial plan for the next five years based on the revenue and expenses information presented above. The plan includes the above mentioned five percent revenue adjustments as well as the assumed revenue bond issuance forecast for FY 2018.

**Table 2-10: Operating Cash Flow**

	Estimated FY 2014	Budgeted FY 2015	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019
<b>REVENUE</b>						
Rate Revenue Under Existing Rates	\$42,709,000	\$41,618,422	\$43,525,743	\$43,770,871	\$43,988,287	\$44,303,495
Total Additional Revenue	\$0	\$520,230	\$2,747,563	\$5,089,732	\$7,570,178	\$10,220,820
Total Service Charge Revenue	\$42,709,000	\$42,138,652	\$46,273,305	\$48,860,603	\$51,558,465	\$54,524,315
Other Operating Revenue	\$2,936,000	\$2,179,000	\$2,363,880	\$3,150,320	\$3,274,819	\$3,407,936
Interest Income	\$165,000	\$166,124	\$229,475	\$290,483	\$287,751	\$287,851
Non-Operating Revenue	\$3,078,000	\$2,867,000	\$2,867,280	\$2,867,560	\$2,867,840	\$2,868,120
<b>TOTAL REVENUE</b>	<b>\$48,888,000</b>	<b>\$47,350,776</b>	<b>\$51,733,940</b>	<b>\$55,168,965</b>	<b>\$57,988,875</b>	<b>\$61,088,222</b>
<b>EXPENSES</b>						
O&M Expenses without depreciation	\$13,119,000	\$14,031,000	\$14,525,650	\$14,919,477	\$15,423,491	\$15,885,356
Purchased Water (potable & recycled)	\$23,255,000	\$24,349,944	\$27,312,003	\$30,729,672	\$32,347,769	\$34,281,887
Recycled Non-Operating Expenses	\$0	\$0	\$0	\$0	\$0	\$0
Existing Debt Service	\$4,976,000	\$4,988,000	\$4,989,000	\$4,996,000	\$4,988,000	\$4,992,000
Existing Lease Payment	\$1,045,000	\$1,045,000	\$1,046,000	\$523,000	\$0	\$0
Proposed SRF Loan Payment		\$0	\$0	\$0	\$0	\$0
Proposed Debt Service		\$0	\$0	\$0	\$552,937	\$1,105,874
<b>TOTAL EXPENSES</b>	<b>\$42,395,000</b>	<b>\$44,413,944</b>	<b>\$47,872,653</b>	<b>\$51,168,149</b>	<b>\$53,312,198</b>	<b>\$56,265,117</b>
<b>TRANSFERS</b>						
Transfer Potable Oper. to Potable Capital - PAYGO	\$4,226,000	\$4,400,000	\$4,400,000	\$4,400,000	\$4,400,000	\$4,400,000
Transfer for Equipment Replc.	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000
Transfer for Future Infrastructure Replc.	\$3,826,000	\$4,000,000	\$4,000,000	\$4,000,000	\$4,000,000	\$4,000,000
Transfer to Capital Fund - Lease Payment		\$0	\$0	\$0	\$0	\$0
Transfer to 2012 SRF Reserve		\$112,000	\$114,000	\$116,000	\$118,000	\$120,000
Transfer to/(from) Rate Stabilization Fund	\$500,000	\$0	\$0	\$0	\$0	\$0
Transfer Recycled Oper. to Recycled Capital	\$300,000	\$300,000	\$200,000	\$300,000	\$300,000	\$200,000
Transfer Recycled Oper. to Potable Capital	\$300,000	\$300,000	\$0	\$0	\$0	\$0
<b>TOTAL TRANSFERS</b>	<b>\$5,326,000</b>	<b>\$5,112,000</b>	<b>\$4,714,000</b>	<b>\$4,816,000</b>	<b>\$4,818,000</b>	<b>\$4,720,000</b>
<b>Net Annual Cash Balance for debt calculation</b>	<b>\$1,167,000</b>	<b>(\$2,175,168)</b>	<b>(\$852,713)</b>	<b>(\$815,184)</b>	<b>(\$141,322)</b>	<b>\$103,105</b>
Calculated Debt Coverage	208%	149%	164%	172%	184%	179%
Required Debt Coverage	115%	115%	115%	115%	115%	115%



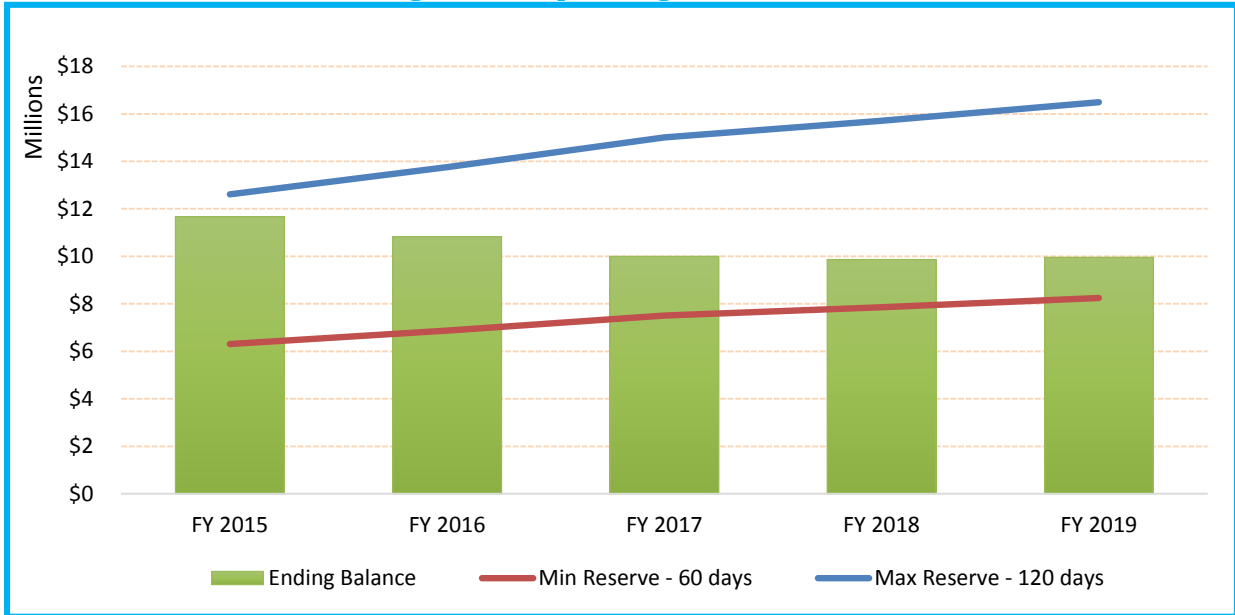
Figure 2-3: Operating Cash Flow



## 2.10 RESERVES

The District maintains three separate funds: an operating fund, which is designed to provide working capital and mitigate the impact of fluctuations in O&M expenditures; a capital improvement fund, which is designed to ensure adequate construction funds are maintained to cover project costs as they are incurred; and a rate stabilization fund, to reduce the impact of fluctuations in water service demand on water rates. The operating fund is set at a minimum of 60 days and a maximum of 90 days of O&M expenditures. As part of the study, it is recommended that the District adjust its maximum operating fund target balance to 120 days. The capital improvement fund is set to a minimum of the average annual CIP for the next ten years and a maximum of five times the minimum. Finally, the rate stabilization fund is set to a minimum of 25 percent of projected net sales in the current (i.e. rate revenue less purchases) and a maximum of 50 percent of projected net sales for the following two years. As **Figures 2-4** through **2-6** indicate, District will maintain the minimum balances in each fund throughout the study period assuming the proposed financial plan is implemented.

