



SANTA FE IRRIGATION DISTRICT

Water Rate Study

FINAL Report/March 2016





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March 21, 2016

Ms. Jeanne Deaver
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Santa Fe Irrigation District
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Subject: Water Rate Study Report

Dear Ms. Deaver:

Raftelis Financial Consultants, Inc. (RFC) is pleased to present this water rate study (Study) to the District. The Study involved a comprehensive review of the District's Financial Plan, an assessment of alternative tiered rate structures and allocated costs to customer classes and tiers using Cost of Service principles. We are confident the rates presented meet Proposition 218 requirements and are fair and equitable.

The report includes a brief Executive Summary followed by a detailed discussion regarding study assumptions and an in-depth rate derivation.

It was a pleasure working with you and we wish to express our thanks for your and other staff member support during the study. If you have any questions, please call me at (626) 583-1894

Sincerely,

RAFTELIS FINANCIAL CONSULTANTS, INC.

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

Sudhir D. Pardiwala, PE
Executive Vice President

A blue ink signature of Steve Gagnon, written in a cursive style.

Steve Gagnon, PE
Senior Consultant

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1 EXECUTIVE SUMMARY

1.1 BACKGROUND

In late 2014, the Santa Fe Irrigation District (the District) engaged Raftelis Financial Consultants (RFC) to conduct a Water Rate Study (Study) which included a ten-year Financial Plan. This report presents the Financial Plan and the resulting rates for implementation in February of 2016.

This Executive Summary summarizes the water rates and contains a description of the rate study process, methodology, results and recommendations. The District's last rate adjustment was effective on January 1, 2013. The District wishes to establish fair and equitable rates that:

1. Meet fiscal needs in terms of operational expenses, reserve goals and capital investment to maintain the system;
2. Are fair and equitable and therefore proportionately allocate the costs of providing service in accordance with California Constitution article XIII D, section 6 (commonly referred to as Proposition 218),
3. Result in stable charges over time for customers; and
4. Promote water conservation.

The rate goals mentioned above were provided by the Board of Directors as part of a Pricing Objectives exercise facilitated by RFC.

1.2 PROCESS

District staff, along with RFC, presented two Financial Plan options to the District Board which set forth the total revenue adjustments, capital investment, and debt proposed (Plan #2) during the ten-year study period. The Board of Directors selected the first Financial Plan which consists of 9%, 9% and 9% revenue increases in fiscal years (FY) 2016 through 2018 and does not include any debt financing.

1.3 METHODOLOGY

The water rates were developed using cost of service principles set forth by the American Water Works Association M1 Manual titled *Principles of Water Rates, Fees and Charges* (AWWA M1 Manual). Cost of service principles endeavor to distribute costs to customer classes in accordance with the way each class uses the water system. This methodology is described in detail in Sections 4 and 5. For this Study, the Base-Extra Capacity Method of the AWWA M1 Manual was used to distribute costs to customer classes and tiers. This method separates costs into four main¹ components: (1) base costs, (2) extra capacity costs, (3) customer costs, and (4) direct fire protection costs. Base costs are costs associated with meeting average daily demand needs and include operations and maintenance costs and capital costs designed to meet average load conditions. Extra capacity costs are costs (both operating and capital costs) associated with meeting peak demand. Customer costs are costs

¹ There can be other cost components such as conservation and supply; however, the four mentioned are almost always used in rate studies.

associated with serving customers, such as meter reading, billing and customer service, etc. Direct fire protection costs are related solely to the fire protection function of a water system, such as fire hydrants and related mains and valves.

1.4 RESULTS AND RECOMMENDATIONS

Table 1-1 shows the revenue adjustments that are part of the selected Financial Plan. The District indirectly purchases water from the Metropolitan Water District of Southern California (MWD) through the San Diego County Water Authority (SDCWA). To meet its revenue requirement over the next three years, it is recommended that the District’s rates for its water service fees be adjusted to collect 9% more revenue during each of the three years. Other than in the first year, it is important to note that the revenue adjustments shown do not include projected increases in the fixed and volumetric rates imposed on the District by MWD and SDCWA. The District intends to pass through any increases in these wholesale costs of water to its customers in the subsequent two years.

Table 1-1: Financial Plan

	FY 2016	FY 2017	FY 2018
Revenue Adjustment	9%	9%	9%

Factors Affecting Revenue Adjustments

The following items affect the District’s revenue requirement (i.e., costs) and thus its water rates. The District’s expenses include Operation and Maintenance (O&M) expenses and capital expenses.

- » **O&M expenses:** Overall, the District’s O&M expenses (excluding water costs) are expected to increase approximately 11% from FY 2015 to FY 2016. A major contributor to this increase is additional water conservation staff/costs as well as professional services contracts. The District will purposely make use of reserves from FY 2017 to FY 2020 to minimize customer rate impacts – this is further discussed in Section 3.7.
- » **Water System Capital Investment:** The District will invest over \$47 million over the next five years in water treatment and distribution system infrastructure. The average District capital investment over the next three years is approximately \$9 million per year.
- » **Reduced Water Sales:** State and local public outreach efforts to conserve water are affecting District water use and revenues. The District has seen an 8% decrease in water use from FY 2014 to FY 2015 and projects another 36% decrease for FY 2016. However, rates developed as part of this study (excluding the water shortage rates) assume a 1% decrease in water sales from FY 2015 to FY 2016 to reflect “new normal” water sales. To recover lost revenue the District is also adopting Demand Reduction rates as part of the overall rate structure. This combined 9% decrease in water sales effectively increases water rates since the District’s (mostly fixed) costs are spread over fewer units of water sold.

Proposed Water Rates

Note that in this report, the terms fee and charge are often used interchangeably. The rate structure for the District’s water service fees are composed of two components: (1) a fixed Base Meter Fee, and (2) a variable Commodity Charge. In addition to these two charges, the District also passes through

to its customers fixed and variable charges that SDCWA and MWD impose on the District for costs associated with the wholesale water they deliver to the District. Each of these charges is described below.

SDCWA imposes the following fixed charges on the District: (1) an Infrastructure Access Charge (IAC); (2) a Supply Reliability Charge (SRC); (3) a Customer Service Charge (CSC); and (4) an Emergency Storage Charge (ESC). The IAC is established by SDCWA on the basis of the size of a customer's water meter and is imposed on the District as an additional source of revenue to SDCWA to provide better coverage for SDCWA's projected fixed costs. The SRC is imposed on the District for the purpose of recovering the cost of SDCWA's investments in long-term water supply reliability projects, including a portion of the water supply costs associated with the Carlsbad Desalination Plant and the Imperial Irrigation District's (IID) water transfers. The CSC is imposed on the District as an allocation of SDCWA's customer service related costs. The ESC is imposed on the District as an allocation of SDCWA's costs for its emergency and carryover water storage program to provide sufficient water to the San Diego region in the event of an emergency. The amount of these latter two charges are determined by SDCWA on the basis of a three-year rolling average of the amount of water purchased by the District from SDCWA.

MWD imposes two fixed charges on the District: a Readiness to Serve Charge (RTS Charge) and a Capacity Charge. The RTS Charge is a fixed charge designed to recover a portion of MWD's debt service on bonds issued to finance capital facilities needed to meet existing demands on MWD's system. The Capacity Charge is a fixed fee imposed (on a dollar per cubic-foot-per-second basis) on the District based on the amount of capacity used by the District and is designed to recover the cost of providing peaking capacity within MWD's distribution system. The SDCWA and MWD charges and any increases in these charges imposed on the District by SDCWA or MWD are passed through by the District to its customers. Together, the District's proposed water service fees and charges are structured to recover the District's costs of providing water service to each customer class and indirectly deter waste, encourage water use efficiency, and manage the District's water resources.

Under the District's prior rate structure, a portion of the fixed charges imposed on the District were included in the rates of the Base Meter Fee. The remainder of the fixed charges were collected through the variable commodity charge. The proposed rates included in this Study no longer include the costs of these charges in the Base Meter Fee, but are separate fixed charge components of the District's rates.

Fixed Charge

The District's proposed fixed charge is composed of four components:

Total Fixed Charge

$$\begin{aligned} &= 1) \textit{SFID Base Meter Fee} + 2) \textit{SDCWA IAC}^2 \\ &+ 3) \textit{MWD Capacity Charge \& RTS Charge}^3 + 4) \textit{SDCWA SRC \& ESC \& CSC}^4 \end{aligned}$$

² San Diego County Water Authority Infrastructure Access Charge

³ Metropolitan Water District Capacity Charge and Ready to Serve Charge

⁴ San Diego County Water Authority Supply Reliability Charge, Emergency Storage Charge and Customer Service Charge

The first component is the District’s Base Meter Fee and is based on the meter size serving a property. The Base Meter Fee is calculated to recover a portion of the District’s fixed costs, such as the costs of billing and collections, customer service, meter reading, meter maintenance, and a portion of extra-capacity related costs (i.e., costs associated with meeting system capacity beyond that required for an average rate of use).

A notable change for this rate study is that the District is proposing to itemize and bill the SDCWA and MWD fixed charges which are components 2, 3 and 4 shown in the equation above. The District proposes to authorize automatic increases in the rates for such charges that will be passed-through to its customers in calendar years (CY) 2017 and 2018.

Table 1-2 shows the current bi-monthly Base Meter Fee (column 7) and proposed (column 2) Calendar Year 2016 Base Meter Fee. The total fixed charge (column 6) includes the Base Meter Fee (column 2) and the SDCWA and MWD fixed charges that are imposed on the District and passed through to the District’s customers (columns 3, 4, and 5) by meter size. The total fixed charge (column 6) is derived in Section 6.2.

Table 1-2: Current and Proposed Calendar Year 2016 Bi-Monthly Fixed Charge

Line No.	Meter Size (1)	Proposed SFID			MWD Cap Charge & RTS Charge (4)	SDCWA SRC, ESC, CSC (5)	Total Fixed Charge (6)	Current Base Meter Fee (7)	Difference (\$) (8)	Difference (%) (9)
		Base Meter Fee (2)	SDCWA IAC (3)							
1	5/8"	\$31.09	\$5.52	\$10.04	\$28.60	\$75.25	\$58.47	\$16.78	28.7%	
2	3/4"	\$31.09	\$5.52	\$10.04	\$28.60	\$75.25	\$58.47	\$16.78	28.7%	
3	1"	\$47.34	\$8.83	\$16.73	\$47.67	\$120.57	\$92.93	\$27.64	29.7%	
4	1.5"	\$87.97	\$16.56	\$33.46	\$95.35	\$233.33	\$179.10	\$54.23	30.3%	
5	2"	\$136.72	\$28.70	\$53.53	\$152.56	\$371.51	\$282.49	\$89.02	31.5%	
6	3"	\$250.48	\$52.99	\$100.37	\$286.04	\$689.88	\$523.75	\$166.13	31.7%	
7	4"	\$413.00	\$90.52	\$167.28	\$476.74	\$1,147.53	\$868.39	\$279.14	32.1%	
8	6"	\$819.28	\$165.60	\$334.55	\$953.48	\$2,272.91	\$1,730.02	\$542.89	31.4%	
9	8"	\$1,306.81	\$287.04	\$535.29	\$1,525.57	\$3,654.71	\$2,763.97	\$890.74	32.2%	
10	10"	\$1,875.61	\$430.56	\$769.48	\$2,193.01	\$5,268.65	\$3,970.24	\$1,298.41	32.7%	

The District will authorize passing through increases in the rates for the fixed charges imposed on the District (components 2, 3 and 4 in the equation above) from the SDCWA and MWD (pass-through increases) on a calendar year basis - January 1 of each year. The fixed charges shown in Table 1-2 include calendar year 2016 SDCWA and MWD pass-throughs. Note that the SDCWA sets the IAC yearly and this component of the District total Fixed Charge would adjust accordingly.

Table 1-3 shows the total fixed charge in which column 2 includes the 2016 calendar year (CY) wholesale pass-through increases since the SDCWA and MWD fixed charges for CY 2016 are known. The rates for the SCDWA and MWD fixed charges for CY 2017 and 2018 are unknown at this time,⁵ therefore columns 3 and 4 in Table 1-3 do not include wholesale pass-through increases – the charges

⁵ The SDCWA has published its rates for CY 2016 only.

shown reflect the increase in the District’s Base Meter Fee only. The District is proposing to authorize automatic pass-through increases in subsequent calendar years for a period of up to two years.

Table 1-3: Three Year Proposed Bi-Monthly Fixed Charge

Meter Size (Inches) (1)	February 1, 2016 Total Fixed Charge (2)	January 1, 2017 Fixed Charge ¹ (3)	January 1, 2018 Fixed Charge ¹ (4)
5/8"	\$75.25	\$78.05	\$81.10
3/4"	\$75.25	\$78.05	\$81.10
1"	\$120.57	\$124.84	\$129.48
1.5"	\$233.33	\$241.25	\$249.88
2"	\$371.51	\$383.82	\$397.23
3"	\$689.88	\$712.43	\$737.00
4"	\$1,147.53	\$1,184.70	\$1,225.22
6"	\$2,272.91	\$2,346.65	\$2,427.02
8"	\$3,654.71	\$3,772.33	\$3,900.53
10"	\$5,268.65	\$5,437.46	\$5,621.46

¹Does not include MWD and SDCWA future adjustments

Recycled Fixed Charge

Table 1-4 shows the proposed recycled water Base Meter Fee by meter size and the existing recycled Base Meter Fee. Based on projected revenue requirements, we recommend no changes to the commodity rate and a slight decrease in monthly base meter fee as shown in Table 1-4.

Table 1-4: Proposed (Monthly) Recycled Base Meter Fees

Line No.	Meter Size (1)	Fixed Monthly Charge (2)	Customer (3)	Proposed Monthly Base Meter Fee (4)	Current Base Meter Fee (5)	Difference (6)
1	5/8"	\$20.06	\$6.71	\$26.77	\$27.58	-\$0.81
2	3/4"	\$20.06	\$6.71	\$26.77	\$27.58	-\$0.81
3	1"	\$33.43	\$6.71	\$40.14	\$43.84	-\$3.70
4	1.5"	\$66.86	\$6.71	\$73.57	\$84.48	-\$10.91
5	2"	\$106.97	\$6.71	\$113.69	\$133.25	-\$19.56
6	3"	\$200.57	\$6.71	\$207.28	\$247.05	-\$39.77
7	4"	\$334.28	\$6.71	\$341.00	\$409.62	-\$68.62
8	6"	\$668.56	\$6.71	\$675.28	\$816.05	-\$140.77
9	8"	\$1,069.70	\$6.71	\$1,076.42	\$1,303.76	-\$227.34
10	10"	\$1,537.70	\$6.71	\$1,544.41	\$1,872.76	-\$328.35

Table 1-5 shows the proposed three-year recycled Base Meter Fee. The charges for CY 2017 and 2018 are escalated at 3% which correlates with long-term inflation.

Table 1-5: Proposed Three-Year Recycled Base Meter Fees

Meter Size	February 1, 2016	January 1, 2017	January 1, 2018
5/8"	\$26.77	\$27.57	\$28.40
3/4"	\$26.77	\$27.57	\$28.40
1"	\$40.14	\$41.35	\$42.59
1.5"	\$73.57	\$75.78	\$78.05
2"	\$113.69	\$117.10	\$120.61
3"	\$207.28	\$213.50	\$219.91
4"	\$341.00	\$351.23	\$361.76
6"	\$675.28	\$695.54	\$716.40
8"	\$1,076.42	\$1,108.71	\$1,141.97
10"	\$1,544.41	\$1,590.75	\$1,638.47

Private Fire Line (Fixed) Charges

Table 1-6 shows the three-year private Fire Line bi-monthly charges. There are no pass-through increases associated with this charge. The rates for the Fire Line Charges are derived in Section 6.3.

Table 1-6: Proposed Three Year Private Fire Line Charges

Fire Connection Size (inches)	Existing Charge (1)	February 1,	January 1,	January 1,
		2016 (2)	2017 (3)	2018 (4)
5/8"	\$14.21	\$9.26	\$9.53	\$9.82
3/4"	\$14.21	\$9.26	\$9.53	\$9.82
1"	\$19.15	\$12.13	\$12.49	\$12.87
1.5"	\$31.51	\$22.44	\$23.11	\$23.81
2"	\$46.97	\$40.23	\$41.43	\$42.68

Potable Commodity Rate

Tables 1-7 and 1-8 show the current and proposed commodity rates by customer class respectively. The rates are designed to recover the costs associated with serving each class and tier as discussed in Sections 5 and 6.

At the Board’s request we assessed the feasibility of creating a separate commodity rate for Commercial Agriculture customers. We then analyzed the water use of current customers meeting the District’s Commercial Agriculture criteria. This customer class exhibits very similar usage patterns as the irrigation customer class, and therefore has the same commodity rate as shown in Table 1-7.

Table 1-7: Current Commodity Rates (\$/HCF)

Class/Tier	Bi-Monthly Breakpoint (HCF) ¹	Commodity Rate (\$ / HCF)
Single Family		
Tier 1	0 - 15	\$2.70
Tier 2	16 - 300	\$3.84
Tier 3	>300	\$4.39
Multifamily Residence		\$3.84
Non-Residential		\$3.71
Irrigation / Commercial Agriculture		\$4.04
Temporary Construction Use		\$4.39
Fire Line Use		\$4.39
Recycled		\$3.19

¹One Hundred Cubic Feet

An important change for this rate study is that the District will authorize wholesale pass-through increases on a calendar year basis. Table 1-8 shows the proposed District’s Commodity rates – column 3 includes the CY 2016 SDCWA pass-through. Columns 4 and 5 show the District’s Commodity rate *without* the wholesale pass-through increases since SDCWA’s rates for those years are not published at this time. The commodity rates shown in columns 4 and 5 reflect the increase in the District’s costs (only). In subsequent years the District will calculate the pass-through increases to be implemented when SDCWA publishes its rates. The pass-through increases for CY 2016 are fully derived and discussed in Section 6.

Table 1-8: Proposed Commodity Rates (\$ / HCF)

Commodity Rate (\$ / HCF) (1)	Bi-Monthly Breakpoint (HCF) (2)	February 1, 2016 Total Commodity Rate (3)	January 1, 2017 Commodity Rate ¹ (4)	January 1, 2018 Commodity Rate ¹ (5)
Single Family				
Tier 1	0 - 15	\$2.12	\$2.30	\$2.54
Tier 2	16 - 37	\$2.55	\$2.78	\$3.06
Tier 3	38 - 165	\$4.57	\$4.98	\$5.46
Tier 4	>165	\$5.34	\$5.82	\$6.38
Multi-family Residence		\$3.89	\$4.23	\$4.65
Irrigation / Commercial Agriculture		\$4.47	\$4.87	\$5.34
Non-Residential		\$3.90	\$4.25	\$4.66
Temporary Construction		\$4.65	\$5.06	\$5.55
Fire Line		\$4.65	\$5.06	\$5.55
Recycled Water		\$3.19	TBD	TBD

¹Does not include wholesaler pass-throughs

Recycled Commodity Rate

The District purchases recycled water from the San Elijo Joint Powers Authority. Note that the District plans to authorize passing through any increases in recycled water costs from the San Elijo Joint Powers Authority should they occur. If not, the recycled water rate would remain unchanged. The recycled Commodity Rate remains at \$3.19 / HCF.

Demand Reduction Rates

As a result of state mandated water use cutbacks of 36 percent compared to 2013 usage, District customers have reduced usage and the District is experiencing lower water sales, and therefore lower water revenue. To help mitigate the loss in revenue from reduced sales, the District will adopt Demand Reduction Rates to use as a tool during periods of reduced customer demand.

The District is subject to penalties from the State should it not meet the mandated reductions. The District will implement Demand Reduction Rates as necessary with formal Board adoption, depending on the level of cutbacks to ensure that it recovers revenues to meet its expenses.

As demand drops, the District’s water purchase costs decrease along with revenue. However, the District’s revenue decreases at a greater rate than its costs do. The majority of the District’s short-term costs are fixed (e.g., salaries, benefits, debt service, etc.) and therefore water Demand Reduction Rates are a tool that can be used to recover lost revenue needed to help cover its fixed costs.

Under the proposed Demand Reduction Rates, customers who cut back their water use by the current cutback goal of 36%, would experience lower water bills than their bills under normal use. Conversely, those that do not cut back consumption will realize higher bills.

Table 1-9 shows the proposed Demand Reduction Rates assuming an overall 36% cutback by District customers. Depending on current customer use reductions, the District Board could implement lower Demand Reduction Rates. Demand Reduction Rates are derived and discussed in Section 8.