**Figure 2-4: Operating Fund Balance**



**Figure 2-5: CIP Fund Balance**

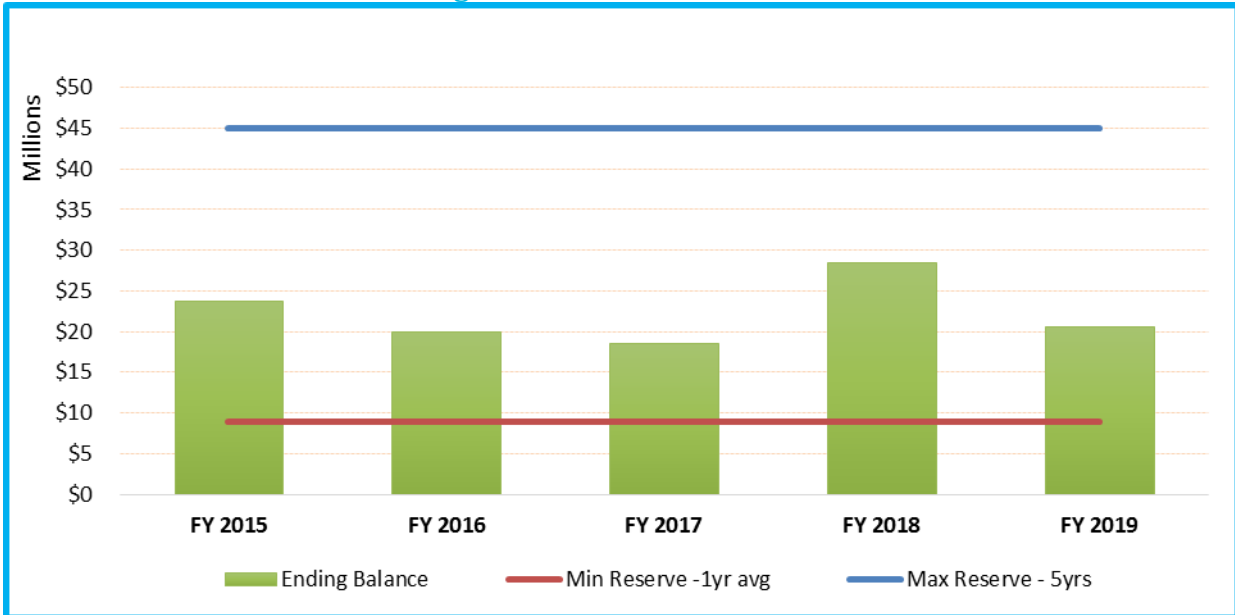
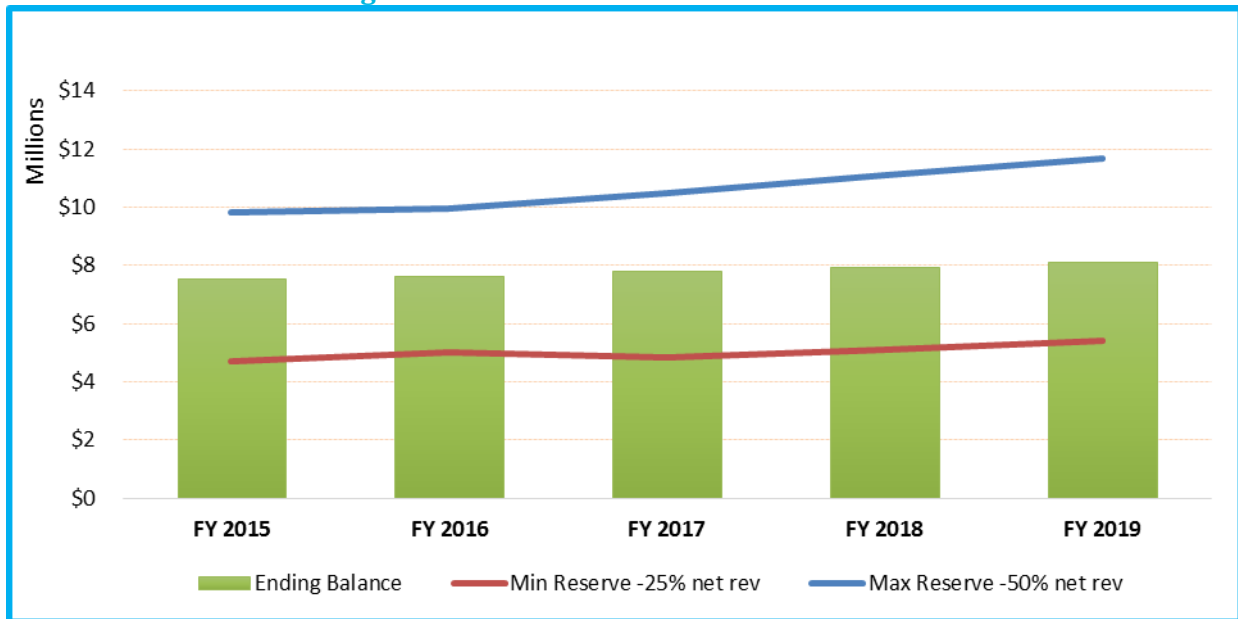


Figure 2-6: Rate Stabilization Fund Balance



### 3. COST OF SERVICE ANALYSIS

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The revenue requirements reviewed discussed in the prior section, along with an analysis of customer class service demand, provide the basis for performing the cost of service analysis. This section of the report discusses the allocation of operating and capital costs to the appropriate parameters, the determination of unit costs and the allocation of costs to the District's customer classes.

The total revenue requirements net of revenue credits from miscellaneous sources, is by definition, the cost of providing service as shown in **Table 3-1** below. This cost is then used as the basis for developing unit costs for the water parameters and allocating costs to the various customer classes in proportion to the level of water services rendered. The proportionate allocation process considers not only the average quantity of water used but also the peak rate at which it is consumed. There are costs associated with design and construction of facilities used to meet peak demands, and these need to be allocated so that peaking costs can be recovered appropriately. In this Study, water rates were calculated for FY 2015, and accordingly FY 2015 is defined as the Test Year. Test Year revenue requirements are used in the cost allocation process.

#### 3.1 COST OF SERVICE TO BE ALLOCATED

The annual revenue requirements or costs of service to be recovered from commodity charges include O&M expenses, costs associated with annual renewal and replacements, and other capital related costs. O&M expenses include costs directly related to the supply, treatment, and distribution of water as well as routine maintenance of system facilities. This maintenance is often referred to as routine capital and represents the annual recurring capital outlay for minor system improvements and purchases of materials and supplies.

The total FY 2015 cost of service to be recovered from the District's water customers, shown in **Table 3-1**, is estimated at approximately \$43.7 million, of which approximately \$37.8 million is operating costs and the remaining \$5.9 million is capital costs, which consist of existing debt service and lease payments. The cost of service analysis is based upon the premise that the utility must generate annual revenues adequate to meet the estimated annual revenue requirements. As part of the cost of service analysis, revenues from sources other than water rates and charges (e.g. revenues from miscellaneous services) are deducted from the appropriate cost elements. Additional deductions are made to reflect interest income and other non-operating income during FY 2015. Adjustments are also made to account for cash balances to ensure adequate collection of revenue and to determine annual revenues needed from rates.

**Table 3-1: Allocation of Revenue Requirements**

	FY 2015		
	Operating	Capital	Total
<b>Revenue Requirements</b>			
O&M Expenses without depreciation	\$14,031,000		\$14,031,000
Purchased Water (potable & recycled)	\$24,349,944		\$24,349,944
Recycled Non-Operating Expenses		\$0	\$0
Existing Debt Service		\$4,988,000	\$4,988,000
Existing Lease Payment		\$1,045,000	\$1,045,000
Proposed SRF Loan Payment		\$0	\$0
Proposed Debt Service		\$0	\$0
<b>Total Revenue Requirements</b>	<b>\$38,380,944</b>	<b>\$6,033,000</b>	<b>\$44,413,944</b>
<b>Revenue Offsets</b>			
CWA Infrastructure Access Charge	\$944,000		\$944,000
Misc. Water Sales	\$40,000		\$40,000
Meter Installations	\$20,000		\$20,000
Hydro-electric Plant Revenues	\$80,000		\$80,000
Turn Off/On Fees and NSF Charges	\$20,000		\$20,000
Delinquency Charges	\$65,000		\$65,000
Transfer Fee	\$40,000		\$40,000
Cross Connection/Inspection	\$125,000		\$125,000
Outside District Boundary Charges	\$9,000		\$9,000
Rental Income	\$526,000		\$526,000
CWA Reimb of Park Costs	\$290,000		\$290,000
Other operating	\$10,000		\$10,000
Recycled Cross Connection/Inspection	\$10,000		\$10,000
Investment Income (Potable) (estimated)		\$120,110	\$120,110
Property Tax Revenue		\$2,800,000	\$2,800,000
Gain on Sale of Fixed Assets		\$5,000	\$5,000
Other Non Operating		\$62,000	\$62,000
Investment Income (RW) (estimated)		\$46,019	\$46,019
<b>Total Revenue Offsets</b>	<b>\$2,179,000</b>	<b>\$3,033,129</b>	<b>\$5,212,129</b>
<b>Adjustments</b>			
Adjustment for Cash Balance		(\$2,937,323)	(\$2,937,323)
Adjustment for Mid-year Increase	(\$1,560,709)		(\$1,560,709)
<b>Total Adjustments</b>	<b>(\$1,560,709)</b>	<b>(\$2,937,323)</b>	<b>(\$4,498,032)</b>
<b>Cost of Service to be Recovered from Rates</b>	<b>\$37,762,653</b>	<b>\$5,937,194</b>	<b>\$43,699,847</b>

To allocate the cost of service among the different customer classes, costs first need to be allocated to the appropriate water parameters. The following section describes the allocation of the operating and capital costs of service to the appropriate parameters of the water system.