Table 1-9: Demand Reduction Rates assuming a 36% Water Use Reduction

Line No.	Class (1)	Demand Reduction Rate (\$ / HCF) (2)	\$ Increase (3)
	SFR		
1	Tier 1	\$3.06	\$0.95
2	Tier 2	\$3.70	\$1.14
3	Tier 3	\$6.62	\$2.05
4	Tier 4	\$7.74	\$2.39
5	Multi-family Residence	\$5.63	\$1.74
6	Irrigation / Commercial Agriculture	\$6.47	\$2.00
7	Non-Residential	\$5.65	\$1.75
8	Temporary Construction	\$6.73	\$2.08
9	Fire Line	\$6.73	\$2.08

2 WATER SYSTEM

This section briefly describes the water system and the District-provided customer account and water use data for FY 2013 – FY 2015.

2.1 WATER SOURCES AND SYSTEM FACILITIES

The District currently serves a population of approximately 20,000 people, with approximately 6,500 potable water service connections. The District purchases the majority of its water from the SDCWA and also has rights to local water stored in Lake Hodges. Historically, the District has used approximately 30% local water and 70% imported water for potable deliveries; however, the drought has limited the amount of water available from Lake Hodges in recent years. The District's current water supply scenario is driven by the limited water resources, regional drought conditions, rapidly increasing costs of imported water, and the volatility of local water supply. The District also sells approximately 500 to 550 acre feet (AF) of recycled water it purchases from the San Elijo Joint Powers Authority (SEJPA).

The District operates and maintains 150 miles of pipelines, one storage reservoir, the R. E. Badger Filtration Plant (40 MGD), two pump stations, the 850 AF San Dieguito Reservoir, eight miles of transmission mains, and a 1.4 megawatt hydroelectric power plant.

On January 17, 2014, Governor Jerry Brown issued a drought state of emergency declaration in response to record-low water levels in California's rivers and reservoirs as well as an abnormally low snowpack. On April 1, 2015, Governor Brown issued an Executive Order calling for statewide mandatory water reductions of up to 25%. The drought has impacted the availability and cost of imported water the District purchases from SDCWA and the availability of local water supplies. Additionally, on May 5, 2015, the State Water Resources Control Board (SWRCB) approved regulations, based on Governor Brown's Executive Order, mandating the District to reduce its water consumption by 36% percent from June 2015 through February 2016 as compared to the same months in 2013. On February 2, 2016, the SWRCB extended this call for conservation through October 2016.

2.2 NUMBER OF ACCOUNTS

Table 2-1 shows the projected number of water accounts, including Fire Line and recycled accounts, by meter size for FY 2016. RFC projected the number of meters using FY 2014 meter count data provided by the District. The number of accounts are used to forecast the amount of fixed revenue the District will receive from fixed meter charges (Base Meter Charge and wholesale water charges passed through to District customers).

Table 2-1: Projected Accounts by Meter Size (FY 2016)

Meter Size	Single Family Residence	Multi-family Residence	Irrigation / Commercial Agriculture	Non-Residential	Fireline	Recycled	Total
5/8"	12	1	-	2	-	-	15
3/4"	3,201	154	35	159	103	-	3,652
1"	1,537	82	29	111	565	15	2,339
1.5"	620	134	31	100	104	-	989
2"	62	91	31	54	63	28	329
3"	1	2	-	2	-	3	8
4"	1	-	2	2	-	2	7
6"	-	-	2	-	-	-	2
8"	-	-	-	-	-	-	-
10"	-	-	-	-	-	1	1
Total	5,434	464	130	430	835	49	7,342

2.3 ACCOUNT AND WATER USE GROWTH ASSUMPTIONS

The revenue calculated for each of the fiscal years in the Financial Plan is a function of the number of accounts, account growth, water use trends, and existing rates. As shown in Table 2-2, this study assumes no account growth. Like most water purveyors, the District has realized reduced water use due to conservation – more than what is shown in Table 2-2. However, the District is setting rates using a “new normal” projected long- term water use and implementing Demand Reduction Rates to cover the shortfall in revenue during water shortages. Table 2-2 shows the water use growth/decline in comparison to FY 2015. As shown the financial plan assumes a 1% reduction in water (the Water Demand Reduction Factor) use from FY 2015 to FY 2016 – this is on top of a 7.5% decrease from FY 2014 to FY 2015. Water use in FY 2017 is expected to increase slightly as shown in Table 2-2.

Table 2-2: Account Growth and Water Use Assumptions

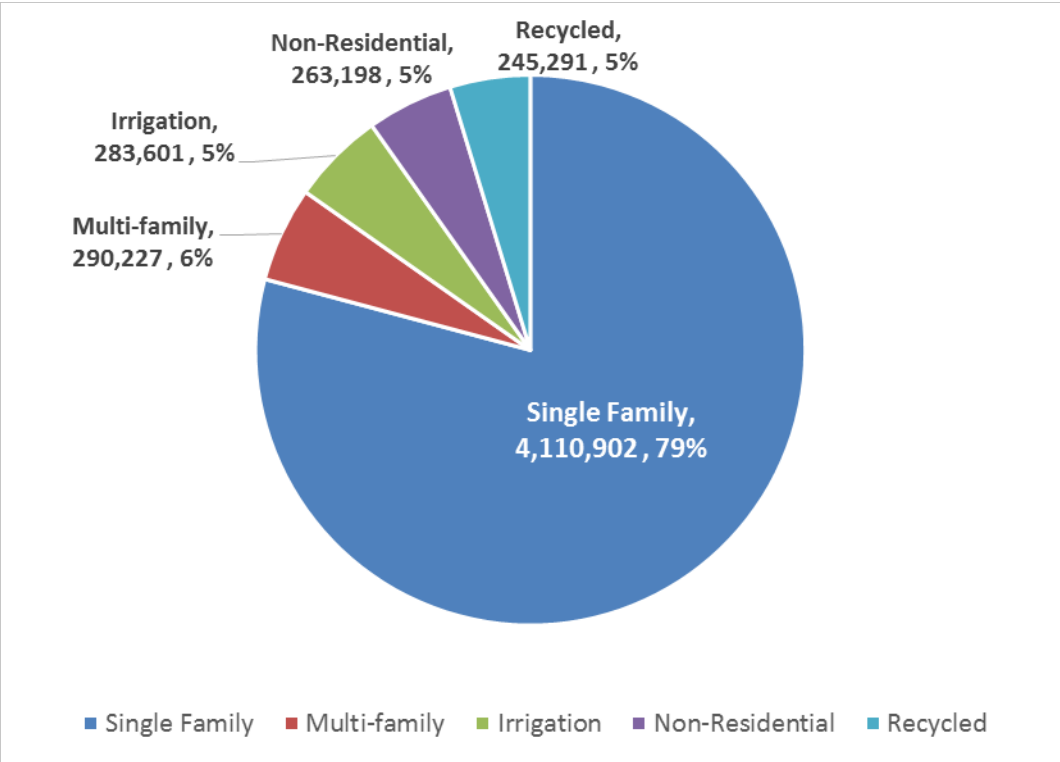
	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Account Growth	0.00%	0.00%	0.00%	0.00%	0.00%
Water Demand Reduction Factor	-1.00%	0.75%	0.75%	0.75%	0.00%

Note: Water use from FY 2014 to FY 2015 decreased 7.5%

2.4 WATER USE

Figure 2-1 shows FY 2014 water use by customer class. The first number shown in the pie chart is the water use in hundred cubic feet (HCF) followed by the percentage of total water used by the class. The total water use for FY 2014 was 11,920 AF (or 5.19 million HCF) including recycled water.

Figure 2-1: Water Use in HCF by Customer Class - FY 2014



3 FINANCIAL PLAN

This section describes the assumptions used in projecting operating and capital expenses as well as reserve coverage requirements that determine the overall revenue adjustments required to ensure the financial stability of the District. Revenue adjustments represent the average increase in rates for the District as a whole; rate changes for individual classes will depend on the cost of service results – since a cost of service analysis allocates costs to each user class.

3.1 INFLATIONARY AND OTHER ASSUMPTIONS

To ensure that future costs are reasonably projected, we make informed assumptions about inflationary factors, water costs and use. Table 3-1 shows the water sales, purchase and inflationary assumptions incorporated in the Financial Plan. Note the slightly decreased water sales in FY 2016 reflecting the drought. The District is setting rates based on the level of sales shown and also has the option to enact Demand Reduction Rates since true water sales for FY 2016 will likely be lower than those shown in Table 3-1. The inflationary factors shown in Table 3-1 reflect long-term averages for general and capital (construction) inflation and energy prices. The salary and benefit inflationary factors were provided by the District and reflect employee benefit obligations.

Table 3-1: Water Purchase and Inflationary Assumptions

	FY 2015 ¹	FY 2016 ²	FY 2017	FY 2018	FY 2019	FY 2020 ³
Water Sales (Acre Feet)						
Potable	10,506	10,401	10,479	10,558	10,637	10,637
Recycled	522	450	500	550	550	550
Water Purchases (Acre Feet)						
Imported Treated	474	300	302	305	307	307
Imported Raw	9,391	7,001	7,078	7,156	7,234	7,234
Local Water (Lake Hodges)	811	3,268	3,268	3,268	3,268	3,268
Escalatory Assumptions						
General	NA	Budget	3.0%	3.0%	3.0%	3.0%
Salary	NA	Budget	3.0%	3.0%	3.0%	3.0%
Benefits	NA	Budget	4.0%	4.0%	4.0%	4.0%
Benefits - Medical	NA	Budget	7.5%	7.5%	7.5%	7.5%
Benefits - Dental	NA	Budget	5.0%	5.0%	5.0%	5.0%
Benefits - CalPers	NA	Budget	12.0%	8.0%	8.0%	8.0%
Chemicals	NA	Budget	4.0%	4.0%	4.0%	4.0%
Utilities	NA	Budget	4.0%	4.0%	4.0%	4.0%
Capital	NA	Budget	3.5%	3.5%	3.5%	3.5%

¹FY 2015 shown for comparison purposes

²FY 2016 - Budgeted values were used, therefore no escalatory values needed.

³Water purchase and escalatory factors remain the same beyond FY 2020

3.2 FINANCIAL PLAN

The assumptions shown in Table 3-1 were incorporated into the 10-year Financial Plan. To develop the Financial Plan, RFC projected annual expenses and revenues and, capital expenditures, modeled reserve balances and transfers between funds, capital expenditures and calculated debt service coverage ratios to estimate the amount of additional rate revenue needed per year. This section of the report provides a discussion of O&M expenses, the Capital Improvement Plan (CIP), reserve funding, projected revenue under existing rates, and the revenue adjustments needed to ensure the fiscal sustainability and solvency of the District.

3.3 WATER SYSTEM EXPENSES

The District's expenses include O&M expenses, capital expenses, and debt service payments. Sections 3.4 through 3.6 discuss the details of each of these expenses.

3.4 O&M EXPENSES

The District's O&M budget is shown by fiscal year in Table 3-2. Fiscal Year 2016 is the year for which rates were calculated (this is known as the test year) and FY 2015 is shown for comparison. The Financial Plan study period is from FY 2016 to 2025; however, data for the next 5 years are shown for report readability. The full 10-year financial plan is shown in Appendix A. The O&M budget incorporates the inflationary factors discussed in Section 3.1. Fiscal Year 2015 water purchase costs are notably higher compared to FY 2016 because the District is anticipating lower water sales, and consequently lower water purchases, in FY 2016 (shown in Table 3-1).

Table 3-2: Projected O&M Expenses

Line No.	Expense (1)	FY 2015 (2)	FY 2016 (3)	FY 2017 (4)	FY 2018 (5)	FY 2019 (6)	FY 2020 (7)
1	Personnel	\$6,122,982	\$6,393,268	\$6,695,387	\$6,981,226	\$7,282,131	\$7,599,056
2	Administration	\$834,031	\$1,182,899	\$1,219,718	\$1,257,740	\$1,297,006	\$1,337,562
3	Engineering	\$85,000	\$170,271	\$175,379	\$180,641	\$186,060	\$191,642
4	Operations	\$1,036,940	\$1,144,700	\$1,179,041	\$1,214,412	\$1,250,845	\$1,288,370
5	Plant	\$2,803,346	\$3,154,295	\$3,259,100	\$3,367,456	\$3,479,486	\$3,595,317
6	Water Costs						
7	Variable Costs	\$8,695,505	\$6,456,453	\$6,746,714	\$7,160,396	\$7,599,180	\$7,979,139
8	Fixed Costs						
9	CWA Supply Reliability Charge	\$0	\$194,346	\$398,409	\$418,330	\$439,246	\$461,209
10	CWA Infrastructure Access Charge	\$340,134	\$345,228	\$362,596	\$389,070	\$408,523	\$428,949
11	CWA Customer Service Charge	\$304,182	\$358,590	\$419,246	\$440,208	\$462,218	\$485,329
12	CWA Emergency Storage Charge	\$794,976	\$941,076	\$1,102,486	\$1,157,610	\$1,215,491	\$1,276,265
13	MWD Capacity Charge	\$152,508	\$202,740	\$238,657	\$250,590	\$263,119	\$276,275
14	MWD Readiness-to-Serve Charge	\$469,128	\$424,464	\$445,687	\$467,972	\$491,370	\$515,939
15	Local Water Cost	\$86,400	\$100,000	\$102,000	\$104,040	\$106,121	\$108,243
16	Total O&M Expenses	\$21,725,131	\$21,068,329	\$22,344,420	\$23,389,688	\$24,480,795	\$25,543,294
17	Total O&M Expenses less Fixed Water Costs	\$19,664,203	\$18,601,885	\$19,377,339	\$20,265,909	\$21,200,828	\$22,099,329

3.5 CAPITAL IMPROVEMENT PLAN

Table 3-3 shows the District’s five-year CIP summary. The District is funding capital investment through rate revenue (also known as PAY-GO funding). Line 6 shows the contribution from San Dieguito Water District towards capital improvements at the R.E. Badger Filtration Plant (Joint Facilities). Line 7 shows the District’s total CIP responsibility.

Table 3-3: Detailed Capital Improvement Plan

Line No.	Capital Component (1)	FY 2016 (2)	FY 2017 (3)	FY 2018 (4)	FY 2019 (5)	FY 2020 (6)
1	Distribution System	\$3,170,000	\$5,097,375	\$4,793,732	\$5,571,307	\$6,235,114
2	Other District Assets	\$625,000	\$258,750	\$80,193	\$554,359	\$0
3	Joint Facilities	\$7,297,874	\$5,443,583	\$6,432,171	\$5,393,912	\$6,535,143
4	Capital Acquisitions	\$557,000	\$576,495	\$596,672	\$617,556	\$639,170
5	Total CIP	\$11,649,874	\$11,376,202	\$11,902,768	\$12,137,135	\$13,409,428
6	SDWD Contribution	\$3,408,061	\$2,363,717	\$1,927,899	\$2,402,470	\$2,840,960
7	SFID CIP	\$8,241,813	\$9,012,485	\$9,974,868	\$9,734,665	\$10,568,468

3.6 EXISTING AND PROPOSED DEBT SERVICE

Table 3-4 shows the District’s existing debt service payments. The Financial Plan presented in this section assumes no additional debt. The debt service on the 2007 Water Revenue Bonds ends in FY 2020 and therefore would remove the associated debt service coverage requirement of 115%.

Table 3-4: Existing 2007 Water Revenue Bonds Debt Service

Line No.	Debt Service Component (1)	FY 2016 (2)	FY 2017 (3)	FY 2018 (4)	FY 2019 (5)	FY 2020 (6)
1	Principal	\$1,135,000	\$1,175,000	\$1,220,000	\$1,270,000	\$1,325,000
2	Interest	\$216,150	\$172,750	\$126,575	\$76,875	\$24,975
3	Total Debt Service	\$1,351,150	\$1,347,750	\$1,346,575	\$1,346,875	\$1,349,975

3.7 PROPOSED FINANCIAL PLAN AND REVENUE ADJUSTMENTS

The proposed revenue adjustments help ensure adequate revenue to fund operating expenses, capital expenditures, and compliance with bond covenants. Financial Plan modelling assumes the revenue adjustment occurs on February 1, 2016. The proposed revenue adjustments would enable the District to execute the CIP shown in Table 3-3 and exceed its debt service coverage requirement of 115% over the ten year study period.

Table 3-5 shows the Financial Plan selected by the Board of Directors. At this time the District has elected to proceed with three annual revenue adjustments, as shown in Table 3-5. The rates presented in Section 6 are based on this Financial Plan.

Table 3-5: Proposed Rate Adjustments

	FY 2016	FY 2017	FY 2018
Revenue Adjustment	9%	9%	9%

Table 3-6 shows the cash flow detail over the next five years assuming the revenue adjustments shown in Table 3-5. Line number 18 shows the additional revenue from the revenue adjustments. The Financial Plan assumes 8% and 3% revenue adjustments in FY 2019 and FY 2020; however, the District will reevaluate its revenue needs for those years in FY 2018. Line 58 shows the District meets debt service coverage requirement of 115% during the study period.

Table 3-6: Five-Year Water Operating Cash Flow

Line No.		2016 Projected (1)	2017 Projected (2)	2018 Projected (3)	2019 Projected (4)	2020 Projected (5)
1	Revenue - Potable (Bi-Monthly)					
2	Revenue from SFID Rates	\$21,117,280	\$21,247,465	\$21,378,628	\$21,510,774	\$21,510,774
8	Additional Revenue:					
9	Fiscal					
10	Year					
13	FY 2016	\$791,898	\$1,912,272	\$1,924,076	\$1,935,970	\$1,935,970
14	FY 2017		\$1,042,188	\$2,097,243	\$2,110,207	\$2,110,207
15	FY 2018			\$1,142,998	\$2,300,126	\$2,300,126
16	FY 2019				\$1,114,283	\$2,228,566
17	FY 2020					\$451,285
18	Total Additional Revenue	\$791,898	\$2,954,460	\$5,164,318	\$7,460,585	\$9,026,153
19						
20	Other Revenue					
21	Pass-through Revenue					
22	SDCWA IAC Revenue	\$0	\$17,368	\$43,842	\$63,295	\$83,721
23	MWD RTS and Capacity Charge	\$0	\$57,140	\$91,357	\$127,285	\$165,010
24	SDCWA SRC, ESC and CSC	\$0	\$426,129	\$522,136	\$622,943	\$728,791
26	Passthrough SDCWA Volumetric	\$0	\$220,447	\$563,791	\$931,711	\$1,311,670
27	SDWD Operating Contribution	\$2,080,907	\$2,172,006	\$2,248,361	\$2,328,004	\$2,411,302
28	Other Non-Operating Revenue	\$333,000	\$332,495	\$331,994	\$331,497	\$331,497
29	Interest Income	\$205,500	\$205,500	\$205,500	\$205,500	\$205,500
30	Total Revenue	\$24,528,584	\$27,633,011	\$30,549,926	\$33,581,594	\$35,774,417
32	O&M Expenses					
33	Personnel	\$6,393,268	\$6,695,387	\$6,981,226	\$7,282,131	\$7,599,056
34	Admin	\$1,182,899	\$1,219,718	\$1,257,740	\$1,297,006	\$1,337,562
35	Engineering	\$170,271	\$175,379	\$180,641	\$186,060	\$191,642
36	Operations	\$1,144,700	\$1,179,041	\$1,214,412	\$1,250,845	\$1,288,370
37	Plant	\$3,154,295	\$3,259,100	\$3,367,456	\$3,479,486	\$3,595,317
39	Water Costs					
40	Variable Costs	\$6,456,453	\$6,746,714	\$7,160,396	\$7,599,180	\$7,979,139
42	Fixed Costs					
43	SDCWA Supply Reliability Charge	\$194,346	\$398,409	\$418,330	\$439,246	\$461,209
44	SDCWA Infrastructure Access Charge	\$345,228	\$362,596	\$389,070	\$408,523	\$428,949
45	SDCWA Customer Service Charge	\$358,590	\$419,246	\$440,208	\$462,218	\$485,329
46	SDCWA Emergency Storage Charge	\$941,076	\$1,102,486	\$1,157,610	\$1,215,491	\$1,276,265
47	MWD Capacity Charge	\$202,740	\$238,657	\$250,590	\$263,119	\$276,275
48	MWD Readiness-to-Serve Charge	\$424,464	\$445,687	\$467,972	\$491,370	\$515,939
49	Subtotal Fixed Costs	\$2,466,444	\$2,967,081	\$3,123,779	\$3,279,968	\$3,443,966
50	Local Water	\$100,000	\$102,000	\$104,040	\$106,121	\$108,243
52	Subtotal Water Costs	\$9,022,897	\$9,815,795	\$10,388,214	\$10,985,268	\$11,531,348
53	Total O&M Expenses	\$21,068,329	\$22,344,420	\$23,389,688	\$24,480,795	\$25,543,294
54	Existing Debt	\$1,351,150	\$1,347,750	\$1,346,575	\$1,346,875	\$1,349,975
55	Total Expenses	\$22,419,479	\$23,692,170	\$24,736,263	\$25,827,670	\$26,893,269
56						
57	Net Cash Flow	\$2,109,105	\$3,940,841	\$5,813,663	\$7,753,924	\$8,881,148
58	Coverage	256%	392%	532%	676%	758%
59	Target Coverage	115%	115%	115%	115%	115%

Figures 3-1 through 3-5 display the FY 2016 through FY 2025 Financial Plan in graphical format. Though we show the ten year Financial Plan, the District will reevaluate revenue adjustments and the Financial Plan in FY 2018. At this time, the District is setting rates for FY 2016 through FY 2018. Figure 3-1 shows the modeled revenue adjustments (blue bars). The pass-throughs increases due to increased wholesale water costs from the SDCWA and the MWD would add approximately 2.5% in FY 2016. Revenue adjustments for FY 2019 and beyond will be evaluated in the future. Figure 3-1 also shows the calculated and minimum debt coverage requirements as shown by the green and red lines, respectively.

Figure 3-1: Proposed Revenue Adjustments

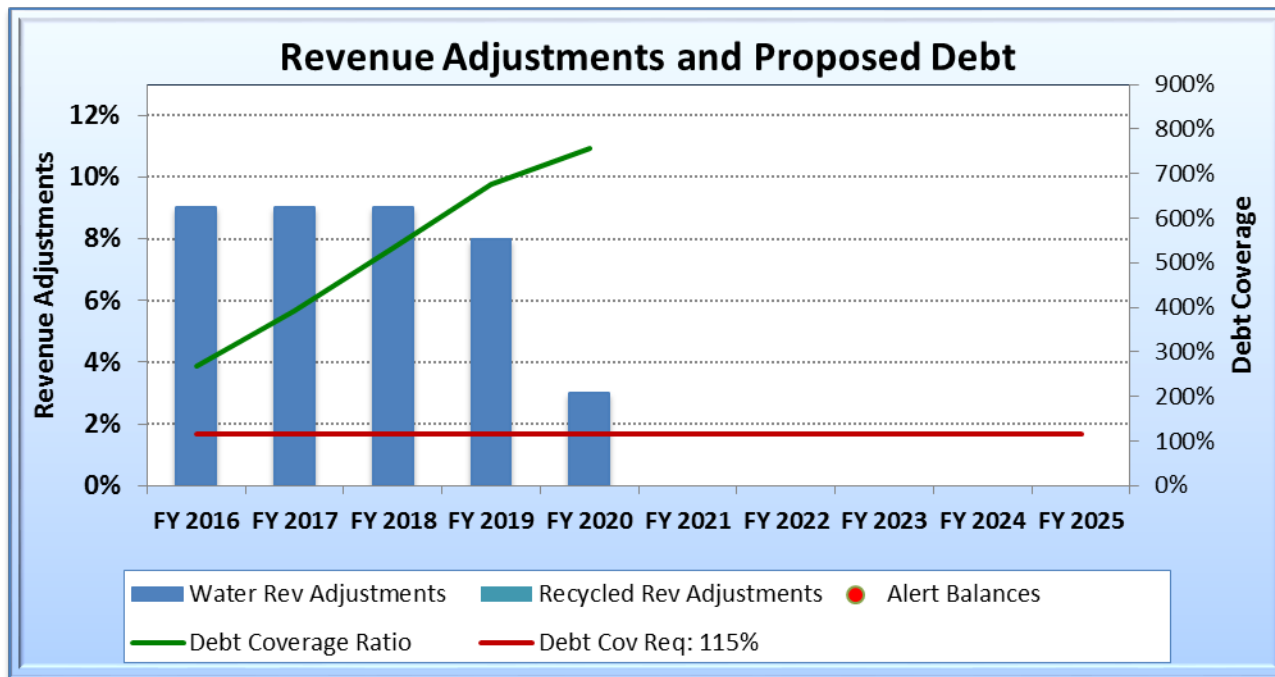


Figure 3-2 graphically illustrates the operating Financial Plan – i.e., it compares existing and proposed revenues with projected expenses. The expenses include O&M, purchased water, debt service, pass-through increases and reserve funding, and are shown by the stacked bars. Total revenues at existing and proposed rates are shown by the horizontal red and green lines, respectively. As shown on the graph, current revenue from existing rates, in red, does not meet future total expenses and, therefore the need for revenue adjustments.

Figure 3-2: Proposed Operating Financial Plan

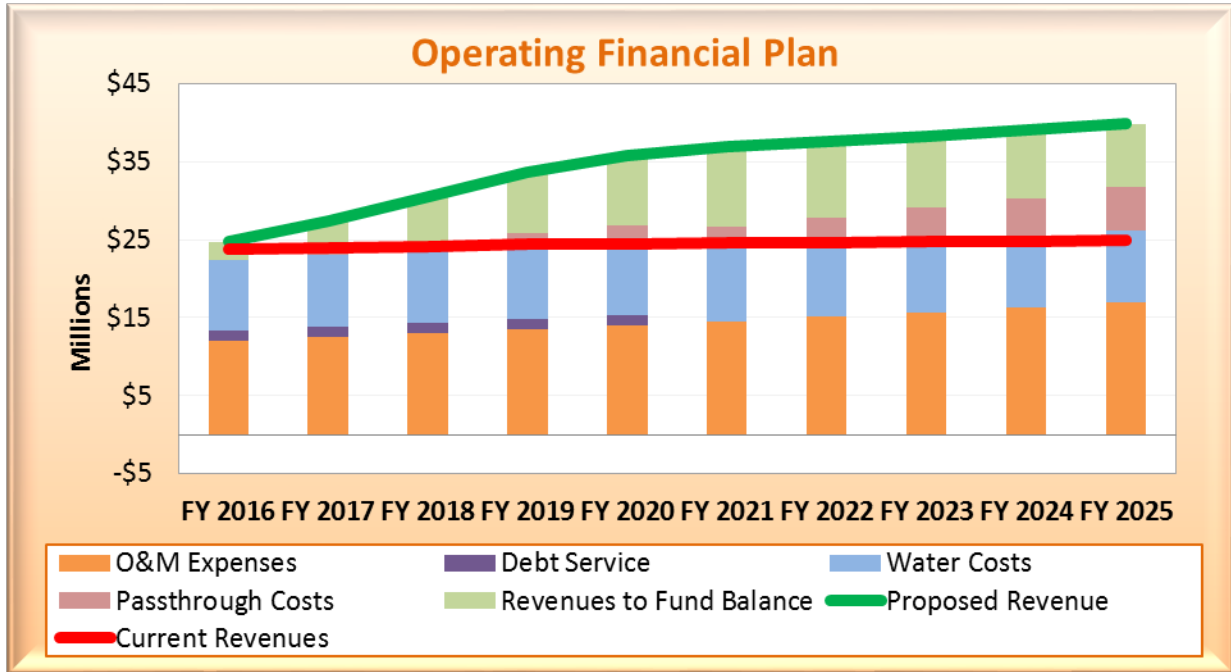


Figure 3-3 summarizes the projected CIP and its funding sources – which for this study is solely rate revenue. The graph shows the portion of CIP that is funded by San Dieguito Water District in blue for its share of the Badger Filtration Plant capital investment.

Figure 3-3: Projected CIP and Funding Sources

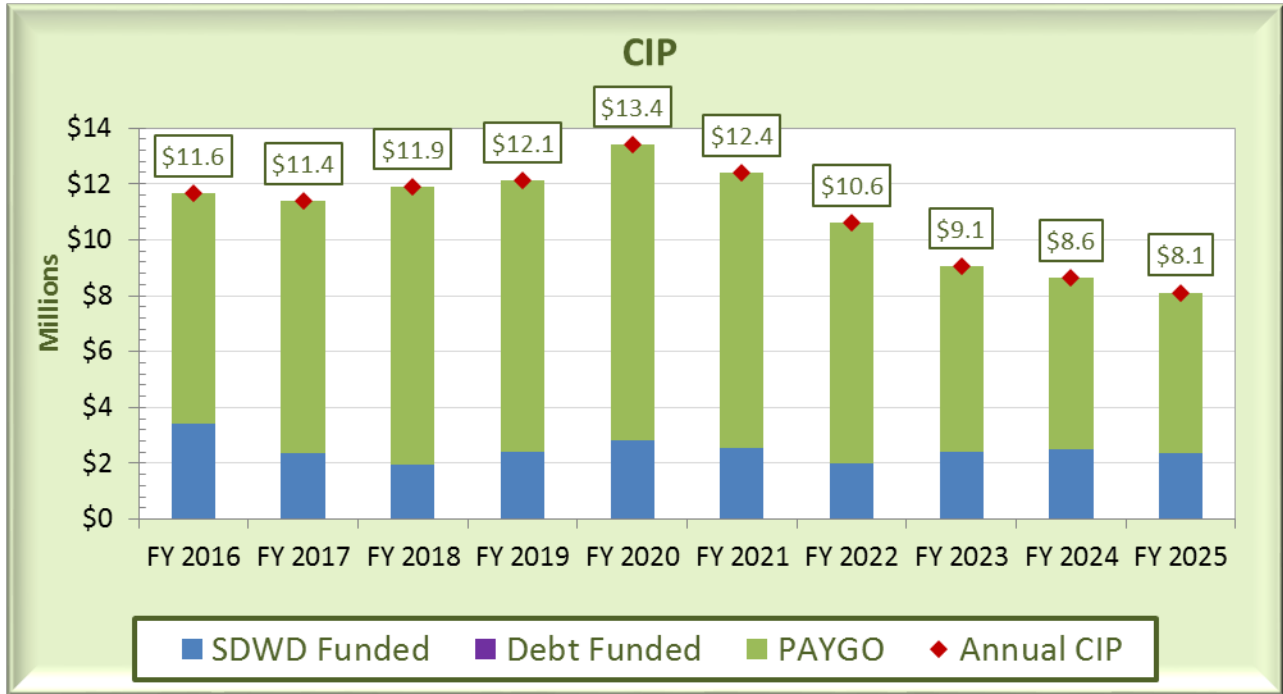


Figure 3-4 displays the ending balance of all the District’s reserves combined. The red horizontal line is the total reserve fund target balance which consists of the operating reserve, capital reserve and rate stabilization reserve funds. The minimum target for the operating reserve fund is 60 days of current FY operating expenses. The minimum Board approved capital reserve fund target balance is the sum of the following:

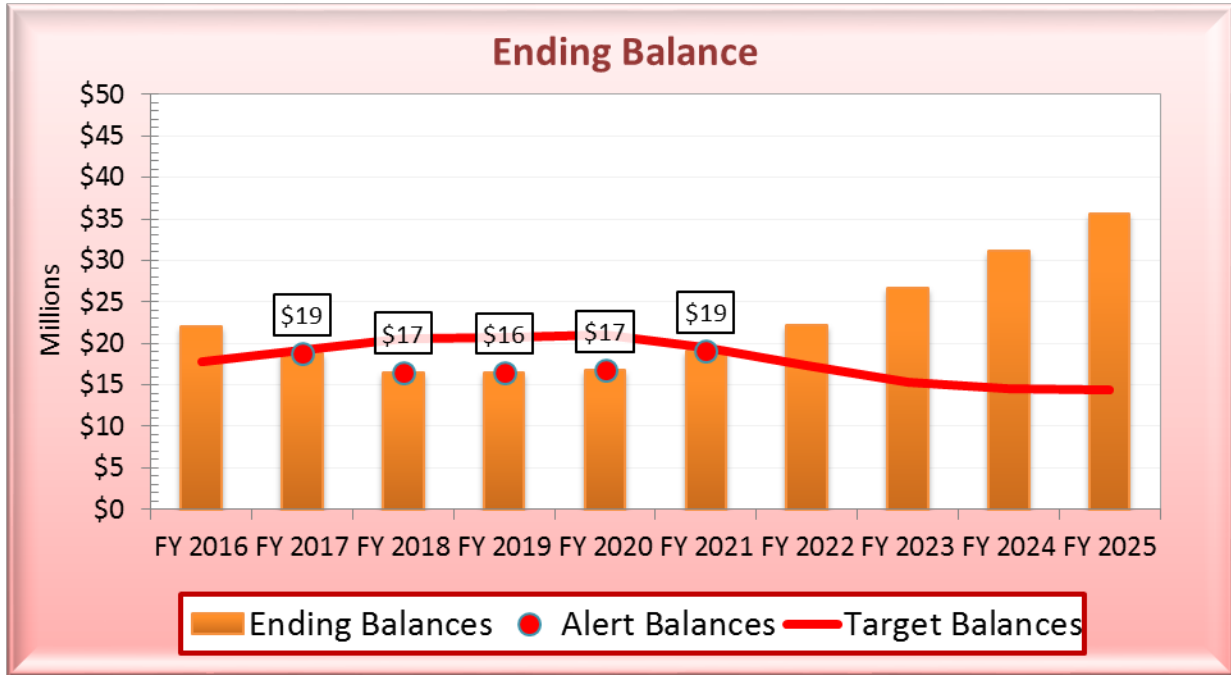
- 1) 100% of the current year PAY-GO (Rate funded) capital,
- 2) 50% of next years’ PAY-GO capital,
- 3) 25% of the third years’ PAY-GO capital.

The target for the capital reserve fund decreases in the out years since the CIP decreases. The minimum target for the rate stabilization reserve is the sum of the following:

- 1) 8% of current FY property tax,
- 2) 10% of current FY water sales,
- 3) 5% of current FY water purchase costs.

As shown, the total reserves dip below the minimum target in FYs 2017 through FY 2021. The District desires to minimize customer rate impacts by slowly reaching target reserve fund levels over a 5-year period.

Figure 3-4: Projected Total Reserve Fund Ending Balances



Appendix A – The Ten Year Financial Plan shows the cash flow detail and the flow of funds for all the District’s reserves.

4 LEGAL FRAMEWORK AND RATE SETTING METHODOLOGY

4.1 LEGAL FRAMEWORK

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

California Constitution - Article XIII D, Section 6 (Proposition 218)

Proposition 218 was enacted in 1996. It amended the California Constitution by adding article XIII C and XIII D. Article XIII D, section 6 established procedural requirements for the imposition of property-related fees and charges and substantive provisions governing the amount that may be imposed and the use of such fees charged by local agencies. The substantive requirements for such fees and charges are as follows:

1. A property-related charge (such as water service fees and charges) imposed by a public agency on a parcel shall not exceed the costs required to provide the property-related service.
2. Revenues derived by the charge shall not be used for any other purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of the property.
5. No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.

RFC followed industry-standard rate setting methodologies set forth by the *AWWA M1 Manual* to ensure this study meets Proposition 218 requirements and creates rates that do not exceed the cost of providing water service and are proportionate to the cost of providing water service.

California Constitution - Article X, Section 2

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

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

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

In addition, Section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water. The proposed tiered rates for the single family residential customers were designed in compliance with California Constitution article XIII D, section 6 by allocating a proportionately greater share of the cost of providing service to those whose water usage creates greater demands and burdens on the District's water system and water resources, and therefore generates additional costs for the District. The tiered rates also have the incidental effect of encouraging conservation by sending a price signal to customers to use less water.

"Inclining" block rate structures (which are synonymous with tiered rates) when properly designed and differentiated by customer class, allow a water utility to send consistent conservation price incentives to customers. Due to heightened interest in water conservation, tiered rates have gained widespread use, especially in relatively water-scarce regions, such as Southern California.

4.2 COST-BASED RATE-SETTING METHODOLOGY

As stated in the AWWA M1 Manual, "the costs of water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." To develop utility rates that comply with Proposition 218 and industry standards, while meeting other emerging goals and objectives of the utility, there are four major steps discussed below.

1) Calculate Revenue Requirement

The rate-making process starts by determining the test year revenue requirement - which for this study is FY 2016. The revenue requirement should sufficiently fund the utility's O&M, debt service, and capital expenses, and reserve funding.

2) Cost Of Service Analysis (COS)

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

1. Functionalizing costs. This process takes each cost item in the District's budget and organizes the items collectively based on what function is served. Examples of cost functions are supply, treatment, transmission, distribution, storage, meter servicing and customer billing and collection.
2. Allocating functionalized costs to cost components. This process allocates the functionalized costs to cost components. Cost components include base, maximum day, maximum hour⁶, meter service, customer service and conservation costs.
3. Distributing the cost components. This analysis distributes the cost components, using unit costs, to customer classes in proportion to their demands on the water system. This is described in the M1 Manual published by AWWA.

A COS analysis considers both the average quantity of water consumed (base costs) and the peak rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour

⁶ Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.

demands).⁷ Peaking costs are costs that are incurred during peak times of consumption. There are additional costs associated with designing, constructing, and operating and maintaining facilities to meet peak demands. These peak demand costs need to be allocated to those customers and customer classes whose water usage results in the District incurring the associated costs. In other words, not all customer classes share the same responsibility for peaking related costs.

3) Rate Design and Calculations

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

4) Rate Adoption

Rate adoption is the last step of the rate-making process to comply with Proposition 218. RFC documented the rate study results in this Study Report to help educate the public about the proposed changes, the rationale and justifications behind the changes, and their anticipated financial impacts in lay terms.

⁷ System capacity is the system's ability to supply water to all delivery points at the time when demanded. Coincident peaking factors are calculated for each customer class at the time of greatest system demand. The time of greatest demand is known as peak demand. Both the operating costs and capital asset related costs incurred to accommodate the peak flows are generally allocated to each customer class based upon the class's contribution to the peak month, day and hour event.

5 COST OF SERVICE ANALYSIS

The principles and methodology of a cost of service analysis were described in Section 4.2. A Cost of Service analysis distributes a utility's revenue requirements (costs) to each customer class. To do so we allocate the District's revenue requirement to the **cost causation components**. The cost causation components include:

1. Base (average) costs⁸
2. Peaking costs (maximum day and maximum hour)
3. Meter service
4. Billing and customer service
5. Fire protection
6. Conservation
7. General and administrative costs

Peaking costs are further divided into maximum day and maximum hour demand. The maximum day demand is the maximum amount of water used in a single day in a year. The maximum hour demand is the maximum usage in an hour on the maximum usage day. Different facilities, such as distribution and storage facilities are designed to meet the peaking demands of customers. Therefore, extra capacity⁹ costs include the O&M and capital costs associated with meeting peak customer demand. This method is consistent with the AWWA M1 Manual, and is widely used in the water industry to perform cost of service analyses.

5.1 ALLOCATION OF EXPENSES TO COST COMPONENTS

In a Cost of Service analysis we must allocate the District's expenses to the cost causation components. To do so we must identify system-wide peaking factors which are shown in column 2, Table 5-1. The system-wide peaking factors are used to derive the cost component allocation bases (i.e., percentages) shown in columns 3 through 5 of Table 5-1. Expenses are then allocated to the cost components using these allocation bases shown in column 1. To understand the interpretation of the percentages shown in columns 3 through 5 we must first establish the base use as the average daily demand during the year.

As an example, expenses that are allocated to the cost components using the maximum bi-monthly bases (line 2) attribute 74% ($1.00/1.36$) of the demand (and therefore costs) to base (average daily demand) use and the remaining 26% to maximum day (peaking) use. Expenses allocated using the maximum day bases assume 49% ($1.00/1.70$ – half of fire allocation) of costs are due to base demands, with the remaining proportion, less fire, ($100\% - 49\% - 20\%$ (fire)) of costs allocated to the maximum day cost component to account for the layout of the District and the storage and distribution systems needed to meet fire demands. Twenty percent of costs allocated using the maximum day bases is allocated to fire protection. Lastly, expenses allocated using the maximum hour bases

⁸ The base component can be further divided into supply and base/delivery cost components as discussed in Section 6.3.

⁹ The terms extra capacity, peaking and capacity costs are used interchangeably.

attribute 27% of the costs to the base cost component, 17% to maximum day, and 37% to maximum hour and 20% to fire protection using a similar derivation as for maximum day. Collectively the maximum day and hour cost components are known as peaking costs. These allocation bases are used to assign District expenses in Table 5-3 to the cost components.