### **3.1.1 Functional Cost Components**

The total cost of water service is analyzed by system function in order to equitably distribute costs of service to the various classes of customers. For this analysis, water utility costs of service are assigned under the Base-Extra Capacity method to three basic functional cost components: base costs, extra capacity or peaking costs and customer service related costs as described in the M1 Manual, Principles of Water Rates, Fees, and Charges, published by the American Water Works Association (AWWA). Additionally, some costs are allocated to fire service.

#### ***Base Costs***

Base costs are those operating and capital costs of the water system associated with serving customers at a constant average rate of use. Supply costs are typically considered to be based on average usage.

#### ***Extra Capacity Costs***

Extra capacity or peaking costs represent those costs incurred to meet customer peak demands for water in excess of average day usage. Total extra capacity costs are subdivided into costs associated with maximum day and maximum hour demands. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities are designed to meet different peaking characteristics. For example, transmission lines are designed to meet Max Day requirements. Transmission lines have to be designed larger than they would be if the same annual amount of water were being used at a constant rate throughout the year. The cost associated with constructing a larger line is based on the "overdesign" and is proportioned on the Max Day factor. For example if the Max Day factor is 2.0, then the line has to be designed twice as large as required to meet just the average usage conditions. In this case half of the cost would be allocated to Base or average and the other half allocated to Max Day. The calculation of the Max Hour and Max Day demands is explained below.

#### ***Customer Service Related Costs***

Customer service costs include customer related and meter related costs. Customer related costs are uniform for all customers and include such costs as meter reading, billing, collecting, and accounting. Meter service costs include maintenance and capital costs associated with meters and a portion of the capacity related costs. These costs are assigned based on meter size or equivalent meter capacity.

The allocation of costs of service into these principal components provides the means for determining the costs to the various customer classes on the basis of their respective base, extra capacity and customer requirements for service.

#### ***Fire Service Costs***

Storage systems are designed to provide maximum day (Max Day) and fire flow service while distribution systems are designed to provide maximum hour (Max Hour) and fire flow service. A

portion of the costs associated with these facilities is allocated to fire service. In addition, hydrant related costs are also allocated to fire service. Typically, based on our experience about 10 percent of the costs of storage and distribution are allocated to fire service.

### **3.1.2 Allocation to Functional Cost Components**

The water utility is comprised of various facilities each designed and operated to fulfill a given function. In order to provide adequate service to its customers at all times, the utility must be capable of not only providing the total amount of water used, but also supplying water at peak or maximum rates of demand. The separation of costs by function allows allocation of such costs to the functional cost components.

### **3.1.3 Determination of Allocation Percentages**

To determine how costs should be allocated to average and peak (Max Day and Max Hour) demands, the allocation percentages assigned to each cost component need to be determined. Allocation percentages were derived from actual historical data. Customer service related costs are allocated 100 percent to the customer service component. Costs related to meter maintenance are allocated to meter service component. These two components are included in the fixed monthly service charges. Recycled water costs were allocated 100 percent to the recycled water component and are recovered via the recycled water volumetric rates. The methodology for calculating volume related cost allocations is explained below. **Table 3-3** summarizes the allocation percentages utilized in this study.

#### **Volume Related Cost Allocations**

The first step is to determine system peaking factors. Peaking factors are based on the District's usage characteristics. The max day factor was provided by the District. Based on our experience for utilities of this size, the max hour factor is assumed to 1.5 times the max day factor. The Base or average daily demand (ADD) is the average of the annual usage expressed as the usage per day. This Base Demand, or ADD, for the District is assigned a value of 1.0. The District's Max Day demand is 1.74 times the ADD. The maximum hourly (Max Hour) is assigned a value of 2.61 (1.5 times of 1.74). **Table 3-2** below shows the peaking factors of the whole system provided by the District.

**Table 3-2: Peaking Factors**

System Peaking Factors	
Base	1.00
Max Day	1.74
Max Hour	2.61

To determine the relative proportion of costs to assign to Base, Max Day and Max Hour, allocations are calculated based on these factors. Cost components that are solely related so satisfying base demand, such as source of supply, are allocated 100 percent to Base. Cost components that are designed to meet Max Day peaks, such as reservoirs and transmission facilities, are allocated to Base and Max Day factors. Since facilities such as reservoirs and distribution systems are also

designed to handle fire flow, an allocation is also provided for fire flow. The Max Day factor of the District’s system is 1.74, which means that Max Day facilities are designed to provide 174 percent of the average day capacity. In other words, 74 out of 174, or 43 percent (74/174) represents the portion required to meet Max Day requirements. Therefore the Max Day facilities are designed 43% larger than required to meet average usage conditions to meet Max Day requirements.

$$\begin{aligned} \text{Base:} & \quad 57\% = (1.00/1.74) \times 100 \\ \text{Max Day:} & \quad 43\% = (1.74-1.00)/1.74 \times 100 \end{aligned}$$

Cost components that are designed for Max Hour peaks (i.e. distribution system costs) are allocated similarly. The Max Hour factor is 2.61, so Max Day facilities are designed to provide 261 percent of the average day capacity. Out of this 261, 100 represents the ADD, 74 represents the Max Day requirement and the remainder of 87 represents the Max hour requirement. This means that the Max Hour capacity represents 87 out of 261, or 33 percent (87/261), the Max Day represents 74 out of 261, or 28 percent (74/261), and the remaining 100 out of 261 represents the base capacity of the facilities designed for Max Hour. The allocation of Max Hour facilities is shown below:

$$\begin{aligned} \text{Base:} & \quad 38\% = (1.00/2.61) \times 100 \\ \text{Max Day:} & \quad 28\% = (1.61-1.00)/2.61 \times 100 \\ \text{Max Hour:} & \quad 33\% = (2.61-1.61)/2.40 \times 100 \end{aligned}$$

As with the max day allocation factors, an allocation for fire flow is included where appropriate. The results of the allocation are presented in **Table 3-3** below.

**Table 3-3: Allocation Factors**

Category	Base	Max Day	Max Hour	Recycled Water	Fire Protection	Meters	Customer	Conservation	General	Total
Supply	100%									100%
Treatment	57%	43%								100%
Reservoir	52%	38%			10%					100%
Distribution	35%	25%	30%		10%					100%
Pump Stations	38%	28%	33%							100%
Meters						100%				100%
Hydrants					100%					100%
Customer							100%			100%
Recycled Water				100%						100%
Customer+Meter						50%	50%			100%
Conservation								100%		100%
General									100%	100%

These percentages are used to allocate the operating and capital improvement costs amongst Base, Max Day, and Max Hour parameters for cost of service calculations, which is explained in detail in the following sections. Note that those revenue requirements not receiving a base extra capacity allocation are allocated directly to recycled water, fire protection, meters, customer, conservation and general. Recycled water costs will be directly allocated to the recycled water volumetric charge. As mentioned above, meter and customer costs will be allocated to the meter service charge. Conservation costs will be allocated to potable demand less construction demand, and



general charges will be allocated proportionally to all cost components. Finally, fire protection costs will be separated into public and private fire protection components. Public fire protection will be reallocated to all of the remaining cost components proportionally, and private fire protection costs will be recovered via the private fire meter charge.

### ***3.1.4 Allocation of Operating Expense***

Projected net operating expenses for FY 2015 are allocated to cost components on the basis of the design criteria of the facilities. Water supply costs are allocated to base; storage or reservoir costs are allocated to max day and fire; distribution system costs are allocated to max hour and fire; transmission costs are allocated to max day; billing and customer service costs are allocated to customer service, etc.