Table 5-1: System-Wide Peaking Factors and Allocation to Cost Components

Line No.	Cost Component Allocation Bases (1)	System Wide Peaking Factor (2)	Base (3)	Max Day (4)	Max Hour (5)	Fire (6)	Total (7)	System MDD ³ / System Max Bi-Monthly Demand (8)	Hour / Max Day Ratio (9)
1	Base	1.00	100%	0%	0%	0%	100%		
2	Max Bi-M / Avg Bi-	1.36	74%	26%	0%	0%	100%		
3	Max Day ²	1.70	49%	31%	0%	20%	100%	125%	
4	Max Hour	3.00	27%	17%	37%	20%	100%		176%

¹Source for Max Bi/ Avg Bi = Usage FY 13-15YTD_db (formatted_bimonthly) Find Max Bimonth Period,

Max Bi-M/Avg Bi-M stands for Max Bi-monthly use over Average Bi-monthly use

²Source: From Water Master Plan (see SFID 2010 Model)

³MDD = Maximum Day Demand

Fire Allocation Source (%); 2010 SFID Model

Tables 5-2 and 5-3 allocate O&M expenses for FY 2016 shown earlier in Table 3-2. We allocate costs to each cost component using the bases shown in column 1 of Table 5-2, which are those defined in Table 5-1. We multiply the total expense for each line in Table 5-3, column 10, by the respective percentage in Table 5-2. For example, the total for District Administration in line 2 of Table 5-3, is multiplied by the percentages in Table 5-2 to yield the amounts shown in line 2 of Table 5-3.

The allocation bases are chosen based on the type of cost for each line item and the proportion of those costs associated with each cost component. For example, District Engineering is allocated using the max hour basis since we estimate engineering time is spent accordingly – i.e., 27% of engineering time is spent on projects that serve base demand¹⁰, and 53% of engineering time is spent on projects involving peak demands (this is the sum of max day and max hour) which would involve working on the transmission, distribution and storage systems. Lastly, we assume 20% of engineering time is spent working on storage and distribution for fire protection. A similar logic is used for the remaining expenses in each of the line items. Nearly all Administration costs are allocated to General and Administrative.

We note that the total for FY 2016 (which is known as the Test Year) in line 53, column 10 of Table 5-3 equals the total O&M (less pass-through increases) in line 17, column 3 of Table 3-2. Line 54 of Table 5-3 shows the total resulting cost component allocation for O&M expenses. This resulting allocation is used to allocate the District’s operating revenue requirement (discussed in Section 5.2) to the cost components.

¹⁰ Base demand refers to average daily demand.

Table 5-2: Allocation of O&M Expenses to Cost Causation Components

Line No.	Allocation Bases (1)	Base (2)	Max Day (3)	Max Hour (4)	Fire Protection (5)	Meter Service (6)	Customer (7)	Con-servation (8)	Recycled (9)	General (9)	Total (10)	
1	Personnel											
2	District Administration	General & Admin	0%	0%	0%	0%	0%	17%	0%	0%	83%	100%
3	Water Conservation	Conservation	0%	0%	0%	0%	0%	100%	0%	0%	100%	
4	District Engineering	Max Hour	27%	17%	37%	20%	0%	0%	0%	0%	100%	
5	District Operations	Max Hour	27%	17%	37%	20%	0%	0%	0%	0%	100%	
6	District Retiree Health Care Prog	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
7	Water Treatment Plant Oper	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
8	Plant Maintenance	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
9	Plant Laboratory	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
10	Plant Administration	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
11	Plant Retiree Health Care Prog	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
12												
13	Admin											
14	Board Support	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
15	Property & Liability Ins	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
16	Office Supplies	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
17	Information Technology	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
18	Other Office Expense	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
19	Conservation	Conservation	0%	0%	0%	0%	0%	100%	0%	0%	100%	
20	Professional Services	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
21	Training & Development	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
22	LAFCO Operations	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
23	Interdepartmental Charges	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
24												
25	Engineering											
26	Drafting & Mapping	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
27	Engineering Services	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
28	Other Expenses	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
29	Interdepartmental Charges	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
30												
31	Operations											
32	System Operations	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
33	Facilities Maintenance	Max Day	49%	31%	0%	20%	0%	0%	0%	0%	100%	
34	Construction	Max Day	49%	31%	0%	20%	0%	0%	0%	0%	100%	
35	Pot & Recyc Meter Ser & Bckflw	Meter Service	0%	0%	0%	0%	100%	0%	0%	0%	100%	
36	Safety	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
37	Interdepartmental Charges	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%	
38												
39	Plant											
40	Local Water & Transport	Max Bi-M/Avg Bi-M	74%	26%	0%	0%	0%	0%	0%	0%	100%	
41	Operations (Filtration Plant)	Max Bi-M/Avg Bi-M	74%	26%	0%	0%	0%	0%	0%	0%	100%	
42	Maintenance	Max Bi-M/Avg Bi-M	74%	26%	0%	0%	0%	0%	0%	0%	100%	
43	Laboratory	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
44	Administrative	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
45	Interdepartmental Charges	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
46	SFID Local Water Reimburse	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
47												
48	Water Costs											
49	Variable Costs	Max Bi-M/Avg Bi-M	74%	26%	0%	0%	0%	0%	0%	0%	100%	
50												
51	Local Water	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%	
52	Recycled Water	Recycled	0%	0%	0%	0%	0%	0%	100%	0%	100%	

Table 5-3: Allocation of FY 2016 O&M Expenses (FY 2016) to Cost Causation Components

Line No.		Base (1)	Max Day (2)	Max Hour (3)	Fire Protection (4)	Meter Service (5)	Customer (6)	Con-servation (7)	General (9)	Total (10)
1	Personnel									
2	District Administration	\$0	\$0	\$0	\$0	\$0	\$243,289	\$0	\$1,187,823	\$1,431,112
3	Water Conservation	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000	\$0	\$150,000
4	District Engineering	\$108,462	\$67,789	\$149,135	\$81,347	\$0	\$0	\$0	\$0	\$406,733
5	District Operations	\$516,899	\$323,062	\$710,736	\$387,674	\$0	\$0	\$0	\$0	\$1,938,371
6	District Retiree Health Care Prog	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$413,362	\$413,362
7	Water Treatment Plant Oper	\$1,018,884	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,018,884
8	Plant Maintenance	\$629,852	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$629,852
9	Plant Laboratory	\$150,974	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$150,974
10	Plant Administration	\$113,127	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$113,127
11	Plant Retiree Health Care Prog	\$140,853	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$140,853
12										
13	Admin									
14	Board Support	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$89,545	\$89,545
15	Property & Liability Ins	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$117,000	\$117,000
16	Office Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,925	\$50,925
17	Information Technology	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$112,980	\$112,980
18	Other Office Expense	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$123,478	\$123,478
19	Conservation	\$0	\$0	\$0	\$0	\$0	\$0	\$120,000	\$0	\$120,000
20	Professional Services	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$704,800	\$704,800
21	Training & Development	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$34,907	\$34,907
22	LAFCO Operations	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$13,200	\$13,200
23	Interdepartmental Charges	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$183,936)	(\$183,936)
24										
25	Engineering									
26	Drafting & Mapping	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,000	\$3,000
27	Engineering Services	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$160,000	\$160,000
28	Other Expenses	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$19,000	\$19,000
29	Interdepartmental Charges	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$11,729)	(\$11,729)
30										
31	Operations									
32	System Operations	\$236,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$236,700
33	Facilities Maintenance	\$75,237	\$48,043	\$0	\$30,820	\$0	\$0	\$0	\$0	\$154,100
34	Construction	\$281,224	\$179,576	\$0	\$115,200	\$0	\$0	\$0	\$0	\$576,000
35	Pot & Recyc Meter Ser & Bckflw	\$0	\$0	\$0	\$0	\$162,100	\$0	\$0	\$0	\$162,100
36	Safety	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,800	\$15,800
37	Interdepartmental Charges	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
38										
39	Plant									
40	Local Water & Transport	\$438,971	\$158,029	\$0	\$0	\$0	\$0	\$0	\$0	\$597,000
41	Operations (Filtration Plant)	\$814,412	\$293,188	\$0	\$0	\$0	\$0	\$0	\$0	\$1,107,600
42	Maintenance	\$587,706	\$211,574	\$0	\$0	\$0	\$0	\$0	\$0	\$799,280
43	Laboratory	\$127,600	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$127,600
44	Administrative	\$352,150	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$352,150
45	Interdepartmental Charges	\$220,665	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$220,665
46	SFID Local Water Reimburse	(\$50,000)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$50,000)
47										
48	Water Costs									
49	Variable Costs	\$4,747,392	\$1,709,061	\$0	\$0	\$0	\$0	\$0	\$0	\$6,456,453
50	Local Water	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000
51	Recycled Water	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
52										
53		\$10,611,107	\$2,990,323	\$859,871	\$615,041	\$162,100	\$243,289	\$270,000	\$2,850,154	\$18,601,885
54	Allocation to Cost Components	57.0%	16.1%	4.6%	3.3%	0.9%	1.3%	1.5%	15.3%	100.0%

We also allocate the District’s assets to the cost components as shown in Table 5-4. The resulting total asset allocation is derived in a similar manner as the O&M allocation. RFC functionalized (shown in lines 1 through 11 of Table 5-4) the District’s assets and then allocated them to the cost causation components in the same manner as O&M expenses were allocated. Part of the District’s revenue requirement includes rate/reserve funded capital. This capital portion of the revenue requirement is allocated to the cost causation components using the resulting asset allocation shown in line 27 of Table 5-4.

Table 5-4: Allocation of Assets to Cost Causation Components

Line No.	Capital Function (1)	Allocation Basis (2)	Base (3)	Max Day (4)	Max Hour (5)	Fire Protection (6)	Meter Service (7)	Customer (8)	Con-servation (9)	General (10)	Total (11)
1	Source of Supply	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%
2	Wells	Max Day	49%	31%	0%	20%	0%	0%	0%	0%	100%
3	Pumping	Max Day	49%	31%	0%	20%	0%	0%	0%	0%	100%
4	Treatment	Max Day	49%	31%	0%	20%	0%	0%	0%	0%	100%
5	Transmission	Max Day	49%	31%	0%	20%	0%	0%	0%	0%	100%
6	Distribution	Max Hour	27%	17%	37%	20%	0%	0%	0%	0%	100%
7	Storage	Max Hour	27%	17%	37%	20%	0%	0%	0%	0%	100%
8	Meters and Services	Meter Service	0%	0%	0%	0%	100%	0%	0%	0%	100%
9	Fire Protection	Fire Protection	0%	0%	0%	100%	0%	0%	0%	0%	100%
10	Customer Billing	Billing & Cust Service	0%	0%	0%	0%	0%	100%	0%	0%	100%
11	General Plant	General & Admin	0%	0%	0%	0%	0%	0%	0%	100%	100%

	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conservati on	General	Total	
13	Source of Supply	\$7,206,086	\$0	\$0	\$0	\$0	\$0	\$0	\$ 7,206,086	
14	Wells	\$3,507	\$2,239	\$0	\$1,437	\$0	\$0	\$0	\$ 7,183	
15	Pumping	\$949,134	\$606,074	\$0	\$388,802	\$0	\$0	\$0	\$ 1,944,010	
16	Treatment	\$3,657,967	\$2,335,810	\$0	\$1,498,444	\$0	\$0	\$0	\$ 7,492,221	
17	Transmission	\$4,820,869	\$3,078,386	\$0	\$1,974,814	\$0	\$0	\$0	\$ 9,874,069	
18	Distribution	\$1,128,465	\$705,291	\$1,551,639	\$846,349	\$0	\$0	\$0	\$ 4,231,744	
19	Storage	\$123,121	\$76,950	\$169,291	\$92,340	\$0	\$0	\$0	\$ 461,702	
20	Meters and Services	\$0	\$0	\$0	\$0	\$50,551	\$0	\$0	\$ 50,551	
21	Fire Protection	\$0	\$0	\$0	\$65,703	\$0	\$0	\$0	\$ 65,703	
22	Customer Billing	\$0	\$0	\$0	\$0	\$0	\$93,752	\$0	\$ 93,752	
23	General Plant	\$0	\$0	\$0	\$0	\$0	\$0	\$4,943,292	\$ 4,943,292	
25										
26	TOTAL ASSETS	\$17,889,149	\$6,804,750	\$1,720,930	\$4,867,889	\$50,551	\$93,752	\$0	\$4,943,292	\$36,370,313
27	% of Total Assets	49.2%	18.7%	4.7%	13.4%	0.1%	0.3%	0.0%	13.6%	100%

5.2 REVENUE REQUIREMENT DETERMINATION

Table 5-5 shows the revenue requirement derivation with the total revenue required from District rates shown in line 24¹¹. The total in line 24, column 1, is the (O&M) revenue requirement that is allocated to the cost components using the percentages derived in line 54 of Table 5-3. The total in line 24, column 2 is allocated to the cost components using the percentages derived in line 27 of Table 5-4.

RFC calculated the revenue requirement using FY 2016 expenses, which include water purchases, O&M expenses, capital expenses and existing debt service. O&M expenses include the costs shown in lines 3 through 8 in Table 5-5. To arrive at the rate revenue requirement in line 24, column 3, we

¹¹ Table 5-5 also shows the amounts to be collected from the fixed charge pass-through increases in lines 26 through 28.

subtract revenue offsets from other (non-rate) revenues and make adjustments for annual cash balances and for the fact that the impending rate adjustment will take place six (or more) months into the fiscal year and we must therefore annualize the rate increase (line 21). The adjustments, shown as negative values are subtracted (therefore added as a result of subtracting a negative number) to arrive at the total revenue required from District rates in line 24 column 3. This is the amount that District base meter fees and commodity rates are designed to collect.

We note that adding lines 33-40, 50 and 54 in column 1 of Table 3-6 yields the total shown in column 3, line 10 of Table 5-5. The revenue offsets shown in Table 5-5 are taken from lines 27 thru 29, column 1 in Table 3-6. These revenue offsets are non-rate revenue that lowers the revenue derived from rates. The adjustment for cash balance, in line 19 of Table 5-5, is the net cash balance taken from line 57, column 1, in Table 3-6. The adjustment for mid-year increase in line 21 adjusts the revenue adjustments we have modeled in the cash flow table – line 13 of Table 3-6. Note these numbers are not intended to be the same - it annualizes this revenue adjustment, in line 13 of Table 3-6, to reflect the fact that the District is implementing rates half way through the fiscal year. We must design rates to collect the annualized amounts shown in line 13 of Table 3-6.

Table 5-5: Revenue Requirement Determination

Line No.	FY 2016		
	(1)	(2)	(3)
1	Operating	Capital	Total
2	Revenue Requirement		
3	Personnel	\$6,393,268	\$6,393,268
4	Admin	\$1,182,899	\$1,182,899
5	Engineering	\$170,271	\$170,271
6	Operations	\$1,144,700	\$1,144,700
7	Plant	\$3,154,295	\$3,154,295
8	Subtotal Water Costs	\$6,556,453	\$6,556,453
9	Debt Service (Existing and Proposed)	\$1,351,150	\$1,351,150
10	Total Revenue Requirement	\$18,601,885	\$19,953,035
11			
12	Revenue Offsets		
13	CWA IAC Revenue	\$0	\$0
14	MWD RTS and Capacity Charge	\$0	\$0
15	CWA SRC, ESC and CSC	\$0	\$0
16	Passthrough MWD Volumetric	\$0	\$0
13	SDWD Operating Contribution	\$2,080,907	\$2,080,907
14	Other Non-Operating Revenue	\$333,000	\$333,000
15	Interest Income	\$205,500	\$205,500
16	Total Revenue Offsets	\$2,619,407	\$2,619,407
17			
18	Adjustments		
19	Adjustment for Cash Balance	(\$2,109,105)	(\$2,109,105)
21	Adjustment for Mid-year Increase	(\$1,108,657)	(\$1,108,657)
22	Total Adjustments	(\$3,217,762)	(\$3,217,762)
23			
24	Revenue Required from SFID Rates	\$19,200,241	\$1,351,150
25			
26	CWA IAC		\$345,228
27	CWA SRC, CSC, ESC		\$1,494,012
28	MWD Fixed Charges		\$627,204
29	Total		\$2,466,444
30	Revenue Required from SFID Rates and CWA/MWD Pass-thrus		\$23,017,835

5.3 UNIT COST COMPONENT DERIVATION

Our end goal is to allocate the revenue requirement in line 24, column 3 of Table 5-5 to the cost components, and then distribute the cost components to each user class. To do so we must calculate the cost component unit costs, which starts by assessing the total units demanded by each class for each cost component. This is shown across the bottom of Table 5-6 in line 12. Table 5-6 also shows

the peaking factors for each tier and class in column 1.¹² The peaking factors establish the maximum day and hour requirements for each class and are the reason for the peaking unit rate differentials discussed in Table 6-11 of Section 6.

Table 5-7 shows the cost component unit cost derivation in line 17. Line 24 plus line 16 of Table 5-5 are added and are allocated to the cost components using the resulting O&M allocation from line 54 of Table 5-3. Similarly the capital revenue requirement in column 2 of Table 5-5 is allocated to the cost components using the resulting asset allocation from line 27 of Table 5-4. Revenue offsets (line 3 of Table 5-7 and line 16 of Table 5-5) are also allocated to the cost components using the resulting allocation of O&M from line 54 of Table 5-3. General and Administrative costs are distributed in proportion to the resulting allocation of the other cost components – this is shown in lines 5 and 6 of Table 5-7. Public fire protection costs are allocated to the meter service component (line 9 of Table 5-7). Private fire protection is allocated a portion of meter service costs to account for maintenance of fire meters in line 11 of Table 5-7. Lastly, we allocate a portion of capacity related costs to the meter service component in line 12 of Table 5-7 (column 5). This reflects the District’s desire to collect a portion of capacity related costs through the fixed charge instead of the volumetric (commodity) rate. The allocation of the revenue requirement in column 9, line 13 of Table 5-7, to cost components is shown in line 13. The total for each cost component in line 13 (Table 5-7) is divided by the units of service in line 14 (Table 5-7) to calculate the unit cost in line 17 (Table 5-7). For example, the unit cost for the base component is determined by dividing the total base cost by total water use in one hundred cubic feet (HCF). Max day costs are divided by the total max day use in HCF/day. Annual billing and customer service costs are divided by the estimated number of annual bi-monthly bills. The unit costs are used to distribute the cost components to the customer classes in Section 5.4.

¹² The District must construct and operate infrastructure to deliver water at peak times. A user class with higher peaking (capacity) needs is allocated a larger share of the capacity costs compared to other classes. The peaking factors are used to derive the proportion of water demanded by each class during times of peak demand.