Administration and general expenses are related to total system operations and cannot be specifically allocated to individual functions such as storage or distribution, etc. These expenses are therefore allocated in the same proportion as all the remaining operating expenses. The resulting allocation of operation and maintenance expense serves as the basis for allocating the FY 2015 net operating costs shown in **Table 3-1** to the base, extra capacity and customer costs functions.

### ***3.1.5 Allocation of Plant Investment and Capital Costs***

Capital costs include capital improvements financed from annual revenues, debt service and other sources. Capital costs related to specific facilities will vary significantly from year to year. Allocating these costs based on the functions of these specific facilities would cause the rates to the different customer classes to change from year to year. A reasonable method of assigning capital costs to functional components, widely practiced in the industry, is to allocate such costs on the basis of net plant investment recognizing that over a period of time these allocations will provide costs to be passed on to customers equitably.

Net plant investment is represented by the total replacement cost of water utility facilities less accumulated depreciation. The estimated fiscal year net plant investment in water facilities consists of net plant in service as of June 30, 2014.

Costs are allocated based on the design criteria of each facility. For example, treatment facilities are allocated to Max Day since these facilities are designed to handle the maximum day demand. Recycled water assets were allocated specifically to the recycled water component. The investment in general plant is allocated to each cost component on the basis of all other plant investment. The resulting allocation of net plant investment serves as the basis for allocating the capital costs shown in **Table 3-1**.

### ***3.1.6 Allocation of Revenue Offsets***

Revenue offsets are allocated based upon the type of revenue. Where the allocation could not be clearly identified, the revenue offset was allocated in the same manner as the overall allocation of the operating costs. Property tax revenue and investment income are retained as revenue offsets to be allocated to customer classes.

### 3.2 UNIT COST OF SERVICE

In order to allocate costs of service to the different customer classes, unit costs of service need to be developed for each cost component. The unit costs of service are developed by dividing the total annual costs allocated to each parameter by the total annual service units of the respective component.

The volume related cost components are based on volumetric units of one hundred cubic feet or CCF (about 748 gallons). Customer service related cost components are based on number of accounts and meter related costs are based on equivalent meters. **Table 3-4** shows the determination of the total annual units by customer class. The extra capacity units are determined based on the respective peaking factor for each class, as shown in **Table 3-6**.

**Table 3-4: Units of Service**

Customer Class	Annual Usage (hcf)	Daily Usage (hcf)	Max Day Factor	Max Day Requirements	Max Day Extra Capacity	Max Hour Factor	Max Hour Requirements	Max Hour Extra Capacity	Equivalent Meters	Equivalent Fire	No. of Bills
Residential	6,406,369	17,552	1.75	30,715	13,164	2.63	46,073	15,358			
Agriculture	328,007	899	2.05	1,838	939	3.07	2,757	919			
Commercial	277,412	760	1.46	1,107	347	2.18	1,661	554			
Irrigation	1,176,620	3,224	2.20	7,091	3,868	3.30	10,637	3,546			
Construction	69,260	190	3.00	569	380	6.00	1,139	569			
Recycled Water	1,058,508	2,900									
Meters									29,349	10,507	303,756
<b>TOTAL</b>	<b>9,316,177</b>	<b>25,524</b>			<b>18,698</b>			<b>20,945</b>	<b>29,349</b>	<b>10,507</b>	<b>303,756</b>

**Table 3-5** shows the units of service and the development of the FY 2015 unit costs for each of the cost components. To ensure that the costs are appropriately shared between fixed and variable components and recognize the demands based on capacity of meters, a portion of the extra capacity related costs are allocated to meters to recognize the demand that meters place on the system. As the cost of providing public fire protection will be recovered via the meter service charge, the costs associated with public fire protection have been reallocated to the meters component in proportion to the capacity of the fire hydrants as compared to the total (hydrants plus private) fire capacity, leaving the private fire costs to be recovered via the fire connection charges. Conservation costs and revenue offsets are allocated to total potable demand less construction demand. Finally, general costs have been reallocated proportionally to the remaining cost parameters. The allocated costs are divided by the total number of units for each component to determine the unit costs of each component as shown in **Table 3-5**.

**Table 3-5: Development of Unit Cost**

	Base	Max Day	Max Hour	Recycled		Fire			Conservation	General	Revenue	
				Water	Protection	Meters	Customer	Offsets			Total	
Operating Expenses	\$20,141,475	\$3,352,162	\$3,863,191	\$1,734,121	\$1,287,730	\$6,066,588	\$1,776,007	\$85,355	\$1,635,005	\$0	\$39,941,635	
Capital Expenses	\$2,673,027	\$1,943,356	\$1,138,651	\$1,950,786	\$452,324	\$133,649	\$0	\$0	\$678,038	\$0	\$8,969,832	
Revenue Offsets	(\$788,000)	(\$74,104)	(\$77,177)	(\$101,415)	(\$26,269)	(\$1,072,838)	(\$116,570)	(\$1,517)	(\$34,128)	(\$2,920,106)	(\$5,212,124)	
<b>Total Cost of Service</b>	<b>\$22,026,503</b>	<b>\$5,221,414</b>	<b>\$4,924,665</b>	<b>\$3,583,493</b>	<b>\$1,713,785</b>	<b>\$5,127,399</b>	<b>\$1,659,437</b>	<b>\$83,838</b>	<b>\$2,278,915</b>	<b>(\$2,920,106)</b>	<b>\$43,699,343</b>	
Allocation of General Cost	\$1,132,069	\$268,358	\$253,107	\$184,176	\$88,081	\$263,527	\$85,288	\$4,309	(\$2,278,915)	\$0	\$0	
Allocation of Public Fire Protection					(\$1,711,773)	\$1,711,773					\$0	
<b>Allocated Cost of Service</b>	<b>\$23,158,572</b>	<b>\$5,489,772</b>	<b>\$5,177,772</b>	<b>\$3,767,670</b>	<b>\$90,093</b>	<b>\$7,102,699</b>	<b>\$1,744,725</b>	<b>\$88,147</b>	<b>\$0</b>	<b>(\$2,920,106)</b>	<b>\$43,699,343</b>	
Adjustment from Rates Sheet	\$0	(\$1,097,954)	(\$1,035,554)	(\$408,815)	\$0	\$2,133,509	\$0	\$0	\$0	\$408,815	(\$0)	
											\$0	
<b>Adjusted Cost of Service</b>	<b>\$23,158,572</b>	<b>\$4,391,818</b>	<b>\$4,142,218</b>	<b>\$3,358,855</b>	<b>\$90,093</b>	<b>\$9,236,208</b>	<b>\$1,744,725</b>	<b>\$88,147</b>	<b>\$0</b>	<b>(\$2,511,291)</b>	<b>\$43,699,343</b>	
Unit of Service	8,257,669 hcf	18,698 hcf/day	20,945 hcf/day	1,058,508 hcf	10,466 Equiv fire	29,349 Equiv meter	303,756 No. of bills	8,188,409 hcf		8,188,409 hcf		
Unit Cost	\$2.80	\$234.89	\$197.76	\$3.17	\$0.72	\$26.23	\$5.74	\$0.01		(\$0.31)		
Average commodity rate	\$3.84											

**3.3 ALLOCATION OF COSTS TO CUSTOMER CLASSES**

The unit cost of each of the cost categories shown in **Table 3-5** is then applied to the projected FY 2015 usage and units of each customer class to derive customer class costs. Costs are allocated to each customer class based on the respective peaking factors for each class. The primary differentiator of rates amongst different customer classes is based on the demand that they put on the system. This demand is expressed in terms of the maximum day and maximum hour factors. These are the maximum demands expressed as a multiple of the average demands of the customer class. Residential customers generally have higher peaking factors than commercial customers and irrigation customers typically have the highest peaking factors. In the case of the District, construction and recycled water, both of which exhibit seasonal demand patterns, have the highest peaking factors. The max day factor for each customer class is based on the maximum month demands. The ratio of the max hour and max day for the whole system is used to estimate the max hour factor for each customer class. The peaking factors, shown in **Table 3-6**, were determined for the six customer classes.