Table 5-6: Derivation of Cost Component Units

Line No	Customer Class	Max Bi-Mnth / Avg Bi-Mnth Peaking Factors ¹	Annual Usage (hcf)	Daily Usage (hcf)	Max Day Factor	Max Day Requirement (hcf/day)	Max Day Requirement above ADD (hcf/day)	Max Hour Factor	Max Hour Requirement (hcf /day)	Max Hour Requirement above Max Day (hcf/day)	Hy-draulically Equivalent Meters	No. of Bills	Private Fire Line Bills	Recycled (Billed Monthly)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	SFR							3.07						
2	Tier 1	1.02	504,447	1,382	1.27	1,760	378	2.25	3,105	1,346				
3	Tier 2	1.10	727,433	1,993	1.38	2,743	750	2.43	4,840	2,097				
4	Tier 3	1.26	1,126,326	3,086	1.58	4,877	1,791	2.79	8,606	3,729				
5	Tier 4	1.74	1,406,027	3,852	2.17	8,378	4,526	3.84	14,785	6,407				
6	Subtotal		3,764,233	10,313		17,757	7,444		31,336	13,579				
7	Multifamily Residence	1.21	265,752	728	1.52	1,104	376	2.68	1,948	844				
8	Irrigation	1.59	279,859	767	1.99	1,525	759	3.51	2,692	1,167				
9	Non Residential (Other)	1.22	220,829	605	1.53	924	319	2.69	1,630	707				
10	Temporary Construction	1.75	842	2	2.19	5	3	3.86	9	4				
11	Fire Line Use	1.75	1,967	5	2.19	12	6	3.86	21	9				
10	All Classes (Less Recycled)										10,915	38,748	5,010	
11	Recycled													588
12			4,533,482	12,420			8,907			16,309	10,915	38,748	5,010	588

¹Ratio of Max Bi-monthly use over Average Bi-monthly use

Table 5-7: Unit Cost Calculation

Line No.		Base (1)	Max Day (2)	Max Hour (3)	Fire Protection (4)	Meter Service (5)	Customer (6)	Con- servation (7)	General (8)	Total (9)
1	Operating Expenses	\$12,446,620	\$3,507,590	\$1,008,612	\$721,431	\$190,140	\$285,373	\$316,705	\$3,343,175	\$21,819,647
2	Capital Expenses	\$769,113	\$292,558	\$73,988	\$209,286	\$2,173	\$4,031	\$0	\$0	\$1,351,150
3	Revenue Offsets	(\$1,494,193)	(\$421,079)	(\$121,082)	(\$86,606)	(\$22,826)	(\$34,259)	(\$38,020)	(\$401,342)	(\$2,619,407)
4	Total Cost of Service	\$11,721,540	\$3,379,069	\$961,519	\$844,111	\$169,488	\$255,145	\$278,685	\$2,941,833	\$20,551,391
5	Allocation of General Cost %	67%	19%	5%	4.8%	1%	1%	2%	17%	
6	Allocation of General Cost	\$1,958,188	\$564,504	\$160,630	\$141,016	\$28,314	\$42,624	\$46,557		\$2,941,833
7	Subtotal	\$13,679,728	\$3,943,573	\$1,122,149	\$985,127	\$197,802	\$297,770	\$325,242		\$20,551,391
8	%	66.6%	19.2%	5.5%	4.8%	1.0%	1.4%	1.6%	0.0%	100%
9	Allocation of Public Fire Protection				(\$962,994)	\$962,994				\$0
10	Allocated Cost of Service	\$13,679,728	\$3,943,573	\$1,122,149	\$22,133	\$1,160,796	\$297,770	\$325,242	\$0	\$20,551,391
11	Fire Share of Meter Costs				20,271	(20,271)				
12	Capacity in Meter Charge	\$0	(\$354,922)	(\$100,993)	\$0	\$455,915	\$0	\$0	\$0	
13	Adjusted Cost of Service	\$13,679,728	\$3,588,651	\$1,021,156	\$42,403	\$1,596,441	\$297,770	\$325,242	\$0	\$20,551,391
14	Unit of Service	4,533,482	8,907	16,309	1,305	10,915	44,346	4,530,673		
15	Units	HCF	HCF / day	HCF / day	Demand Units	Hyd Eq. Mtrs	# of Bills			
16										
17	Unit Cost	\$3.02	\$402.92	\$62.61	\$32.48	\$24.38	\$6.71	\$0.07		

5.4 DISTRIBUTION OF COST COMPONENTS TO CUSTOMER CLASSES

The final step in a cost of service analysis is to distribute the cost components to the user classes using the unit costs derived in Table 5-7, line 17. This is the ultimate goal of a cost of service analysis and yields the cost to serve each customer class. Table 5-8 shows the derivation of the cost to serve (i.e., cost of service for) each class. The cost components shown in columns 1, 2, 3 and 7 of Table 5-8 are collected through the commodity (volumetric) rates (\$/HCF). The cost components shown in columns 4, 5, and 6 are collected through the District's Base Meter charge to provide fixed revenue. The existing versus proposed proportion of fixed revenue is approximately 17% and 19%, respectively, including all pass-through increases, and is directly related to the volume of water sold.

To derive the cost to serve each class, the unit costs from line 17 in Table 5-7 are multiplied by the units shown in Table 5-6 (columns 2, 6 and 9) for each class. For example, the base costs for the Multifamily class is calculated by multiplying the base unit cost (line 17, column 1, Table 5-7) by the annual Multifamily use (line 7, column 2, Table 5-6). Similarly the Multifamily *customer* costs are derived by multiplying the *customer* unit cost (line 17, column 6 in Table 5-7) by the number of Multifamily bills (not shown but equal to 2,784 bills; the total number for all classes is shown in line 10, column 11 in Table 5-6). Similar calculations for each of the remaining user classes and cost components yield the total cost to serve each user class shown in column 8 of Table 5-8. Note that the total cost of service is equal to the revenue requirement in line 24 of Table 5-5 as intended. We have now calculated the **cost to serve each user class** and can proceed to derive rates necessary to collect the cost to serve each class and the customers within each class.

Table 5-8: Derivation of the Cost to Serve Each Class

Line No.		Base (1)	Max Day (2)	Max Hour (3)	Fire Protection (4)	Meter Service (5)	Customer (6)	Con-servation (7)	Total COS ¹ (8)	Total Commodity Revenue (9)	Total Fixed Revenue (10)
1	SFR					\$1,199,147	\$218,926	\$0			
2	Tier 1	\$1,522,163	\$152,163	\$84,255				\$36,213		\$1,794,794	
3	Tier 2	\$2,195,020	\$302,041	\$131,317				\$52,220		\$2,680,599	
4	Tier 3	\$3,398,674	\$721,517	\$233,492				\$80,855		\$4,434,539	
5	Tier 4	\$4,242,671	\$1,823,674	\$401,158				\$100,934		\$6,568,436	
6	Subtotal SFR	\$11,358,528	\$2,999,397	\$850,222		\$1,199,147	\$218,926	\$270,222	\$16,896,441	\$15,478,368	\$1,418,073
7	Multifamily Residence	\$801,905	\$151,373	\$52,850		\$181,900	\$18,694	\$19,077	\$1,225,799	\$1,025,205	\$200,594
8	Irrigation	\$844,472	\$305,703	\$73,040		\$89,853	\$7,534	\$20,090	\$1,340,691	\$1,243,304	\$97,387
9	Non Residential (Other)	\$666,348	\$128,497	\$44,238		\$125,541	\$15,027	\$15,853	\$995,503	\$854,935	\$140,568
10	Temporary Construction	\$2,541	\$1,104	\$242					\$3,886	\$3,886	
11	Fire Line Use	\$5,935	\$2,578	\$564					\$9,078	\$9,078	
10	Private Fire Line				\$42,403		\$33,641		\$76,044	\$0	\$76,044
11	Recycled						\$3,948		\$3,948	\$0	\$3,948
12	TOTAL	\$13,679,728	\$3,588,651	\$1,021,156	\$42,403	\$1,596,441	\$297,770	\$325,242	\$20,551,391	\$18,703,576	\$1,962,653

¹Cost of Service

6 RATE DERIVATION

6.1 EXISTING RATE STRUCTURE AND RATES

The District’s existing rate structure consists of a fixed bi-monthly meter charge, called a Base Meter Fee determined on the basis of the size of the meter serving a property. The District also has a three-tier, Commodity Rate for single family customers, and a uniform Commodity Rate for all remaining classes. Table 6-1 shows the existing rate structure and rates. Please note that in this report, the terms fee and charge are often used interchangeably.

Table 6-1: Existing Rate Structure and Rates (Bi-monthly)

Meter Size	Bi-Monthly Fee		Monthly Fee
	Potable	Private Fire Line	Reclaimed
5/8"	\$58.47	\$14.21	\$27.58
3/4"	\$58.47	\$14.21	\$27.58
1"	\$92.93	\$19.15	\$43.84
1 1/2"	\$179.10	\$31.51	\$84.48
2"	\$282.49	\$46.97	\$133.25
3"	\$523.75	\$81.58	\$247.05
4"	\$868.39	\$131.02	\$409.62
6"	\$1,730.02	\$255.84	\$816.05
8"	\$2,763.97	\$405.40	\$1,303.76
10"	\$3,970.24	\$579.66	\$1,872.76

Class/Tier	Bi-Monthly Breakpoint (HCF) ¹	Commodity Rate (\$ / HCF)
Single Family		
Tier 1	0 - 15	\$2.70
Tier 2	16 - 300	\$3.84
Tier 3	>300	\$4.39

Multifamily Residence		\$3.84
Non-Residential		\$3.71
Irrigation / Commercial Agriculture		\$4.04
Temporary Construction Use		\$4.39
Fire Line Use		\$4.39
Recycled		\$3.19

¹One Hundred Cubic Feet

6.2 PROPOSED BASE METER FEES

Table 6-2 shows the derivation of the District Base Meter Fees in column 5. The cost of service analysis derived in Table 5-8 feeds into the Base Meter Fee derivation as the Base Meter Fee is designed to collect the amount of revenue shown in column 10 of Table 5-8. The Base Meter Fees shown in Table 6-2 do not include the SDCWA and MWD pass-through increases that the District will now pass through by way of a fixed charge. These are discussed in Table 6-3 below. The industry standard is to use the most numerous meter as the standard with which to compare meter capacity. The District's most numerous meter is the ¾" meter and therefore it is the base to which the capacity of other meter sizes is compared to.

Table 6-2: Derivation of District Bi-Monthly Base Meter Fees

Meter Size (1)	AWWA Capacity Ratio (2)	Meter Service Component (3)	Customer Component (4)	Proposed SFID Base Meter Fee (5)
5/8"	1.0	\$24.38	\$6.71	\$31.09
3/4"	1.0	\$24.38	\$6.71	\$31.09
1"	1.7	\$40.63	\$6.71	\$47.34
1.5"	3.3	\$81.26	\$6.71	\$87.97
2"	5.3	\$130.01	\$6.71	\$136.72
3"	10.0	\$243.77	\$6.71	\$250.48
4"	16.7	\$406.28	\$6.71	\$413.00
6"	33.3	\$812.56	\$6.71	\$819.28
8"	53.3	\$1,300.10	\$6.71	\$1,306.81
10"	76.7	\$1,868.89	\$6.71	\$1,875.61

Base Meter Fee Components

There are two cost components that comprise the District's Base Meter Fee: meter service and customer service; they are described below. This fee recognizes the fact that the District incurs fixed costs related to maintaining meters, billing customers and providing ready-to-use water capacity even when a customer does not use any water.

Meter Service Component

The meter service component collects capacity (also known as peaking) related costs. These costs are shown as max day and max hour costs in Section 5. A portion of capacity related costs can be allocated to and collected through the meter service component by meter size because larger meters have the potential to demand more capacity compared to smaller meters. Capacity ratios, a function of a meter's maximum flow rate, are used to increase the service charge to larger capacity meters. The potential capacity demand (peaking) is proportional to the potential flow through each meter size as established by the AWWA hydraulic capacity ratios. The AWWA capacity ratios used for this report are shown in column 2 of Table 6-2. The ratios shown are the ratio of potential flow through each meter size compared to the flow through a ¾-inch meter. The ¾-in meter is the standard meter size for the District and is used to compare the capacities of the larger meters. Larger meters have the potential to demand more peak capacity. For example, column 2 shows that hydraulic capacity

of a 2-inch meter is 5.3 times that of a ¾-inch meter and therefore the meter service component of the Base Meter Fee is 5.3 times that of the ¾-inch meter. The meter service component for a ¾-inch meter is derived in column 5, line 17 of Table 5-7 and this fee for larger meters is scaled up using the AWWA capacity ratios shown in column 2 of Table 6-2.

Allocating extra capacity costs by meter size (instead of using the maximum day and maximum hour cost components by applying the peaking factors shown in column 1 of Table 5-6) is a common way to provide greater revenue stability, especially in light of decreasing revenues during a drought or other reasons for sales declines.

The meter service component also recovers costs associated with maintaining and servicing meters. The cost for maintaining and servicing larger meters is proportional to the AWWA hydraulic capacity ratios shown in column 2.

Customer Component

The customer component, shown in column 4, recovers costs associated with meter reading, customer billing and collection, as well as answering customer calls. These costs are the same for all meter sizes as it costs the same to bill a small meter as it does a larger meter. The customer component is derived in column 6 (line 17) of Table 5-7.

Table 6-3 shows the Base Meter Fees for the next three fiscal years. The Base Meter Fees for FY 2017 and 2018 are derived by applying the revenue adjustments shown in Table 3-5 to the Base Meter Fee for FY 2016.

Table 6-3: Base Meter Fees by Fiscal Year

Meter Size (Inches)	February 1, 2016 Base Meter Fee (1)	January 1, 2017 Base Meter Fee (2)	January 1, 2018 Base Meter Fee (3)
5/8"	\$31.09	\$33.89	\$36.94
3/4"	\$31.09	\$33.89	\$36.94
1"	\$47.34	\$51.60	\$56.25
1.5"	\$87.97	\$95.89	\$104.52
2"	\$136.72	\$149.03	\$162.44
3"	\$250.48	\$273.03	\$297.60
4"	\$413.00	\$450.17	\$490.68
6"	\$819.28	\$893.01	\$973.38
8"	\$1,306.81	\$1,424.43	\$1,552.63
10"	\$1,875.61	\$2,044.41	\$2,228.41

Total Fixed Charge

The District proposes to pass through the SDCWA IAC, SRC, ESC and CSC, as well as the MWD’s RTS Charge and Capacity Charge. These wholesaler fixed costs are added to the Districts Base Meter Fee to yield the total fixed charge. Table 6-4 shows the District Base Meter Fee and the SDCWA and MWD charges that will be passed through to District customers, which yield the total fixed charge shown

in column 6. Table 6-4 includes the CY 2016 pass-throughs from the SDCWA and MWD that will be passed –through to District customers, shown in columns 3, 4 and 5. The District intends to authorize pass-through increases for increases in these charges in subsequent calendar years.

Table 6-4: Derivation of the Total Fixed Charge

Line No.	Meter Size (1)	Proposed SFID Base Meter (2)	SDCWA IAC (3)	MWD Cap Charge & RTS Charge (4)	SDCWA SRC, ESC, CSC (5)	Total Fixed Charge (6)	Current Base Meter Fee (7)	Difference (\$) (8)	Difference (%) (9)
1	5/8"	\$31.09	\$5.52	\$10.04	\$28.60	\$75.25	\$58.47	\$16.78	28.7%
2	3/4"	\$31.09	\$5.52	\$10.04	\$28.60	\$75.25	\$58.47	\$16.78	28.7%
3	1"	\$47.34	\$8.83	\$16.73	\$47.67	\$120.57	\$92.93	\$27.64	29.7%
4	1.5"	\$87.97	\$16.56	\$33.46	\$95.35	\$233.33	\$179.10	\$54.23	30.3%
5	2"	\$136.72	\$28.70	\$53.53	\$152.56	\$371.51	\$282.49	\$89.02	31.5%
6	3"	\$250.48	\$52.99	\$100.37	\$286.04	\$689.88	\$523.75	\$166.13	31.7%
7	4"	\$413.00	\$90.52	\$167.28	\$476.74	\$1,147.53	\$868.39	\$279.14	32.1%
8	6"	\$819.28	\$165.60	\$334.55	\$953.48	\$2,272.91	\$1,730.02	\$542.89	31.4%
9	8"	\$1,306.81	\$287.04	\$535.29	\$1,525.57	\$3,654.71	\$2,763.97	\$890.74	32.2%
10	10"	\$1,875.61	\$430.56	\$769.48	\$2,193.01	\$5,268.65	\$3,970.24	\$1,298.41	32.7%

6.3 PROPOSED FIRE LINE CHARGES

Table 6-5 shows the derivation of private fire line charges. Private fire line charges are calculated based on the potential flow through public and private fire hydrants and fire connections. Total fire protection costs are allocated to private and public fire protection in proportion to the potential demand of each. The top portion of Table 6-5 calculates the potential private fire demand by calculating the demand units from public fire hydrants. Column 2 shows that residential fire hydrants are served through six inch pipelines with two, 2.5 inch diameter ports on the hydrant. We calculate demand factors¹³ for each type of hydrant (residential and industrial) and then multiply by the number of hydrants in column 3 to yield the total demand units shown in column 5. We perform a similar calculation for private fire connections. Column 6 of Table 6-5 shows the percent responsibility for public and private fire costs. Line 8, column 5 shows the number of private fire demand units – which was used to calculate the annual private fire charge shown in Table 5-7, line 17 column 4.

Table 6-5: Derivation of Private Fire Line Charges

Public Fire Protection Potential Demand						
Line No.	Public Fire Hydrants (6" Mains) (1)	Connection Size (in) (2)	Number in Service (3)	Demand Factor ¹ (4)	Demand Units (5)	% of Total Fire Protection Cost (6)
1	Residential	6" Conn, 2 - 2.5" Dia	1,996	22	44,440	
2	Industrial	6" Conn, 2 - 2.5" Dia, 4" Dia	204	61	12,359	
			<u>2,200</u>		<u>56,799</u>	98%

Private Fire Protection Potential Demand Calculation						
Line No.		Connection Size (in)	Number in Service	Demand Factor ¹	Demand Units	% of Total Fire Protection Cost
3		5/8"	0	0.29	0	
4		3/4"	103	0.47	48	
5		1"	565	1.00	565	
6		1.5"	104	2.90	302	
7		2"	63	6.19	390	
8			<u>835</u>		<u>1,305</u>	2.2%
9						
10	Total		<u>3,035</u>		<u>58,104</u>	100%

¹Diameter of the connection raised to 2.63 - Based on the Hazen-Williams equation for flow.

Table 6-6 shows the derivation of the bi-monthly private fire line charge. The annual private fire line charge derived in column 4 of Table 5-7 is divided by the number of billing periods (6) to yield the bi-monthly private fire line charge shown in column 4 for the smaller meters. The larger meter private fire charges are calculated by scaling up the small meter charges by the demand factors for private fire line connections shown in column 4 of Table 6-4. The fire line service charges are lower

¹³ Demand factors are calculated using the Hazen Williams equation for flow through pipe which is a function of the diameter

than the current charges because the District has experienced an increase in the number of fire line service connections because fire departments now require fire service protection for new and remodeled residential services.

Table 6-6: Calculation of Private Fire Line Charges

Line No.	Connection Size (in)	Fire Bi-monthly Charge (2)	Bi-monthly Billing Charge (3)	Proposed Bi-monthly Charge (4)	Current Bi-monthly Charge (5)
1	5/8"	\$2.54	\$6.71	\$9.26	\$14.21
2	3/4"	\$2.54	\$6.71	\$9.26	\$14.21
3	1"	\$5.41	\$6.71	\$12.13	\$19.15
4	1.5"	\$15.73	\$6.71	\$22.44	\$31.51
5	2"	\$33.51	\$6.71	\$40.23	\$46.97

6.4 COMMODITY RATES

Single Family Tier Definitions

The District uses three main sources of water supply for single family customers: local water from Lake Hodges; imported raw water from SDCWA; and imported treated water from SDCWA. As described below, the direct and indirect costs of each source of supply are increasingly more expensive. The amount of water in the breakpoint for the first tier is unchanged and approximately equates to the amount of water necessary to serve a three-person household using 60 gallons of water per day per person (gpcd) on a bi-monthly basis.¹⁴ The amount of water established for the second tier is based on the projected bi-monthly allocation of the amount of water historically available (on a long-term basis) from Lake Hodges to each of the District’s accounts. The amount of water established for the third tier is set at the average summer Single Family bi-monthly use, when water use is at its highest, so that water use beyond this tier (Tier 4 use) is primarily outdoor usage in excess of the average water use.

Absent higher customer demands, the District would be less reliant on the more expensive SDCWA imported water supplies. As a result, the proposed commodity rate structure progressively allocates higher cost supplies to higher volume users. The Tier 1 rate is set using the lowest cost water sources, has the lowest peaking unit rate, and no conservation costs. Tiers 2-4 assign progressively higher water supply, peaking and conservation costs to those who place more demands on the system and generate the associated costs.

Unit Rate Definitions

The commodity rates for each class and tier are derived by summing of the unit rates (\$ / HCF) for:

1. Water Supply
2. Delivery
3. Peaking
4. Conservation

¹⁴ A similar level of use is identified in Water Code section 10608.20 as essential indoor use.

Water Supply costs are costs associated with obtaining and treating water to make it ready for delivery from each of the District’s three possible sources of potable supply, shown in Table 6-6.

Delivery costs are the operating and capital costs associated with delivering water to all customers at a constant average rate of use – also known as serving customers under average daily demand conditions. Therefore delivery costs are spread over all units of water which results in an equal delivery unit costs for all classes and tiers.

Peaking costs, or extra-capacity costs, represent costs incurred to meet customer peak demands in excess of a base use (or in excess of average daily demand). Total extra capacity costs are composed of maximum day and maximum hour demands as discussed in Section 5. For the portion of extra capacity costs collected through the commodity rate, peaking costs are distributed to each tier and class using peaking factors derived from customer use data – this is shown in columns 2 and 3 in Table 5-8. For the portion of extra capacity costs collected through the fixed charge, AWWA hydraulic capacity factors are used to distribute extra capacity costs to customer classes – this is shown in column 5 (meter service) of Table 5-8.

Conservation costs are costs which cover water conservation and efficiency programs and efforts. These programs are targeted to high volume water users. Therefore conservation costs are allocated progressively to Tiers 2, 3 and 4, for which conservation programs are designed to promote water efficiency. The allocation of conservation costs to upper tiers proportionately allocates such costs to those customers whose greater demand create the need for conservation and efficiency programs and efforts.

Unit Cost Derivation

The first step in the commodity rate calculation is the derivation of the supply rate for each tier and class. The supply rate for each tier and class is a function of the cost and amount of water allocated from each of the District’s water sources. Table 6-7 shows the estimated volume (water sold) and cost of each District’s water source.