**Table 3-6: Peaking Factor by Customer Class**

Customer Peaking Factors	Max Day	Max Hour
Residential	1.75	2.63
Commercial	1.46	2.18
Irrigation	2.20	3.30
Agriculture	2.05	3.07
Construction	3.00	6.00
Recycled Water	2.37	3.56

**Table 3-7** shows the FY 2015 customer class units and cost responsibility for each customer class.

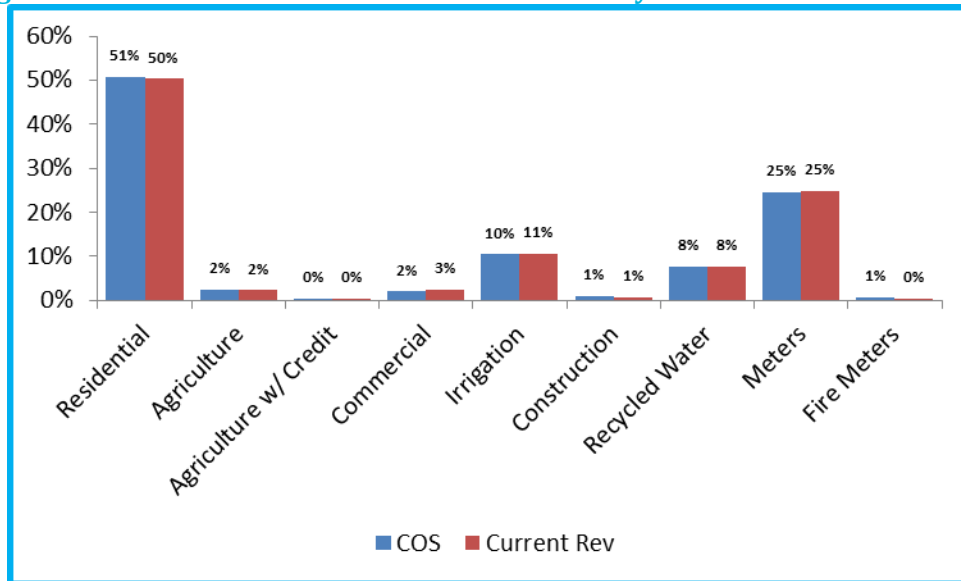
**Table 3-7: Customer Class Cost**

	Base	Max Day	Max Hour	Recycled Water	Fire Protection	Meters	Customer	Conservation	General	Revenue Offsets	Total
Residential	\$17,966,615	\$3,091,980	\$3,037,193					\$68,964		(\$1,964,760)	\$22,199,991
Agriculture	\$772,075	\$185,214	\$152,552					\$2,964		(\$84,431)	\$1,028,373
Agriculture w/ Credit	\$147,818	\$35,460	\$29,207					\$567		(\$16,165)	\$196,888
Commercial	\$778,001	\$81,516	\$109,470					\$2,986		(\$85,079)	\$886,894
Irrigation	\$3,299,823	\$908,506	\$701,217					\$12,666		(\$360,856)	\$4,561,357
Construction	\$194,240	\$89,141	\$112,579								\$395,961
Recycled Water				\$3,358,855							\$3,358,855
Meters						\$9,236,208	\$1,548,286				\$10,784,493
Fire Meters					\$90,093		\$196,439				\$286,533
<b>TOTAL</b>	<b>\$23,158,572</b>	<b>\$4,391,818</b>	<b>\$4,142,218</b>	<b>\$3,358,855</b>	<b>\$90,093</b>	<b>\$9,236,208</b>	<b>\$1,744,725</b>	<b>\$88,147</b>	<b>\$0</b>	<b>(\$2,511,291)</b>	<b>\$43,699,343</b>

The residential customer class has the highest assignment of costs at \$22.2 million followed by the Irrigation customer class at \$4.6 million. The District’s residential class is responsible for approximately 50.8 percent of the total cost of service. The irrigation class is responsible for approximately 10.4 percent of the annual cost of service. The remaining classes — Agriculture, Agriculture with Credit, Commercial, Construction and Recycled Water—account for 2.4, 0.5, 2.0, 0.9 and 7.7 percent of cost of service respectively. The remaining costs, 24.7 percent and 0.7 percent are associated with customer meters and private fire connections, respectively.

**Table 3-7** presents a comparison of the projected revenue (FY 2015) at current rates and the annual cost of service allocated among customer classes. Approximately 51 percent of both costs and revenues can be attributed to the residential customer class. **Figure 3-1** indicates minor adjustments that should be made based on cost of service. In general, a higher proportion of revenue should be recovered from residential, and construction and a lower proportion from commercial, irrigation, agricultural, and recycled water customers. Furthermore, note that irrigation customers have been broken out from commercial customers for the purposes of developing a separate commercial rate.

**Figure 3-1: Cost of Service and Current Revenue by Customer Class in FY 2015**



Once the customer class cost responsibility is determined, the next step is to design customer rate schedules to recover the revenues required from each customer class, which is discussed in the next section. The rate design analysis will illustrate how revenues are collected within each class using the current rate structure and how they compare to costs.



## 4. RATE DESIGN

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The revenue requirements and cost of service analysis described in the preceding sections of this report allocate the costs equitably amongst the different customer classes. Rate design is the process of developing rate schedules for each customer class such that the annual cost of service determined for each customer class is equitably recovered from the customers in that class. In this study, the focus of rate design is on the development of rate schedules for each of the District's customer classes. This subsection of the report discusses the current water rate structure and develops a schedule of water rates for the District's customer classes to meet the District's objectives of equitable collection of costs and efficient use of resources. While cost of service generally follows the standard methodology prescribed in the M1 Manual, rates can be designed to meet the District' objectives. Finally, this subsection analyzes the impact of the proposed cost allocations and rate design on District customers.

### 4.1 PROPOSED RATE STRUCTURE

Rate structures should be designed to ensure that customers pay their proportionate share of costs. In addition, rate structures should be easy to understand, simple to administer, and comply with regulatory requirements. A review of the current rate structure provides insights into the equitability of the current methodology and changes, if any, that should be considered.

#### 4.1.1 *Proposed Changes*

Based on discussions with District staff and our understanding of the District's operations and customer base, RFC recommends the following rate structure adjustments:

First, RFC proposes that the District retain the tiered rate structures for residential customers, but that the second tier cut-off be reduced and that a fourth tier be added. The first tier would provide for essential indoor use; the second tier encompasses average usage; and the final two tiers would target the largest users and are designed to promote conservation.

Second, RFC also recommends separating the current commercial/irrigation class into two separate classes. Currently both commercial and irrigation customers pay the same rate; this may result in some inequity given that customers which use water solely for irrigation exhibit much higher peak usage than a typical commercial customer. In general, commercial customers use water more consistently, and place lesser demands on the water system, than irrigation users. As **Table 3-6** in the prior section indicates, commercial customer use only 46 percent more water on their highest usage day versus their average day, whereas irrigation customers use approximately 120 percent more. The current rate structure assigns equal responsibility to commercial and irrigation customers for the cost of this capacity. Separating commercial and irrigation customers will increase equity in the District's rate structure and may encourage more efficient water use on the part of irrigation customers. In addition to separating the commercial class, RFC also recommends revising the tier for each meter size for the irrigation class to represent more accurately the usage in each meter size.

Finally, RFC recommends that the District maintain its current 25 percent fixed charge revenue recovery. In the current fiscal year, the District will collect 25 percent of total rate revenue from fixed charges. As is explained in the proceeding subsection, the proposed fixed charges have been structured to maintain this proportion. The California Urban Water Conservation Council (CUWCC) Best Management Practice (BMP) #1.4 recommends a maximum of 30 percent rate revenue from fixed charges. The fixed charge proposed is still under the 30 percent and maintains an appropriate balance between revenue stability and conservation.

#### **4.1.2 Monthly Service Charges**

A service charge is a cost recovery mechanism that is generally included in the rate structure to recover some of the fixed costs including meter and customer related costs, and a portion of the capacity related cost to provide a stable source of revenue independent of water consumption.

Customer related costs are fixed expenditures that relate to operational support activities including accounting, billing, customer service, and administrative and technical support. The customer related costs are essentially common-to-all customers that are reasonably uniform across the different customer classes. In addition, there are capacity related costs such as meter maintenance and peaking charges that are included based on the hydraulic capacity of the meters. Since facilities are designed to meet peaking requirements, RFC has assigned a portion of the costs related to peaking to the service charge. Increasing the fixed charge reduces the variable rates and incentive for conservation, but provides a mechanism for recovering a portion of the fixed costs and ensures a stable source of customer revenues for the utility. A good rate design seeks an appropriate balance between these pricing objectives. The District collects approximately 25 percent of the total rate revenues from the fixed service charges in FY 2014. The cost of purchased water is allocated to the variable commodity rate and as it increases, the total fixed service charge revenue decreases. RFC's rate design maintains the current 25 percent fixed charge revenue recovery.