Table 6-7: Water Sources and Costs

Line No.	Water Source (1)	Cost (\$ / HCF) (2)	Total (HCF) (3)
1	Treated Local Water ¹	\$0.74	1,370,702
2	Imported Raw Water ¹	\$2.75	3,034,098
3	Imported Treated Water	\$2.75	128,682
4	Total		4,533,482
5	Weighted Average Cost	\$2.14	

¹Includes cost to treat raw water in the R.E. Badger Filtration Plant

The water sources shown in Table 6-7 were allocated to each user class in proportion to the water use in each class. The use by user class is shown in Table 6-8.

Table 6-8: Water Use by Customer Class

	Single Family Residence	Multi-family Residence	Irrigation	Non-Residential (Other)	Temporary Construction	Fireline Use	Total
Total Use (HCF)	3,764,233	265,752	279,859	220,829	842	1,967	4,533,482
% of Use	83%	6%	6%	5%	0%	0%	100%

Table 6-9 column 9, shows the total water *used* from each source. The use is allocated in proportion to the use in each class shown in Table 6-8. When water supply is allocated in proportion to use in each class it results in the same average supply cost for each class as shown in line 6 of Table 6-9. To calculate the average supply cost by user class, we take the weighted average - weighted by the use from each source - of the **supply cost for each source** (column 2, Table 6-9). Appendix B shows the derivation of these supply costs. The average **supply cost for each class** is shown in line 6 of Table 6-9. This is the first component of the rate derivation for each class.

Table 6-9: Derivation of Supply Costs by User Class

Derivation of Supply Costs by Class									
Line No.	Water Source (1)	Supply Cost (\$ / HCF) (2)	Single Family Residence (3)	Multi-family Residence (4)	Irrigation (5)	Non-Residential (Other) (6)	Temporary Construction (7)	Fireline Use (8)	TOTAL (9)
1	Treated Local Water ¹	\$0.74	1,138,119	80,350	84,616	66,768	255	595	1,370,702
2	Imported Raw M&I Water ¹	\$2.75	2,519,267	177,859	187,300	147,793	564	1,316	3,034,098
3	Imported Treated Water	\$2.75	106,847	7,543	7,944	6,268	24	56	128,682
4									
5	Total Use by Class (HCF)		3,764,233	265,752	279,859	220,829	842	1,967	4,533,482
6	Average Supply Cost (\$ / HCF)	\$2.14	\$2.14	\$2.14	\$2.14	\$2.14	\$2.14	\$2.14	\$2.14

¹Includes the cost to treat water in the R. E. Badger Filtration Plant

We must also derive the supply unit cost for each single family tier. Table 6-10 shows this derivation. The water allocated to the single family class, shown in column 3 of Table 6-9, is allocated to each tier as shown - Tier 1 is allocated local water. Tier 2 is allocated mostly local water with a small amount of imported water. Tier 3 is allocated imported raw water and Tier 4 is allocated mostly imported raw water with some imported treated water. We calculate the weighted average supply cost by tier by taking the weighted average of the **supply cost by source** (line 7, Table 6-10), weighted by the use in each tier (column 4), to produce the average **supply cost by tier** shown in column 12 of Table 6-10. Note that the average supply cost for the single family class as a whole, shown in the bottom right corner, is the same as that shown in Table 6-9. The average supply cost by tier is a component of the total tier rate.

Table 6-10: Derivation of Supply Costs by Single Family Tier

Derivation of Supply Costs by SFR Tier					Total Water Supply by Source (HCF)				Average
					Water	Water ¹	Treated	TOTAL	
Line No.	Tier (1)	Bi-Monthly Tier BreakPoint (2)	% of Use (3)	Use by Tier (4)	1,138,119 (5)	2,519,267 (6)	106,847 (7)	3,764,233 (11)	(12)
1	Tier 1	0 -15	13.4%	504,447	504,447	-	-	504,447	\$0.74
2	Tier 2	16 - 37	19.3%	727,433	633,672	93,761	-	727,433	\$1.00
3	Tier 3	38 - 165	29.9%	1,126,326	-	1,126,326	-	1,126,326	\$2.75
4	Tier 4	>165	37.4%	1,406,027	-	1,299,180	106,847	1,406,027	\$2.75
5			100.0%	3,764,233	1,138,119	2,519,267	106,847	3,764,233	
6									
7	Average Supply Cost by Source (\$ / HCF)				\$0.74	\$2.75	\$2.75		\$2.14

¹Includes the cost to treat raw water

Delivery Unit Cost

We derive the delivery unit cost in Table 6-11 by subtracting the water supply costs from the District’s cost to obtain, treat and deliver water (known as the base rate and shown in line 1). This base cost was derived in line 17, column 1 of Table 5-7. The base rate is the unit cost to supply and deliver water under average daily demand conditions. By subtracting the average unit supply cost, line 6 of Table 6-9, we identify the unit cost to *deliver* water under the same conditions. This delivery cost is the same for all classes and for all single family tiers.

Table 6-11: Derivation of the Delivery Unit Cost

Line No.		Unit Rate (\$ / HCF)
1	Fully Loaded Base Cost (Obtain, Treat and Deliver Water)	\$3.02
2	Less Cost to Obtain and Treat Water (Supply Costs)	\$2.14
3	Delivery Cost	\$0.87

Peaking Unit Cost

Table 6-12 shows the derivation of the unit peaking costs for single family tiers and each customer class. The peaking costs shown in column 4 were derived in the cost of service section and are the sum of columns 2 and 3, the max day and max hour peaking costs, in Table 5-8. The peaking rate is calculated by dividing the peaking costs (column 4) by the use (column 5) for each class. Note that the peaking rate is correlated with the peaking factor – a higher peaking factor correlates to a higher peaking rate. Also note that the total peaking costs in column 4 of Table 6-12 matches the total peaking costs (max day and max hour) shown in columns 2 and 3 in Table 5-8.

Table 6-12: Derivation of Peaking Unit Cost

Derivation of Peaking Costs						
Line No.	Tier / Class	Tier Breakpoint (Bi-monthly)	Peaking Factor ¹	Peaking Costs	Use (HCF)	Peaking Rate (\$ / HCF)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Single Family		1.39			
2	Tier 1	0 -15	1.02	\$236,419	504,447	\$0.47
3	Tier 2	16 - 37	1.10	\$433,359	727,433	\$0.60
4	Tier 3	38 - 165	1.26	\$955,009	1,126,326	\$0.85
5	Tier 4	>165	1.74	\$2,224,832	1,406,027	\$1.58
6	Subtotal			\$3,849,619	3,764,233	
7	Multi-family Residence		1.21	\$204,223	265,752	\$0.77
8	Irrigation / Commercial Agriculture		1.59	\$378,742	279,859	\$1.35
9	Non-Residential		1.22	\$172,735	220,829	\$0.78
10	Temporary Construction		1.75	\$1,345	842	\$1.60
11	Fire Line		1.75	\$3,143	1,967	\$1.60
12	Total			\$4,609,807	4,533,482	

¹Calculated as the maximum bi-monthly use divided by the average bi-monthly use for each class

Conservation Unit Cost

Table 6-13 shows the derivation of the conservation unit costs by class and tier. The conservation costs for the single family class is calculated by taking the conservation costs derived in the cost of service analysis, shown in column 7 of Table 5-8, and allocating these costs to each tier using the allocation factors, shown in column 3, to allocate the total conservation costs to Tiers 2, 3 and 4. Tiers 3 and 4, containing the highest volume users, have higher allocation factors to recognize the fact that conservation and efficiency programs are targeted at these users, and therefore are the reason for these programs. The allocation factor is weighted by the water use in column 4 resulting in the percent responsibility for conservation costs shown in column 6. The conservation rate is derived by dividing the conservation costs (column 7) by the use in column 4 and is shown in column 8.

The conservation rate for the remaining user classes is calculated by dividing the conservation costs by the use (columns 2 and 4) to yield the conservation rate in column 8. We note that the total conservation costs shown in column 2 matches with that derived in column 7 of Table 5-8.

Table 6-13: Derivation of Conservation Unit Costs

Derivation of Conservation Rate by Class									
Line No.	Tier / Class	Tier Breakpoint (HCF)	Conservation Costs	Allocation Factor	Use (HCF)	Weighted Allocation Factor	Percent Responsibility for Conservation Costs (%)	Allocated Conservation Cost	Conservation Rate (\$ / HCF)
(1)			(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Single Family								
2	Tier 1	0 -15	\$36,213	0.00	504,447	-	0%	\$0	\$0.00
3	Tier 2	16 - 37	\$52,220	0.75	727,433	545,575	14%	\$38,992	\$0.05
4	Tier 3	38 - 165	\$80,855	1.00	1,126,326	1,126,326	30%	\$80,498	\$0.07
5	Tier 4	>165	\$100,934	1.50	1,406,027	2,109,041	56%	\$150,732	\$0.11
6	Subtotal		\$270,222		3,764,233	3,780,941	100%	\$270,222	
7	Multi-family Residence		\$19,077		265,752				\$0.07
8	Irrigation / Commercial Agriculture		\$20,090		279,859				\$0.07
9	Non-Residential		\$15,853		220,829				\$0.07
10	Temporary Construction		\$0		842				\$0.00
11	Fire Line		\$0		1,967				\$0.00
12	Total		\$325,242		\$4,533,482				

Final Rate Derivation

We have calculated the unit rates for supply, delivery, peaking and conservation for single family tiers and for each class in Tables 6-6 through 6-13. Table 6-14 shows the final rates for the Commodity Rate derivation by summing each unit cost to derive the total rate for each tier and class shown in column 7. We note that the total revenue shown in line 17, column 9, nearly matches the revenue requirement derived in Table 5-5 line 24 and shown in line 18 with a slight difference due to rounding. Note that the rates shown in Table 6-11 do not include the CY pass through. Pass-throughs are discussed in the pass-through section below.

Table 6-14: Derivation of Rates by Tier and Class

Total Rate Derivation									
Line No.	Tier (1)	Bi-monthly Breakpoint (HCF) (2)	Supply (\$ / HCF) (3)	Delivery (\$ / HCF) (4)	Peaking (\$ / HCF) (5)	Con-servation (\$ / HCF) (6)	Total Proposed Rate (\$ / HCF) (7)	Use (HCF) (8)	Commodity Revenue (\$) (9)
1	Single Family								
2	Tier 1	0 -15	\$0.74	\$0.87	\$0.47	\$0.00	\$2.09	504,447	\$1,051,953
3	Tier 2	16 - 37	\$1.00	\$0.87	\$0.60	\$0.05	\$2.52	727,433	\$1,836,633
4	Tier 3	38 - 165	\$2.75	\$0.87	\$0.85	\$0.07	\$4.54	1,126,326	\$5,117,823
5	Tier 4	>165	\$2.75	\$0.87	\$1.58	\$0.11	\$5.31	1,406,027	\$7,471,959
6									
7	Multi-family Residence		\$2.14	\$0.87	\$0.77	\$0.07	\$3.86	265,752	\$1,025,205
8	Irrigation / Commercial Agriculture		\$2.14	\$0.87	\$1.35	\$0.07	\$4.44	279,859	\$1,242,533
9	Non-Residential		\$2.14	\$0.87	\$0.78	\$0.07	\$3.87	220,829	\$854,935
10	Temporary Construction		\$2.14	\$0.87	\$1.60	\$0.00	\$4.62	842	\$3,886
11	Fire Line		\$2.14	\$0.87	\$1.60	\$0.00	\$4.62	1,967	\$9,078
12									
13	Subtotal							4,533,482	18,614,006
14	Total Base Meter Charge Revenue (Fixed Revenue)								\$1,894,211
15	Private Fire Line Revenue - Fire Protection Component Only								\$42,403
16									
17	Total Revenue								\$20,550,620
18	Revenue Requirement								\$20,551,391
20	Difference (Due to Rounding)								-\$771

6.5 PASS-THROUGH COSTS

Fixed Charge Pass-Throughs

As noted in the executive summary, the District is proposing to itemize and bill the wholesale fixed charges levied on the District by its wholesale water agencies. The CY increase in these wholesale fixed charges will be passed through to District customers as derived below.

Metropolitan Water District (MWD) Capacity Charge

Table 6-15 shows the MWD Capacity Charge for calendar year (CY) that is passed through to District customers. We calculate this charge as the calendar year difference in the yearly MWD capacity charge divided by the number of hydraulically equivalent meters and by the number of billing periods (6). This results in the charge for 5/8" and 3/4" meters; the charge for larger meters is scaled up using hydraulic capacity factors shown in column 2 of Table 6-2. The number of hydraulically equivalent meters remains the same for the remaining fixed charge pass-through calculations in this section (for the remaining tables). The District will do this yearly based on future MWD fixed charge increases – therefore we have not shown future years, as MWD’s charges are not known at this time.

Table 6-15: CY 2016 MWD Capacity Charge Pass-Through

Line No.		CY 2015	CY 2016
1	MWD Capacity Charge	\$172,644	\$232,836
2	CY Pass Through Amount		\$30,096
3	Number of Hydraulically Equivalent Meters		10,915
4	<u>Meter Size</u>		<u>CY 2016</u>
5	5/8"		\$0.46
6	3/4"		\$0.46
7	1"		\$0.77
8	1.5"		\$1.53
9	2"		\$2.45
10	3"		\$4.60
11	4"		\$7.66
12	6"		\$15.32
13	8"		\$24.51
14	10"		\$35.23

MWD Readiness-to-Serve Charge (RTS)

The District will also pass through to its customers MWD’s RTS Charge. The RTS charge is already incorporated in the Fixed Charge discussed in Table 6.3 because it is charged on a fiscal year basis to the District. For CY 2017, the District will calculate this pass-through in a similar manner as other pass-through charges – the difference in charges between fiscal years divided by the number of hydraulically equivalent meters.

San Diego County Water Authority (SDCWA) Customer Service Charge (CSC)

The SDCWA also has a fixed CSC charge that the District will pass through to its customers. Table 6-16 shows the derivation of the SDCWA CSC pass-through. The District will calculate this pass-through as the yearly (calendar) difference in fixed charges and divide by the total number of hydraulically equivalent meters (same number as shown in Table 6-15) to yield the pass-through for small meters. The pass-through for larger meters is then scaled up using AWWA hydraulic capacity ratios (column 2 in Table 6-2).

Table 6-16: Derivation of SDCWA Customer Service Charge Pass-Through

Line No.		CY 2015	CY 2016
1	Customer Service Charge	\$308,160	\$409,020
2	CY Difference		\$50,430
3			
4	<u>Meter Size</u>		<u>CY 2016</u>
5	5/8"		\$0.77
6	3/4"		\$0.77
7	1"		\$1.28
8	1.5"		\$2.57
9	2"		\$4.11
10	3"		\$7.70
11	4"		\$12.83
12	6"		\$25.67
13	8"		\$41.07
14	10"		\$59.04

SDCWA Emergency Storage Charge (ESC)

Table 6-17 shows the derivation of the SDCWA ESC pass-through. This charge is calculated the same as the above pass-through charges.

Table 6-17: Derivation of the SDCWA ESC Pass-Through

Line No.		CY 2015	CY 2016
1	Emergency Storage Charge	\$806,556	\$1,075,596
2	CY Difference		\$134,520
3			
4	<u>Meter Size</u>		<u>CY 2016</u>
5	5/8"		\$2.05
6	3/4"		\$2.05
7	1"		\$3.42
8	1.5"		\$6.85
9	2"		\$10.95
10	3"		\$20.54
11	4"		\$34.23
12	6"		\$68.47
13	8"		\$109.55
14	10"		\$157.48

SDCWA Supply Reliability Charge (SRC)

The SDCWA Supply Reliability Charge is a new charge levied at the start of CY 2016, therefore no amount is shown for CY 2015 in Table 6-18. This pass-through charge is calculated the same as the above pass-throughs.

Table 6-18: Derivation of the SDCWA SRC Pass-Through

Line No.		CY 2015	CY 2016
1	Supply Reliability Charge		\$388,692
2	CY Difference		\$194,346
3			
4	<u>Meter Size</u>		<u>CY 2016</u>
5	5/8"		\$2.97
6	3/4"		\$2.97
7	1"		\$4.95
8	1.5"		\$9.89
9	2"		\$15.83
10	3"		\$29.68
11	4"		\$49.46
12	6"		\$98.92
13	8"		\$158.27
14	10"		\$227.51

SDCWA Volumetric Cost Increase Pass-Through

The District will also pass-through volumetric water cost increases from the SDCWA at the start of every calendar year. Table 6-19 shows the derivation of the volumetric pass-through increases for calendar year 2016. This pass-through charge, passes through the increase in the cost of water from the SDCWA. It is calculated as the difference in District water costs in successive calendar years. This difference is divided by the estimated water use for the calendar year to yield the pass-through increase and commodity charge rate shown in line 5.

Table 6-19: Derivation of Commodity Rate Pass-through

Estimated Pass-Throughs				CY 2016
Line No.	Line No.	(1)	(2)	(3)
1	Difference in CY Water Purchase Costs			\$122,104
2	Pass Through Amount			\$122,104
3	Water Use (HCF)			4,552,047
4				
5	Uniform Pass Through (\$ / HCF)			\$0.03

6.6 RECYCLED WATER RATES

Table 6-20 shows the derivation of the recycled water rates. Lines 1 through 6 show the costs to operate the recycled water system. This cost is just slightly below the current revenue from the recycled water system. The District has chosen to maintain the recycled variable rate and decrease the Base Meter fee. The yearly Base Meter Fee shown in line 9 of Table 6-20 is calculated by taking the amount collected through the Base Meter Fee (line 8) and dividing it by the total number of

equivalent meters shown in column 4 of Table 6-21. Line 13 shows the recycled commodity rate which is calculated by dividing the variable revenue requirement (line 11) by the estimated recycled water use (line 12).

Table 6-20: Derivation of Recycled Water Rates

Line No.	Recycled Expense Item (1)	FY 2016 (2)
1	Recycled Water Purchase Costs	\$610,299
2	General Manager Time (2%)	\$5,315
3	Engineering Manager Time (5%)	\$10,643
4	Recycled Cross Connection Staff	\$57,500
5	Program Costs (Signage, Training, Fees, Meters & Maint)	\$16,750
6	Subtotal	\$700,507
7	Percent Fixed Revenue	10.8%
8	Collected Through Fixed Charge	\$75,655
9	Yearly Equivalent Fixed Charge	\$240.68
10	Variable Revenue %	89.2%
11	Variable Revenue - \$	\$624,852
12	Recycled Water Use	196,020
13	Recycled Variable Rate	\$3.19
14	Current Recycled Rate	\$3.19

Table 6-21 shows the derivation of the Recycled Base Meter Fee which consists of two components – the fixed charge (recovering a portion of capacity costs) and the customer component (which is the same as potable water). The fixed fee shown in column 5 is the yearly fixed charge shown in line 9 of Table 6-20 divided by 12 (for the smaller meters). We add the customer component (column 6) to yield the total Recycled Base Meter Fee in column 7. The Base Meter Fee for larger meters is derived by scaling up this fee by the capacity ratios shown in column 2 of Table 6-2.

Table 6-21: Derivation of the Recycled Base Meter Fee

Line No.	Meter Size (1)	Capacity Ratio (2)	No. of Meters (3)	Equivalent Meters (4)	Fixed Monthly Capacity Charge (5)	Customer (6)	Proposed Monthly Base Meter Fee (7)	Current Charge (8)
1	5/8"	1.00	0	0	\$20.06	\$6.71	\$26.77	\$27.58
2	3/4"	1.00	0	0	\$20.06	\$6.71	\$26.77	\$27.58
3	1"	1.67	15	25	\$33.43	\$6.71	\$40.14	\$43.84
4	1.5"	3.33	0	0	\$66.86	\$6.71	\$73.57	\$84.48
5	2"	5.33	28	149	\$106.97	\$6.71	\$113.69	\$133.25
6	3"	10.00	3	30	\$200.57	\$6.71	\$207.28	\$247.05
7	4"	16.67	2	33	\$334.28	\$6.71	\$341.00	\$409.62
8	6"	33.33	0	0	\$668.56	\$6.71	\$675.28	\$816.05
9	8"	53.33	0	0	\$1,069.70	\$6.71	\$1,076.42	\$1,303.76
10	10"	76.67	1	77	\$1,537.70	\$6.71	\$1,544.41	\$1,872.76

7 BILL IMPACTS

Section 7 shows the customer bill impacts for each customer class. The tables shown include pass-through charges for calendar year 2016 (SDCWA volumetric pass-throughs, IAC, CSC, and ESC as well as the MWD RTS and Capacity Charge). For all tables, columns 8 and 9 show the difference between the proposed bi-monthly bill and the current bi-monthly bill in dollars and in percent. The low water user impacts shown are a result of collecting slightly more revenue through the fixed charge and passing through wholesaler fixed costs via the District fixed charge.