To determine the OMWD Monthly Access Charge, the Meter Unit Cost, determined in the previous section, is multiplied by the meter capacity ratios from the District's Engineering Department to calculate the Meter Capacity Cost. The Meter Capacity Cost is then added to the Customer Service Cost to compute the cost based monthly service charge. The SDCWA IAC was determined by dividing the total projected payment by the District, by the number of equivalent accounts, and again by 12 to determine the monthly cost per equivalent account. This was then scaled up by meter sizes, in the same way as the OMWD charge. Both monthly meter charges are indicated on **Table 4-1** below.

**Table 4-1: Infrastructure Access Charges**

**OMWD**

Meter Size	Current Meter Ratio	Meter Component	Customer Component	Proposed Charges	Current Charges	Difference
5/8"	0.70	\$18.36	\$5.74	<b>\$24.11</b>	\$23.38	3.1%
3/4"	1.00	\$26.23	\$5.74	<b>\$31.97</b>	\$30.76	3.9%
1"	1.90	\$49.83	\$5.74	<b>\$55.58</b>	\$52.82	5.2%
1-1/2"	3.10	\$81.30	\$5.74	<b>\$87.05</b>	\$82.18	5.9%
2"	5.00	\$131.13	\$5.74	<b>\$136.88</b>	\$128.70	6.4%
2-1/2"	9.30	\$243.90	\$5.74	<b>\$249.64</b>	\$184.72	35.1%
3"	10.20	\$267.50	\$5.74	<b>\$273.25</b>	\$256.00	6.7%
4"	17.10	\$448.45	\$5.74	<b>\$454.20</b>	\$424.90	6.9%
6"	36.00	\$944.11	\$5.74	<b>\$949.86</b>	\$887.59	7.0%
8"	65.00	\$1,704.65	\$5.74	<b>\$1,710.39</b>	\$1,597.56	7.1%

**SDCWA IAC**

Meter Size	Current Meter Ratio	Meter Component	Customer Component	Proposed Charges	Current Charges	Difference
5/8"	1.00	\$2.74		<b>\$2.75</b>	\$2.68	2.6%
3/4"	1.00	\$2.74		<b>\$2.75</b>	\$2.68	2.6%
1"	1.90	\$5.19		<b>\$5.20</b>	\$5.08	2.4%
1-1/2"	3.10	\$8.50		<b>\$8.50</b>	\$8.31	2.3%
2"	5.00	\$13.70		<b>\$13.71</b>	\$13.40	2.3%
2-1/2"	9.31	\$25.50		<b>\$25.51</b>	\$24.94	2.3%
3"	10.20	\$27.94		<b>\$27.95</b>	\$27.33	2.3%
4"	17.10	\$46.85		<b>\$46.86</b>	\$45.82	2.3%
6"	35.99	\$98.62		<b>\$98.63</b>	\$96.45	2.3%
8"	64.94	\$177.96		<b>\$177.96</b>	\$174.04	2.3%

**4.1.3 Commodity Rates**

The commodity rate is the rate developed for each customer class which will recover the District’s variable volume related costs. The annual estimated FY 2015 revenue requirement, less annual cost based service charge revenues, are the revenues that need to be recovered through commodity rates.

Cost of service based commodity rates are developed for each customer class based on the principle of maintaining inter-class and intra-class revenue neutrality and equity. This means that each customer class would only pay its assigned share of costs of service (Refer to **Table 3-7** for revenues required from each customer class), and that each member of each class would only pay its fair share of customer class costs. Since a portion of the revenues required from each customer class is to be recovered through uniform monthly service charges, commodity rates are designed to recover only that portion of revenues that is not recovered through the service charge.



Annual service charge revenues for each customer class for FY 2015 are calculated based on the forecast number of meters by size in a given class and the COS based monthly service charges calculated in **Table 4-1**. **Table 3-7** shows the total assigned cost by class, the annual costs recovered from the service charge, and the annual costs that are to be recovered from the commodity rate.

The water commodity rate for each customer class is computed based on the customer class' annual usage revenues required and the estimated annual volume of water usage. The cost based commodity unit rate is shown in **Tables 4-3 and 4-4**.

The customer classes can be sorted into groups with similar peaking characteristics and a uniform water commodity rate is calculated for each class of customers.

RFC proposes that the District retain the tiered rate structures for residential customers, but that the second tier cut-off be reduced to 25 CCF and that a fourth tier—for all usage greater than 80 CCF—be added. The first tier would remain at 6 CCF and is designed to provide for essential indoor usage at an affordable rate consistent with Water Code Section 106 (see Appendix). The first tier rate is slightly lower than the current rate, due to the use of property tax revenues to offset a portion of the costs<sup>3</sup>. All residential users benefit from the lower first tier rate. The second tier would become tighter and should accommodate average indoor and outdoor usage. The third and fourth tiers would target the top 20 and eight percent of total water usage, respectively, and encourage water conservation.

RFC also recommends that commercial and irrigation customers be separated into distinct customer classes. As mentioned above, irrigation customers typically place the greatest peak demand on the water system, whereas commercial customers exhibit much lower peak usage. In the proposed rate structure, commercial customers pay a uniform rate based on COS, and the tiered structure for irrigation rates is maintained. While the seasonal component which determines the irrigation consumption tiers is also maintained, the tiers for each meter size have been reduced to be more in line with the average consumption in each meter size. These changes should increase equity in the District's rate structure and may also encourage conservation among irrigation customers. **Table 4-2** shows the proposed changes to the Irrigation customer tiers. The tiers are developed based on the 3-year average usage in each meter size. Customers with meters larger than 4 inches will need to contact the District for their allotments.

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<sup>3</sup> Property taxes revenues are used to offset costs for all customer classes in proportion to each class total water usage. For residential customers, the total allocated offset amount is used to reduce Tier 1 rate.

**Table 4-2: Proposed Irrigation Tier**

**Irrigation Unit Allotments**

**"B" Base Allotment**

Based upon water use by meter size.

Meter Size	Current		4/1/2015	
	Winter (Dec-May)	Summer (Jun-Nov)	Winter (Dec-May)	Summer (Jun-Nov)
5/8"	12	22	10	15
3/4"	23	47	20	30
1"	78	140	35	50
1-1/2"	170	360	50	110
2"	240	550	100	200
3"	750	1,600	200	500
4"	1,475	5,600	600	3,500

The remaining customers (i.e. agriculture, construction and recycled water) will continue to be charged a uniform rate based on COS. These customer classes are not ideally suited for tiered rates because of their non-homogenous usage characteristic. Construction customers will pay the highest rate as they place the greatest demand on the system due to irregular and large demand. Agricultural rates are higher than the newly separated commercial rates, but lower than the highest tier irrigation rates, as their peak demand falls between that of those classes. Recycled water rates are based on the cost of treating and distributing water via the recycled water distribution system. As this system is separate from the potable water distribution system, their peak demand does not impact the distribution of costs between classes.

**Table 4-3** shows the development of the tiered rate for residential customers. The Base cost represents the costs to deliver water at the average rate, and is applied to all tiers equally. The Max Day and Max Hour costs represent the peaking costs of the system, and are applied to each tier based on the estimated peaking characteristics of each tier. Tier 1 is estimated to have the lowest peaking cost because it provides indoor water usage which is used all year round. Tier 2 has higher peaking cost because it partly covers outdoor usage and experiences some of the higher summer peaks. Tiers 3 and 4 have the highest peaking cost because they are essentially outdoor usage. Conservation costs are applied to Tiers 3 and 4 to pay for staff time, increased outreach and messaging for conservation enforcement at these higher tiers. Miscellaneous revenues, such as property tax revenue, are used as offsets to reduce Tier 1 rate, since it provides essential water for health and safety purposes. Outdoor water usage is considered discretionary usage.

**Table 4-3: Proposed Residential Tiered Rate Development**

Residential	Commodity Rate					Total Rate
	Base	Max Day	Max Hour	Offsets	Conservation	
Tier 1	\$2.80	\$0.23	\$0.23	(\$1.02)	\$0.00	\$2.25
Tier 2	\$2.80	\$0.47	\$0.46	\$0.00	\$0.00	\$3.74
Tier 3	\$2.80	\$0.70	\$0.69	\$0.00	\$0.03	\$4.23
Tier 4	\$2.80	\$0.94	\$0.92	\$0.00	\$0.06	\$4.73

**Table 4-4** shows the current and proposed base rates for the different customer classes in FY 2015 and include a five percent revenue increase over current rates.