7.1 CUSTOMER BILL IMPACTS

Single Family Bill Impacts

Table 7-1 shows the Single Family customer bill impacts for various use points and assuming a ¾-inch meter – which is the most common meter size for Single Family customers. Column 2 shows the percent of bills that fall below a certain use point during a bi-monthly billing period. For example, 65% of the annual bills are for 100 HCF or less. Column 3 shows the percent of bills that fall within the use points shown in column 1. For example, 18% of annual bills fall between 50 and 100 HCF bi-monthly usage. The average and median Single Family use is 120 and 56 HCF bi-monthly respectively. As shown in Table 7-1, due to the higher fixed charge and the new tier structure and breakpoints, the median customer (56 HCF) will realize a small bill decrease, while low and high volume customers will see bill increases.

Table 7-1: Single Family Bill Impacts (3/4" Meter)

Line No.	Bi-Monthly Usage (HCF)		CY 2016		Proposed			Bi-monthly		
	Usage (HCF)	% of Bills Below	Proposed Base Meter Charge	MWD & CWA Pass-Throughs	Proposed Commodity Charge	Bi-monthly Bill	Current Bi-Monthly Bill	Difference (\$)	Difference (%)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	5	3%	3%	\$69.00	\$6.25	\$10.60	\$85.85	\$71.97	\$13.88	19.3%
2	15	13%	10%	\$69.00	\$6.25	\$31.80	\$107.05	\$98.97	\$8.08	8.2%
3	50	47%	34%	\$69.00	\$6.25	\$147.31	\$222.56	\$233.37	-\$10.81	-4.6%
4	100	65%	18%	\$69.00	\$6.25	\$375.81	\$451.06	\$425.37	\$25.69	6.0%
5	150	75%	10%	\$69.00	\$6.25	\$604.31	\$679.56	\$617.37	\$62.19	10.1%
6	200	82%	7%	\$69.00	\$6.25	\$859.76	\$935.01	\$809.37	\$125.64	15.5%
7	250	86%	5%	\$69.00	\$6.25	\$1,126.76	\$1,202.01	\$1,001.37	\$200.64	20.0%
8	300	90%	3%	\$69.00	\$6.25	\$1,393.76	\$1,469.01	\$1,193.37	\$275.64	23.1%

Tables 7-2, 7-3 and 7-4 show the bill impacts for 1", 1 ½" and 2" Single Family customers respectively.

Table 7-2: Single Family Impacts (1" Meter)

Line No.	Bi-Monthly Usage (HCF) (1)	% of Bills Below (2)	% of Bills (3)	Proposed Base Meter Charge (4)	CY 2016 MWD & CWA Pass-Throughs (5)	Proposed Commodity Charge (6)	Proposed Bi-monthly Bill (7)	Current Bi-Monthly Bill (8)	Bi-monthly Difference (\$) (9)	Bi-monthly Difference (%) (10)
1	5	3%	3%	\$110.16	\$10.42	\$10.60	\$131.17	\$106.43	\$24.74	23.2%
2	15	13%	10%	\$110.16	\$10.42	\$31.80	\$152.37	\$133.43	\$18.94	14.2%
3	50	47%	34%	\$110.16	\$10.42	\$147.31	\$267.88	\$267.83	\$0.05	0.0%
4	100	65%	18%	\$110.16	\$10.42	\$375.81	\$496.38	\$459.83	\$36.55	7.9%
5	150	75%	10%	\$110.16	\$10.42	\$604.31	\$724.88	\$651.83	\$73.05	11.2%
6	200	82%	7%	\$110.16	\$10.42	\$859.76	\$980.33	\$843.83	\$136.50	16.2%
7	250	86%	5%	\$110.16	\$10.42	\$1,126.76	\$1,247.33	\$1,035.83	\$211.50	20.4%
8	300	90%	3%	\$110.16	\$10.42	\$1,393.76	\$1,514.33	\$1,227.83	\$286.50	23.3%

Table 7-3: Single Family Impacts (1 ½" Meter)

Line No.	Bi-Monthly Usage (HCF) (1)	% of Bills Below (2)	% of Bills (3)	Proposed Base Meter Charge (4)	CY 2016 MWD & CWA Pass-Throughs (5)	Proposed Commodity Charge (6)	Proposed Bi-monthly Bill (7)	Current Bi-Monthly Bill (8)	Bi-monthly Difference (\$) (9)	Bi-monthly Difference (%) (10)
1	5	3%	3%	\$212.50	\$20.84	\$10.60	\$243.93	\$192.60	\$51.33	26.7%
2	15	13%	10%	\$212.50	\$20.84	\$31.80	\$265.13	\$219.60	\$45.53	20.7%
3	50	47%	34%	\$212.50	\$20.84	\$147.31	\$380.64	\$354.00	\$26.64	7.5%
4	100	65%	18%	\$212.50	\$20.84	\$375.81	\$609.14	\$546.00	\$63.14	11.6%
5	150	75%	10%	\$212.50	\$20.84	\$604.31	\$837.64	\$738.00	\$99.64	13.5%
6	200	82%	7%	\$212.50	\$20.84	\$859.76	\$1,093.09	\$930.00	\$163.09	17.5%
7	250	86%	5%	\$212.50	\$20.84	\$1,126.76	\$1,360.09	\$1,122.00	\$238.09	21.2%
8	300	90%	3%	\$212.50	\$20.84	\$1,393.76	\$1,627.09	\$1,314.00	\$313.09	23.8%

Table 7-4: Single Family Impacts (2" Meter)

Line No.	Bi-Monthly Usage (HCF) (1)	% of Bills Below (2)	% of Bills (3)	Proposed Base Meter Charge (4)	CY 2016 MWD & CWA Pass-Throughs (5)	Proposed Commodity Charge (6)	Proposed Bi-monthly Bill (7)	Current Bi-Monthly Bill (8)	Bi-monthly Difference (\$) (9)	Bi-monthly Difference (%) (10)
1	5	3%	3%	\$338.17	\$33.34	\$10.60	\$382.11	\$295.99	\$86.12	29.1%
2	15	13%	10%	\$338.17	\$33.34	\$31.80	\$403.31	\$322.99	\$80.32	24.9%
3	50	47%	34%	\$338.17	\$33.34	\$147.31	\$518.82	\$457.39	\$61.43	13.4%
4	100	65%	18%	\$338.17	\$33.34	\$375.81	\$747.32	\$649.39	\$97.93	15.1%
5	150	75%	10%	\$338.17	\$33.34	\$604.31	\$975.82	\$841.39	\$134.43	16.0%
6	200	82%	7%	\$338.17	\$33.34	\$859.76	\$1,231.27	\$1,033.39	\$197.88	19.1%
7	250	86%	5%	\$338.17	\$33.34	\$1,126.76	\$1,498.27	\$1,225.39	\$272.88	22.3%
8	300	90%	3%	\$338.17	\$33.34	\$1,393.76	\$1,765.27	\$1,417.39	\$347.88	24.5%

Multi-family Bill Impacts

Table 7-2 shows Multi-family customer bill impacts for various use points, assuming a ¾-inch meter – which is the most common meter size for this class.

Table 7-5: Multi-family Bill Impacts (¾" Meter)

Line No.	Monthly Usage (HCF) (1)	Proposed Base Meter Charge (2)	CY 2016 - MWD & CWA Pass-Throughs (3)	Proposed Commodity Charge (4)	Proposed Bi-monthly Bill (5)	Current Bi-Monthly Bill (6)	Bi-monthly Difference (\$) (6)	Difference (%) (7)
1	50	\$69.00	\$6.25	\$194.50	\$269.75	\$250.47	\$19.28	7.7%
2	100	\$69.00	\$6.25	\$389.00	\$464.25	\$442.47	\$21.78	4.9%
3	150	\$69.00	\$6.25	\$583.50	\$658.75	\$634.47	\$24.28	3.8%

Irrigation

Table 7-3 shows the Irrigation customer bill impacts for various use points and assuming a 1.5-inch meter – the most common meter size for this class.

Table 7-6: Irrigation/Commercial Agriculture Bill Impacts (1.5" Meter)

Line No.	Monthly Usage (HCF) (1)	Proposed Base Meter Charge (2)	CY 2016 - MWD & CWA Pass-Throughs (3)	Proposed Commodity Charge (4)	Proposed Bi-monthly Bill (5)	Current Bi-Monthly Bill (6)	Bi-monthly Difference (\$) (6)	Difference (%) (7)
1	160	\$212.50	\$20.84	\$715.20	\$948.53	\$825.50	\$123.03	14.9%
2	360	\$212.50	\$20.84	\$1,609.20	\$1,842.53	\$1,633.50	\$209.03	12.8%
3	560	\$212.50	\$20.84	\$2,503.20	\$2,736.53	\$2,441.50	\$295.03	12.1%

Non-Residential (Other)

Table 7-4 shows the Non-Residential (commercial) customer bill impacts assuming a ¾-inch meter – the most common meter size for this class.

Table 7-7: Non-Residential Bill Impacts (3/4" Meter)

Line No.	Monthly Usage (HCF) (1)	Proposed Base Meter Charge (2)	CY 2016 - MWD & CWA Pass-Throughs (3)	Proposed Commodity Charge (4)	Proposed Bi-monthly Bill (5)	Current Bi-Monthly Bill (6)	Bi-monthly Difference (\$) (6)	Difference (%) (7)
1	15	\$69.00	\$6.25	\$58.50	\$133.75	\$114.12	\$19.63	17.2%
2	30	\$69.00	\$6.25	\$117.00	\$192.25	\$169.77	\$22.48	13.2%
3	45	\$69.00	\$6.25	\$175.50	\$250.75	\$225.42	\$25.33	11.2%

Recycled Water

Table 7-5 shows Recycled Water customer bill impacts assuming a 2-inch meter- the most common meter size for this customer class. Recycled Water customers are billed monthly.

Table 7-8: Recycled Water Bill Impacts (2" Meter)

Line No.	Monthly Usage (HCF) (1)	Proposed Base Meter Charge (2)	Proposed Commodity Charge (3)	Proposed Monthly Bill (4)	Monthly Difference (5)	Monthly Difference (5)	Difference (%) (6)
1	630	\$113.69	\$2,009.70	\$2,123.39	\$2,292.19	-\$375.10	-15.0%
2	830	\$113.69	\$2,647.70	\$2,761.39	\$2,930.19	-\$432.52	-13.5%
3	1,030	\$113.69	\$3,285.70	\$3,399.39	\$3,568.19	-\$489.94	-12.6%

8 WATER DEMAND REDUCTION RATES

8.1 WATER DEMAND REDUCTION BACKGROUND

In response to ongoing drought conditions, State mandates, and District requirements, customers have reduced their water usage significantly since June 2015. With the water supply situation being very uncertain and with slow customer response to return to normal usage, the District needs to be prepared to handle demand reductions in the near future. To prepare for reduced demand and the impact on District revenues, the District can establish demand reduction rates to recover lost revenue due to reduced sales.

The District is subject to penalties from the SDCWA/MWD should it exceed its water allocation. Currently the District is below its SDCWA allocation; however to meet the State mandate for 36% reduction, the District has implemented volumetric penalties that are charged to customers for any usage that exceed their allocation.

Revenue Collection for Demand Reduction

As water sales decrease, the District's revenue requirement (costs) decreases along with revenue. However, the District's revenue decreases more than its costs do. The majority of the District's short term costs are fixed (salaries, benefits, debt service, etc.) and therefore water demand reduction rates are a tool that can be used to recover lost revenue to cover a portion of its fixed costs. With reduced demand, the District's revenue requirement is lower than its normal revenue requirement because as the District serves less water it also purchases and treats less water, thereby saving the associated treatment and delivery costs.

Customer Bills during a Water Demand Reduction

Provided that customers' reduce their water use in line with the demand reduction cutback goal, their total water bill should be lower than their bill for normal usage. Conversely, those that do not decrease consumption will face higher charges.

8.2 WATER DEMAND REDUCTION RATE CALCULATION

The first step in calculating water demand reduction rates is to estimate the reduction in use from each customer class. RFC modelled the reduction in use by using District customer use data and establishing a minimum use level to provide for basic health and sanitation needs. This minimum use level represents essential indoor water use. The remaining use is considered discretionary and is the target of the cutbacks. The minimum use levels are:

1. For the Single Family Residential class, RFC assumed a minimum bi-monthly use per account of 15 HCF. This is approximately equal to an indoor use of 60 gallons per day per person for a three-person household. The 60 gpcd usage is based on an AWWA Research Foundation (AWWARF) Study titled *Residential End Uses of Water*.
2. For the Multi-family customer class RFC estimated bi-monthly use per account of 13 HCF, reflecting the fact that multi-family homes usually have a lower density of 2.6 persons per household.

- For the Non-Residential class, RFC assumed the use during a customer’s minimum bi-monthly billing cycle (winter use) was each customer’s essential use. We use winter use for the Non-Residential class because it reflects the limited ability of commercial customers to reduce water use beyond their minimum winter use – which assumes no or low outside irrigation use.

The upper (blue) portion of Table 8-1 shows the estimated demand reduction percentages under assumed water use reductions (as examples). The assumed percentage cutbacks for each class and tier are shown in columns 3, 5, 7 and 9, and the volume cutbacks in columns 4, 6, 8 and 10. The estimated cutbacks (columns 3, 5, 7, 9) in the table are the assumed percent reductions for each tier and class, which when combined, yield the total cutbacks in line 20 during each water use reduction example. For instance, we have assumed that Tier 2 customers will reduce use by 25% (1,126,326 x 25% = 281,581 hcf) during a water use reduction of 30% (column 5). The resulting total cutback for all classes, in HCF and percent for each demand reduction level is shown in lines 19 and 20.

Table 8-1: Estimated Use Cutbacks in Percentages and HCF by Demand reduction Percentage

Line No.	Customer Class (1)	FY 2015-2016 Estimated Water Use (HCF) (2)	Water Use Reduction		Water Use Reduction		Water Use Reduction		Water Use Reduction	
			up to 20%		up to 30%		up to 40%		> than 40%	
			(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
			Estimated Cutback (%)	Estimated Cutback (HCF)	Estimated Cutback (%)	Estimated Cutback (HCF)	Estimated Cutback (%)	Estimated Cutback (HCF)	Estimated Cutback (%)	Estimated Cutback (HCF)
1	SF Residential									
2	Tier 1	15	0%	-	0%	-	0%	-	0%	-
3	Tier 2	37	5%	36,372	7%	53,830	13%	94,566	20%	145,487
4	Tier 3	165	15%	168,949	25%	281,581	39%	439,267	52%	585,689
5	Tier 4	>165	38%	534,290	55%	773,315	74%	1,040,460	86%	1,209,184
6	Single Family Resid. Cutback	3,764,233	20%	739,611	29%	1,108,726	42%	1,574,294	52%	1,940,359
7										
8	Multi-family Residence	265,752	20%	53,150	22%	58,466	22%	58,466	22%	58,466
9										
10	Irrigation / Commercial Agriculture	279,859	20%	55,971.84	43%	120,339	45%	125,937	50%	139,930
11										
12	Non-Residential	220,829	19%	41,515.79	19%	41,516	19%	41,516	19%	41,516
13										
14	Temporary Construction	842	0%	-	-	-	-	-	-	-
15										
16	Fire Line	1,967	0%	-	-	-	-	-	-	-
17	Subtotal Non-SFR	769,249		20%		29%		29%		31%
18										
19	Total Cutback - HCF	4,533,482		890,249		1,329,047		1,800,211		2,180,270
20	Total Cutback - %			20%		29%		40%		48%

Using the estimated reduction cutbacks in water use from Table 8-1, we can calculate the estimated lost revenue as shown in Table 8-2, - line 18.

Table 8-2: Calculation of Lost Revenue

Line No.	Customer Class (1)	FY 2015-2016 Estimated Water Use (HCF) (2)	Water Use Reduction up to 20% (3)	Water Use Reduction up to 30% (4)	Water Use Reduction up to 40% (5)	Water Use Reduction > than 40% (6)
		Proposed Non- Drought Rate	Lost Revenue	Lost Revenue	Lost Revenue	Lost Revenue
1	Tier 1	\$2.09	\$0	\$0	\$0	\$0
2	Tier 2	\$2.52	\$91,832	\$135,911	\$238,762	\$367,327
3	Tier 3	\$4.54	\$767,673	\$1,279,456	\$1,995,951	\$2,661,268
4	Tier 4	\$5.31	\$2,839,345	\$4,109,578	\$5,529,250	\$6,425,885
5			3,698,850	5,524,944	7,763,963	9,454,480
7						
8	Multi-family Residence	\$3.86	\$205,041	\$225,545	\$225,545	\$225,545
9						
10	Irrigation / Commercial Agriculture	\$4.44	\$248,507	\$534,289	\$559,140	\$621,267
11						
12	Non-Residential	\$3.87	\$160,728	\$160,728	\$160,728	\$160,728
13						
14	Temporary Construction	\$4.62	\$0	\$0	\$0	\$0
15						
16	Fire Line	\$4.62	\$0	\$0	\$0	\$0
17						
18	Total Lost Revenue		\$4,313,125	\$6,445,507	\$8,709,376	\$10,462,019
19	Percent of Commodity Revenue Lost		23%	35%	47%	56%

We must adjust the lost revenue for savings due to lower water purchases and water treatment expenses. Table 8-3 shows the estimated savings for example demand reduction percentages in line 10. The savings are calculated by multiplying the estimated cutback for each example demand reduction percentage by the variable water purchase and treatment costs shown in line 7 – which are the estimated variable costs that are reduced when the District purchases and treats less water.

Table 8-3: Calculation of Demand Reduction Savings

Line No.	(1)	(2)	FY 2016 (3)	Water Use Reduction up to 20% (4)	Water Use Reduction up to 30% (5)	Water Use Reduction up to 40% (6)	Water Use Reduction > than 40% (7)
			1	SDCWA Water Purchases		\$7,882,478	
2		% to SDWD					
3	Filtration Plant Chemical:	40%	\$572,940				
4	Treatment Residuals Mgmt		\$54,000				
5	Plant Power		\$29,400				
6	San Dieguito Pump Station Elec.		\$120,000				
7	Subtotal Variable Costs		\$8,658,818				
8	Cutback (%)			20%	29%	40%	48%
9	Total Drought Savings			\$1,700,349	\$2,538,441	\$3,438,351	\$4,164,252
10	Net Revenue Lost After Savings (For One Year)			\$2,612,776	\$3,907,065	\$5,271,025	\$6,297,767

Lastly, we calculate the rate percentage increase needed for the demand reduction percentages by dividing the lost revenue (adjusted for savings, line 1, Table 8-4) by the expected demand reduction revenue (line 2, Table 8-4). The result is shown in line 4 of Table 8-4. We apply this percentage increase to the proposed rates in column 2 (which include CY volumetric pass-throughs) to yield the water demand reduction rates shown in columns 3, 5, 7 and 9. Table 8-4 also shows the dollar increase for each demand reduction stage in columns 4, 6, 8 and 10.

Table 8-4: Demand Reduction Rate Calculation

Line No.	(1)	(2)	Water Use Reduction		Water Use Reduction		Water Use Reduction		Water Use Reduction	
			up to 20%	up to 30%	up to 40%	> than 40%				
	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
1	Estimated Lost Rev after Savings		\$2,612,776		\$3,907,065		\$5,271,025		\$6,297,767	
2	Expected Volumetric Drought Revenue		\$14,300,881		\$12,168,499		\$9,904,630		\$8,151,987	
3	Drought Volumetric Revenue Requirement		\$16,913,657		\$16,075,565		\$15,175,655		\$14,449,754	
4	% Increase		18.3%		32.1%		53.2%		77.3%	
		Non-Drought Rate (Includes CY 2016 Pass-Through)	Drought Rate	\$ Increase	Drought Rate	\$ Increase	Drought Rate	\$ Increase	Drought Rate	\$ Increase
5										
6	SFR									
7	Tier 1	\$2.12	\$2.50	\$0.39	\$2.79	\$0.68	\$3.24	\$1.13	\$3.75	\$1.63
8	Tier 2	\$2.55	\$3.02	\$0.47	\$3.38	\$0.82	\$3.91	\$1.36	\$4.53	\$1.97
9	Tier 3	\$4.57	\$5.41	\$0.84	\$6.04	\$1.47	\$7.01	\$2.43	\$8.11	\$3.53
10	Tier 4	\$5.34	\$6.32	\$0.98	\$7.06	\$1.72	\$8.19	\$2.84	\$9.47	\$4.13
12	Multi-family Residence	\$3.89	\$4.60	\$0.71	\$5.14	\$1.25	\$5.96	\$2.07	\$6.89	\$3.00
13	Irrigation / Commercial Agriculture	\$4.47	\$5.29	\$0.82	\$5.91	\$1.44	\$6.85	\$2.38	\$7.92	\$3.45
14	Non-Residential	\$3.90	\$4.61	\$0.71	\$5.15	\$1.25	\$5.98	\$2.08	\$6.92	\$3.01
15	Temporary Construction	\$4.65	\$5.49	\$0.85	\$6.14	\$1.49	\$7.12	\$2.47	\$8.23	\$3.59
16	Fire Line	\$4.65	\$5.49	\$0.85	\$6.14	\$1.49	\$7.12	\$2.47	\$8.23	\$3.59

We have calculated water demand reduction rates for different water use cutback percentages in the above table. The District may consider implementation of a Water Demand Reduction Rate based on a 36% cutback in use, which is obtained by using linear interpolation between the rates for the 30% and 40% cutback in Table 8-4. The Water Demand reduction Rates for a 36% cutback are shown in Table 8-5 as an illustration.