**Table 4-4: Proposed Commodity Rates Calculation**

Customer Class	Usage (ccf)	Proposed Base Rate	Current Base Rate	Difference	
<b>Residential</b>					
Tier 1	6	1,921,911	\$2.25	\$2.32	-3.0%
Tier 2	25	2,690,675	\$3.74	\$3.55	5.4%
Tier 3	80	1,281,274	\$4.23	\$4.14	2.2%
Tier 4	80 +	512,510	\$4.73	\$4.14	14.3%
Total Residential	6,406,369				
Agriculture	275,299	\$3.74	\$3.54	5.6%	
Agriculture w/ Credit	52,708	\$3.36	\$3.06	9.8%	
Commercial	277,412	\$3.20	\$3.70	-13.5%	
<b>Irrigation</b>					
Tier 1	"B" Base	525,744	\$3.27	\$3.70	-11.6%
Tier 2	"C" Over Base	650,876	\$4.37	\$4.32	1.2%
Total Irrigation	1,176,620	\$3.88			
Construction	69,260	\$5.72	\$4.81	18.9%	
Recycled	1,058,508	\$3.18	\$3.03	5.0%	

#### 4.1.4 Monthly Fire Meter Service Charges

Fire service charges are assessed to private fire protection meters. Based on the cost of service analysis discussed above, a portion of the total costs, equal to the proportional capacity of private fire services compared to total fire service capacity, are allocated to private fire protection. The proposed monthly charges are shown in **Table 4-5** below.

**Table 4-5: Proposed Fire Meter Charge Calculation**

<b>Fire Meter</b>						
Meter Size	Current Meter Ratio	Meter Component	Customer Component	Proposed Charges	Current Charges	Difference
5/8"	1.00	\$0.71	\$2.87	<b>\$3.59</b>	\$1.50	139%
3/4"	1.00	\$0.71	\$2.87	<b>\$3.59</b>	\$1.50	139%
1"	1.90	\$1.36	\$2.87	<b>\$4.23</b>	\$2.50	69%
1-1/2"	3.10	\$2.22	\$2.87	<b>\$5.09</b>	\$3.50	45%
2"	5.00	\$3.57	\$2.87	<b>\$6.45</b>	\$6.00	8%
2-1/2"	9.30	\$6.65	\$2.87	<b>\$9.52</b>	\$6.00	59%
3"	10.20	\$7.29	\$2.87	<b>\$10.17</b>	\$10.00	2%
4"	17.10	\$12.22	\$2.87	<b>\$15.10</b>	\$16.00	-6%
6"	36.00	\$25.73	\$2.87	<b>\$28.60</b>	\$34.00	-16%
8"	65.00	\$46.45	\$2.87	<b>\$49.33</b>	\$70.00	-30%

## 4.2 PROPOSED WATER RATES

The proposed water rates for FY 2015 through FY 2019 are shown in **Table 4-6** below. The SDCWA IAC will be passed through when SDCWA implements the new rate for each year.

**Table 4-6: Proposed Base Rates FY 2015 through FY 2019**

Effective	April 1, 2015	April 1, 2016	April 1, 2017	April 1, 2018	April 1, 2019	
<b>Monthly OMWD Access Charge</b>						
Meter Size						
5/8"	\$24.11	\$25.32	\$26.59	\$27.92	\$29.32	
3/4"	\$31.97	\$33.57	\$35.25	\$37.02	\$38.88	
1"	\$55.58	\$58.36	\$61.28	\$64.35	\$67.57	
1-1/2"	\$87.05	\$91.41	\$95.99	\$100.79	\$105.83	
2"	\$136.88	\$143.73	\$150.92	\$158.47	\$166.40	
2-1/2"	\$249.65	\$262.14	\$275.25	\$289.02	\$303.48	
3"	\$273.25	\$286.92	\$301.27	\$316.34	\$332.16	
4"	\$454.21	\$476.93	\$500.78	\$525.82	\$552.12	
6"	\$949.87	\$997.37	\$1,047.24	\$1,099.61	\$1,154.60	
8"	\$1,710.41	\$1,795.94	\$1,885.74	\$1,980.03	\$2,079.04	
<b>Monthly CWA Infrastructure Access Charge (IAC)*</b>						
Meter Size						
5/8"	\$2.75	TBD	TBD	TBD	TBD	
3/4"	\$2.75	TBD	TBD	TBD	TBD	
1"	\$5.20	TBD	TBD	TBD	TBD	
1-1/2"	\$8.50	TBD	TBD	TBD	TBD	
2"	\$13.71	TBD	TBD	TBD	TBD	
2-1/2"	\$25.51	TBD	TBD	TBD	TBD	
3"	\$27.95	TBD	TBD	TBD	TBD	
4"	\$46.86	TBD	TBD	TBD	TBD	
6"	\$98.63	TBD	TBD	TBD	TBD	
8"	\$177.96	TBD	TBD	TBD	TBD	
<b>Monthly Fire Meter Charges</b>						
Meter Size						
5/8"	\$3.59	\$3.77	\$3.96	\$4.16	\$4.37	
3/4"	\$3.59	\$3.77	\$3.96	\$4.16	\$4.37	
1"	\$4.23	\$4.45	\$4.68	\$4.92	\$5.17	
1-1/2"	\$5.09	\$5.35	\$5.62	\$5.91	\$6.21	
2"	\$6.45	\$6.78	\$7.12	\$7.48	\$7.86	
2-1/2"	\$9.52	\$10.00	\$10.50	\$11.03	\$11.59	
3"	\$10.17	\$10.68	\$11.22	\$11.79	\$12.38	
4"	\$15.10	\$15.86	\$16.66	\$17.50	\$18.38	
6"	\$28.60	\$30.03	\$31.54	\$33.12	\$34.78	
8"	\$49.33	\$51.80	\$54.39	\$57.11	\$59.97	
<b>Volumetric Rates (\$/HCF)</b>						
Residential						
Tier 1	0-6 HCF	\$2.25	\$2.37	\$2.49	\$2.62	\$2.76
Tier 2	7-25 HCF	\$3.74	\$3.93	\$4.13	\$4.34	\$4.56
Tier 3	26-80 HCF	\$4.23	\$4.45	\$4.68	\$4.92	\$5.17
Tier 4	80 + HCF	\$4.73	\$4.97	\$5.22	\$5.49	\$5.77
Agriculture		\$3.74	\$3.93	\$4.13	\$4.34	\$4.56
Agriculture w/ Credit		\$3.03	TBD	TBD	TBD	TBD
Commercial		\$3.20	\$3.36	\$3.53	\$3.71	\$3.90
Irrigation						
Tier 1	"B" Base	\$3.43	\$3.61	\$3.80	\$3.99	\$4.19
Tier 2	"C" Over Base	\$4.24	\$4.46	\$4.69	\$4.93	\$5.18
Construction		\$5.72	\$6.01	\$6.32	\$6.64	\$6.98
Recycled Water		\$3.18	\$3.34	\$3.51	\$3.69	\$3.88

\*Note: A fixed charge imposed by SDCWA. Subject to change every year.

### 4.3 PROPOSED WATER SUPPLY SHORTAGE RATES

The rates at different shortage levels are updated using the District’s existing methodology, which recovers the revenue loss due to reduced consumptions at each shortage level. As defined in the District’s rate ordinance, Level 1 has a 10 percent voluntary reduction in total water usage; Level 2 has up to 20 percent mandatory reduction; Level 3 has up to 40 percent mandatory reduction and Level 4 has over 40 percent mandatory reduction in total water usage. It is assumed that usage in the higher tiers would decrease more than that of the lower tiers. In addition, to encourage conservation, the rates in the higher tiers would increase more than the lower tiers. The rates are designed to provide the revenues that would be lost because of reduced sales. Sales are expected to be lower at the higher levels due to price elasticity as well as public outreach related to the drought and need for conservation.

**Table 4-7** shows the proposed rates at each level.

**Table 4-7: Proposed Shortage Rates FY 2015**

Customer Type	NON-SHORTAGE	WATCH	ALERT	CRITICAL	EMERGENCY
	(Base) Rates	Level 1 Voluntary	Level 2 Mandatory	Level 3 Mandatory	Level 4 Mandatory
	4/1/2015	4/1/2015	4/1/2015	4/1/2015	4/1/2015
Residential					
0-6 units	\$2.25	\$2.25	\$2.36	\$2.48	\$2.70
7-25 units	\$3.74	\$3.93	\$4.11	\$4.68	\$5.42
26-80 units	\$4.23	\$4.65	\$5.29	\$6.35	\$7.40
Over 80 units	\$4.73	\$5.44	\$5.91	\$7.10	\$9.46
Agricultural	\$3.74	\$3.93	\$4.02	\$4.49	\$5.24
Commercial	\$3.20	\$3.36	\$3.44	\$3.84	\$4.48
Irrigation					
"B" Base	\$3.43	\$3.60	\$3.77	\$4.29	\$4.97
"C" Over Base	\$4.24	\$4.88	\$5.30	\$6.36	\$8.48
Construction	\$5.72	\$6.58	\$7.15	\$8.58	\$11.44
Recycled Water	\$3.18	SHORTAGE RATES NOT APPLICABLE			

## 5. CUSTOMER IMPACTS AND RATE COMPARISON

RFC performed an analysis to evaluate the impact of the proposed rate structure on customers with various water usage levels. The impacts of each of these changes among customer classes and within customer classes are discussed below.

### 5.1 CUSTOMER IMPACTS

For Residential customers, who account for approximately 60 percent of the District's customer base, the bill impacts at various usage levels assuming a 3/4" meter are shown below in **Table 5-1**. As discussed above, the proposed rates would lower the second tier cut-off from 43 CCF to 25 CCF and add a fourth tier for all consumption above 80 CCF. This means that, for a rate revenue increase of five percent, high and very high users would see slightly larger bill increases. For high users this is due to more consumption falling into third tier. Very high users will see slightly higher increases due to the addition of the fourth tier, whose rate is approximately 14 percent higher than the existing Tier 3 rate.

**Table 5-1: Residential Rate Impacts**

Usage Level	Monthly Usage (hcf)	Current Bill - Base Rate	Proposed Bill - Base Rate	Difference (\$)	Difference (%)
Very Low	4	\$42.72	\$43.72	\$1.00	2.3%
Low	12	\$68.66	\$70.66	\$2.00	2.9%
Average	22	\$104.16	\$108.06	\$3.90	3.7%
High	50	\$207.69	\$225.03	\$17.34	8.3%
Very High	90	\$373.29	\$399.23	\$25.94	6.9%

**Table 5-2** shows the impacts to a Commercial customer at different levels of usage, assuming a 1" meter. **Table 5-3** shows the impacts to an Irrigation customer at different levels of usage, assuming a 1 1/2" meter.

**Table 5-2: Commercial Rate Impacts**

Usage Level	Monthly Usage (hcf)	Current Bill - Base Rate	Proposed Bill - Base Rate	Difference (\$)	Difference (%)
Low	20	\$126.82	\$119.58	(\$7.24)	-5.7%
Average	55	\$256.32	\$231.58	(\$24.74)	-9.7%
High	100	\$422.82	\$375.58	(\$47.24)	-11.2%

**Table 5-3: Irrigation Rate Impacts**

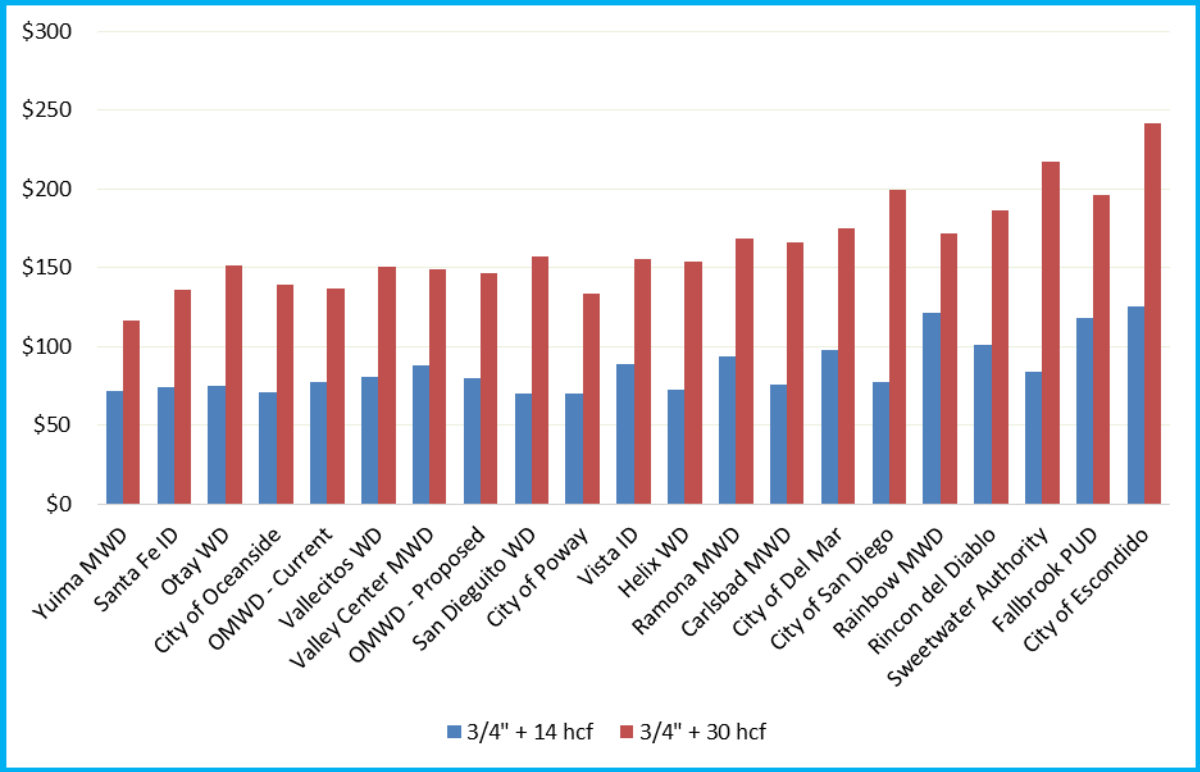
Usage Level	Monthly Usage (hcf)	Current Bill - Proposed Bill -		Difference (\$)	Difference (%)
		Base Rate	Base Rate		
Low - Winter	20	\$156.18	\$155.65	(\$0.53)	-0.3%
Avg - Winter	41	\$233.88	\$227.68	(\$6.20)	-2.7%
High - Winter	80	\$378.18	\$385.75	\$7.57	2.0%
Low - Summer	50	\$267.18	\$258.55	(\$8.63)	-3.2%
Avg - Summer	103	\$463.28	\$440.34	(\$22.94)	-5.0%
High - Summer	200	\$822.18	\$845.95	\$23.77	2.9%

## 5.2 RATE SURVEY

**Figure 5-1** below indicates a comparison of the typical District customer bills to neighboring utilities. Such comparisons can provide insights into a utility’s pricing policies related to service. Care should be taken, however, in drawing conclusions from such a comparison as some factors including geographic location, demand, customer constituency, level of treatment, level of grant funding, age of system, sources of water costs, and rate-setting methodology can affect the cost of providing services. The following table and figures show the comparison between the District’s current and proposed rates with those of neighboring utilities.



**Figure 5-1: Comparison of Neighboring Utilities - Total Monthly Water Bill**



## 6. APPENDIX

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Water Code Section 106 provides in part as follows:

*“It is hereby declared to be the established policy of this State that the use of water for domestic purposes is the highest use of water and the next highest use is for irrigation.”*

Section 106.3 further states that

*“ (a) It is hereby declared to be established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.*

*(b) All relevant state agencies, including the department, the state board, and the State Department of Public Health, shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.”*

Further clarification is provided by the author of the bill:

*“It is intended that subdivisions (a) and (b) together, establish a framework for administrative decision making that will improve access to safe, affordable domestic water service throughout the state.”*

Given the direction provided by this section of the Water Code, the District will provide the basic water for domestic purposes at an affordable rate. To provide affordable water for indoor use for residential and non-residential customers, the District will use revenues from leasing cell towers and a portion of the property tax to offset part of the costs of water. Residential indoor use is provided in the Tier 1 residential rate and the commercial rate which is uniform will include the offset in the design of the rates. Irrigation use will not receive an offset based on this statutory authority.