Table 8-5: Water Demand Reduction Rates for a 36% Water Use Cutback

Line No.	Class (1)	Water Shortage Rate (\$ /HCF) (2)	\$ Increase (3)
	SFR		
1	Tier 1	\$3.06	\$0.95
2	Tier 2	\$3.70	\$1.14
3	Tier 3	\$6.62	\$2.05
4	Tier 4	\$7.74	\$2.39
5	Multi-family Residence	\$5.63	\$1.74
6	Irrigation	\$6.47	\$2.00
7	Non-Residential	\$5.65	\$1.75
8	Temporary Construction	\$6.73	\$2.08
9	Fire Line	\$6.73	\$2.08

Water Demand Reduction Rate Adoption

The Board could adopt the water demand reduction rates separately from other rate increases. The District would include the Water Demand Reduction Rates in the Proposition 218 notice but the Board would authorize them by separate resolution when and if they need to be implemented. Table 8-6 shows the percentage maximum rate increase per water demand reduction percentage. For the duration of the rate proposal period (FY 2016 to FY 2018 - 3 years), the Board would have the ability to adopt water demand reduction rates by increasing the then current commodity rate, through a public hearing without having to re-issue the Proposition 218 notice.

Table 8-6: Water Demand reduction Rate Increases (%) by Water Demand Reduction Percentage

Water Use Cutback up to 20%	Water Use Cutback up to 30%	Water Use Cutback up to 40%	Water Use Cutback > than 40%
18.3%	32.1%	53.2%	77.3%

9 APPENDIX A: CASH FLOW DETAIL

Line No.		2016 Projected (1)	2017 Projected (2)	2018 Projected (3)	2019 Projected (4)	2020 Projected (5)	2021 Projected	2022 Projected	2023 Projected	2024 Projected	2025 Projected
1	Revenue - Potable (Bi-Monthly)										
2	Revenue from SFID Rates	\$21,117,280	\$21,247,465	\$21,378,628	\$21,510,774	\$21,510,774	\$21,510,774	\$21,510,774	\$21,510,774	\$21,510,774	\$21,510,774
8	Additional Revenue:										
9	Fiscal										
10	Year										
13	FY 2016	\$791,898	\$1,912,272	\$1,924,076	\$1,935,970	\$1,935,970	\$1,935,970	\$1,935,970	\$1,935,970	\$1,935,970	\$1,935,970
14	FY 2017		\$1,042,188	\$2,097,243	\$2,110,207	\$2,110,207	\$2,110,207	\$2,110,207	\$2,110,207	\$2,110,207	\$2,110,207
15	FY 2018			\$1,142,998	\$2,300,126	\$2,300,126	\$2,300,126	\$2,300,126	\$2,300,126	\$2,300,126	\$2,300,126
16	FY 2019				\$1,114,283	\$2,228,566	\$2,228,566	\$2,228,566	\$2,228,566	\$2,228,566	\$2,228,566
17	FY 2020					\$451,285	\$902,569	\$902,569	\$902,569	\$902,569	\$902,569
18	Total Additional Revenue	\$791,898	\$2,954,460	\$5,164,318	\$7,460,585	\$9,026,153	\$9,477,437	\$9,477,437	\$9,477,437	\$9,477,437	\$9,477,437
19											
20	Other Revenue										
21	Pass-through Revenue										
22	CWA IAC Revenue	\$0	\$17,368	\$43,842	\$63,295	\$83,721	\$105,169	\$127,688	\$151,334	\$176,162	\$202,232
23	MWD RTS and Capacity Charge	\$0	\$57,140	\$91,357	\$127,285	\$165,010	\$204,621	\$246,212	\$289,883	\$335,737	\$383,884
24	CWA SRC, ESC and CSC	\$0	\$426,129	\$522,136	\$622,943	\$728,791	\$839,931	\$956,628	\$1,079,160	\$1,207,819	\$1,342,910
26	Passthrough MWD Volumetric	\$0	\$220,447	\$563,791	\$931,711	\$1,311,670	\$1,710,627	\$2,129,531	\$2,569,381	\$3,031,224	\$3,516,159
27	SDWD Operating Contribution	\$2,080,907	\$2,172,006	\$2,248,361	\$2,328,004	\$2,411,302	\$2,498,234	\$2,588,991	\$2,683,773	\$2,782,795	\$2,886,284
28	Other Non-Operating Revenue	\$333,000	\$332,495	\$331,994	\$331,497	\$331,497	\$331,497	\$331,497	\$331,497	\$331,497	\$331,497
29	Interest Income	\$205,500	\$205,500	\$205,500	\$205,500	\$205,500	\$205,500	\$205,500	\$205,500	\$205,500	\$205,500
30	Total Revenue	\$24,528,584	\$27,633,011	\$30,549,926	\$33,581,594	\$35,774,417	\$36,883,789	\$37,574,259	\$38,298,740	\$39,058,945	\$39,856,677
32	O&M Expenses										
33	Personnel	\$6,393,268	\$6,695,387	\$6,981,226	\$7,282,131	\$7,599,056	\$7,933,020	\$8,285,116	\$8,656,513	\$9,048,465	\$9,462,316
34	Admin	\$1,182,899	\$1,219,718	\$1,257,740	\$1,297,006	\$1,337,562	\$1,379,454	\$1,422,733	\$1,467,448	\$1,513,654	\$1,561,405
35	Engineering	\$170,271	\$175,379	\$180,641	\$186,060	\$191,642	\$197,391	\$203,312	\$209,412	\$215,694	\$222,165
36	Operations	\$1,144,700	\$1,179,041	\$1,214,412	\$1,250,845	\$1,288,370	\$1,327,021	\$1,366,832	\$1,407,837	\$1,450,072	\$1,493,574
37	Plant	\$3,154,295	\$3,259,100	\$3,367,456	\$3,479,486	\$3,595,317	\$3,715,081	\$3,838,914	\$3,966,958	\$4,099,357	\$4,236,264
39	Water Costs										
40	Variable Costs	\$6,456,453	\$6,746,714	\$7,160,396	\$7,599,180	\$7,979,139	\$8,378,096	\$8,797,001	\$9,236,851	\$9,698,693	\$10,183,628
42	Fixed Costs										
43	CWA Supply Reliability Charge	\$194,346	\$398,409	\$418,330	\$439,246	\$461,209	\$484,269	\$508,482	\$533,907	\$560,602	\$588,632
44	CWA Infrastructure Access Charge	\$345,228	\$362,596	\$389,070	\$408,523	\$428,949	\$450,397	\$472,916	\$496,562	\$521,390	\$547,460
45	CWA Customer Service Charge	\$358,590	\$419,246	\$440,208	\$462,218	\$485,329	\$509,596	\$535,075	\$561,829	\$589,921	\$619,417
46	CWA Emergency Storage Charge	\$941,076	\$1,102,486	\$1,157,610	\$1,215,491	\$1,276,265	\$1,340,079	\$1,407,082	\$1,477,437	\$1,551,308	\$1,628,874
47	MWD Capacity Charge	\$202,740	\$238,657	\$250,590	\$263,119	\$276,275	\$290,089	\$304,593	\$319,823	\$335,814	\$352,605
48	MWD Readiness-to-Serve Charge	\$424,464	\$445,687	\$467,972	\$491,370	\$515,939	\$541,736	\$568,822	\$597,263	\$627,127	\$658,483
49	Subtotal Fixed Costs	\$2,466,444	\$2,967,081	\$3,123,779	\$3,279,968	\$3,443,966	\$3,616,164	\$3,796,972	\$3,986,821	\$4,186,162	\$4,395,470
50	Local Water	\$100,000	\$102,000	\$104,040	\$106,121	\$108,243	\$110,408	\$112,616	\$114,869	\$117,166	\$119,509
52	Subtotal Water Costs	\$9,022,897	\$9,815,795	\$10,388,214	\$10,985,268	\$11,531,348	\$12,104,668	\$12,706,589	\$13,338,540	\$14,002,021	\$14,698,607
53	Total O&M Expenses	\$21,068,329	\$22,344,420	\$23,389,688	\$24,480,795	\$25,543,294	\$26,656,636	\$27,823,496	\$29,046,707	\$30,329,263	\$31,674,332
54	Existing Debt	\$1,351,150	\$1,347,750	\$1,346,575	\$1,346,875	\$1,349,975	\$0	\$0	\$0	\$0	\$0
55	Total Expenses	\$22,419,479	\$23,692,170	\$24,736,263	\$25,827,670	\$26,893,269	\$26,656,636	\$27,823,496	\$29,046,707	\$30,329,263	\$31,674,332
56											
57	Net Cash Flow	\$2,109,105	\$3,940,841	\$5,813,663	\$7,753,924	\$8,881,148	\$10,227,153	\$9,750,762	\$9,252,032	\$8,729,682	\$8,182,345
58	Coverage	256%	392%	532%	676%	758%				#N/A	#N/A
59	Target Coverage	115%	115%	115%	115%	115%	115%	115%	115%	115%	115%

Fund Balance - Utility		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
		Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected
60	Operating Fund										
61	Beginning Balance	\$3,675,336	\$5,267,082	\$4,179,434	\$902,497	\$869,782	\$963,578	\$5,165,275	\$6,955,874	\$7,261,677	\$7,582,316
62	Net Cash Flow	\$2,109,105	\$3,940,841	\$5,813,663	\$7,753,924	\$8,881,148	\$10,227,153	\$9,750,762	\$9,252,032	\$8,729,682	\$8,182,345
63	Intermediate Balance	\$5,784,441	\$9,207,924	\$9,993,097	\$8,656,421	\$9,750,930	\$11,190,731	\$14,916,037	\$16,207,906	\$15,991,359	\$15,764,660
64	Transfers In	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
65	Transfers Out to Capital to meet Capital Min Tar	\$0	(\$5,028,490)	(\$9,090,600)	(\$7,786,638)	(\$8,787,352)	(\$6,025,457)	(\$4,366,800)	\$0	\$0	\$0
66	Intermediate Balance	\$5,784,441	\$4,179,434	\$902,497	\$869,782	\$963,578	\$5,165,275	\$10,549,237	\$16,207,906	\$15,991,359	\$15,764,660
67	Transfer Out to Capital Fund to meet Oper Res N	(\$517,358)	\$0	\$0	\$0	\$0	\$0	(\$3,593,363)	(\$8,946,230)	(\$8,409,043)	(\$7,846,077)
68	Ending Balance	\$5,267,082	\$4,179,434	\$902,497	\$869,782	\$963,578	\$5,165,275	\$6,955,874	\$7,261,677	\$7,582,316	\$7,918,583
69	<i>Interest Income(Actcd for in income above)</i>	<i>\$55,258</i>	<i>\$66,937</i>	<i>\$54,478</i>	<i>\$47,631</i>	<i>\$53,573</i>	<i>\$81,780</i>	<i>\$109,360</i>	<i>\$117,348</i>	<i>\$117,868</i>	<i>\$118,416</i>
70											
71	Fund Requirements										
72	Policy Maximum										
64	<i>Average of current year operati</i> 90 Days	\$5,267,082	\$5,586,105	\$5,847,422	\$6,120,199	\$6,385,824	\$6,664,159	\$6,955,874	\$7,261,677	\$7,582,316	\$7,918,583
65	Policy Minimum										
66	<i>Average of current year operati</i> 60 Days	\$3,511,388	\$3,724,070	\$3,898,281	\$4,080,133	\$4,257,216	\$4,442,773	\$4,637,249	\$4,841,118	\$5,054,877	\$5,279,055
67	Desired Transfers In to meet Min Target	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
68	Required Transfers Out to meet Max Target	\$517,358	\$0	\$0	\$0	\$0	\$0	\$3,593,363	\$8,946,230	\$8,409,043	\$7,846,077
69											
70	Capital Improvement Fund										
71	Beginning Balance	\$20,885,786	\$15,096,331	\$13,047,336	\$14,098,068	\$14,085,041	\$14,238,925	\$12,389,813	\$13,677,285	\$17,907,920	\$22,103,229
72	Property Tax Revenue	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000
73	SDWD Capital Contribution	\$3,408,061	\$2,363,717	\$1,927,899	\$2,402,470	\$2,840,960	\$2,567,753	\$1,996,573	\$2,414,042	\$2,490,184	\$2,375,450
75	Market Debt Proceeds - Proposed	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
76	SRF Proceeds - Proposed	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
77	Transfer from Capacity Charge Fund	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
78	Total CIP - Both SFID and SDWD Funded Projects	(\$11,649,874)	(\$11,376,202)	(\$11,902,768)	(\$12,137,135)	(\$13,409,428)	(\$12,377,322)	(\$10,604,264)	(\$9,064,637)	(\$8,638,918)	(\$8,114,185)
79	Intermediate Balance	\$14,578,973	\$8,018,846	\$5,007,467	\$6,298,403	\$5,451,573	\$6,364,357	\$5,717,122	\$8,961,690	\$13,694,186	\$18,299,494
80	Transfers In from Oper Reserve to meet Capital	\$0	\$5,028,490	\$9,090,600	\$7,786,638	\$8,787,352	\$6,025,457	\$4,366,800	\$0	\$0	\$0
81	Transfer In from Oper Reserve to meet Oper Res	\$517,358	\$0	\$0	\$0	\$0	\$0	\$3,593,363	\$8,946,230	\$8,409,043	\$7,846,077
82		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
83	Ending Balance	\$15,096,331	\$13,047,336	\$14,098,068	\$14,085,041	\$14,238,925	\$12,389,813	\$13,677,285	\$17,907,920	\$22,103,229	\$26,145,571
84	Interest Income	\$148,377	\$105,331	\$95,528	\$101,917	\$98,452	\$93,771	\$96,972	\$134,348	\$178,987	\$222,225
85	5 Yr Avg	\$ 9,506,460									
86	SFID CIP Portion	\$ 8,241,813	\$ 9,012,485	\$ 9,974,868	\$ 9,734,665	\$ 10,568,468	\$ 9,809,569	\$ 8,607,691	\$ 6,650,595	\$ 6,148,733	\$ 5,738,736
87	Fund Requirements										
88	Policy Maximum										
89	% of 10-year CIP costs	\$79,848,851	\$79,848,851	\$79,848,851	\$79,848,851	\$79,848,851	\$79,848,851	\$79,848,851	\$79,848,851	\$79,848,851	\$79,848,851
90	Policy Minimum										
91	<i>% of current year Budgeted Pay-Go</i>	\$11,855,523	\$13,047,336	\$14,098,068	\$14,085,041	\$14,238,925	\$12,389,813	\$10,083,922	\$7,773,396	\$6,867,597	\$6,455,451
92	<i>% of next year Budgeted Pay-Go</i>										
93	<i>% of 3rd year Budgeted Pay-Go</i>										
94											
95	SFID Portion of CIP	\$8,241,813	\$9,012,485	\$9,974,868	\$9,734,665	\$10,568,468	\$9,809,569	\$8,607,691	\$6,650,595	\$6,148,733	\$5,738,736
96	Property Tax	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000	\$1,900,000
97	System Development Charges	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000
98	Remaining CIP	\$6,306,813	\$7,077,485	\$8,039,868	\$7,799,665	\$8,633,468	\$7,874,569	\$6,672,691	\$4,715,595	\$4,213,733	\$3,803,736
99	Debt Issue	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
100	Debt Funds Used	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
101	Debt Funds Remaining	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
102	Remaining CIP - Paygo Funded	\$6,306,813	\$7,077,485	\$8,039,868	\$7,799,665	\$8,633,468	\$7,874,569	\$6,672,691	\$4,715,595	\$4,213,733	\$3,803,736
103											
104	Total Policy Minimum										
105	Required Transfers In	\$0	\$5,028,490	\$9,090,600	\$7,786,638	\$8,787,352	\$6,025,457	\$4,366,800	\$0	\$0	\$0
106	Required Transfers Out	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
		Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	Projected	
107	Capacity Charge Fund											
108												
109	Beginning Balance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
110	Connection Fees	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	
111	Transfer to Capital Improvement Fund	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	(\$35,000)	
112	Intermediate Balance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
113	Transfers In	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
114	Transfers Out	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
115	Ending Balance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
116	Interest Income	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
117												
118												
119	Fund Requirements											
120	Policy Maximum											
121	Average of current year operati	Days	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
122	Policy Minimum											
123	Average of current year operati	Days	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
124	Required Transfers In	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
125	Required Transfers Out	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
126												
127	Rate Stabilization											
128	Beginning Balance	\$3,145,036	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	
129												
130	Intermediate Balance	\$3,145,036	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	
131	Transfers In	Currently these transfers dc	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
132	Transfers Out	\$1,604,244	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
133	Ending Balance	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	\$1,540,792	
134	Interest Income	\$23,429	\$15,408	\$15,408	\$15,408	\$15,408	\$15,408	\$15,408	\$15,408	\$15,408	\$15,408	
135												
136	Fund Requirements											
137	Policy Maximum	\$9,550,750	\$9,808,874	\$10,012,171	\$10,201,078	\$10,337,598	\$10,480,928	\$10,631,408	\$10,789,396	\$10,955,266	\$11,129,413	
138	% of current property tax	100%										
139	% of current water sales	30%										
140	% of current water costs.	25%										
141	Policy Minimum	\$2,401,487	\$2,461,098	\$2,509,783	\$2,552,850	\$2,580,154	\$2,608,820	\$2,638,916	\$2,670,514	\$2,703,688	\$2,738,517	
142	% of current property tax	8%										
143	% of current water sales	10%										
144	% of current water costs.	5%										
145	Required Transfers In	\$0	\$920,306	\$968,991	\$1,012,059	\$1,039,363	\$1,068,029	\$1,098,125	\$1,129,722	\$1,162,896	\$1,197,726	
146	Required Transfers Out	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
147												
148	Total Interest	\$227,063	\$187,676	\$165,414	\$164,956	\$167,433	\$190,959	\$221,740	\$267,104	\$312,263	\$356,049	

10 APPENDIX B: WATER SUPPLY COST DERIVATION

Volume of Water Purchased By Source Water Source	Volume (Acre Feet)							Average
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	
Imported Treated Water - (Trtrd M&I Rate)	569	474	300	302	305	307	307	366
Imported Raw Water Rate (Untrtrd M&I Rate) - SFID Only	9,447	9,391	7,001	7,078	7,156	7,234	7,234	7,792
Tier 2 Use	2,120	1,969	-	-	-	-	-	584
Local Raw Water (Lake Hodges, SFID only)	1,526	811	3,268	3,268	3,268	3,268	3,268	2,668
Total	11,542	10,676	10,569	10,648	10,728	10,809	10,809	10,826

Source: See Expenses Worksheet

Estimated Cost to Treat Surface Water	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Personnel - Water Treatment	\$1,796,158	\$1,847,910	\$1,912,837	\$2,005,198	\$2,092,272	\$2,184,011	\$2,280,713
Plant Expenses	\$2,941,073	\$2,803,346	\$3,154,295	\$3,259,100	\$3,367,456	\$3,479,486	\$3,595,317
Less Local Water Purchase Costs	-\$131,900	-\$150,000	-\$150,000	-\$154,500	-\$159,135	-\$163,909	-\$168,826
Less SDWD Reimbursement for Badger Plant Operation	-\$1,446,433	-\$1,771,331	-\$2,030,907	-\$2,106,081	-\$2,180,458	-\$2,258,064	-\$2,339,264
Subtotal - Cost to Treat Local Water - SFID Costs Only	\$3,158,897	\$2,729,925	\$2,886,225	\$3,003,717	\$3,120,135	\$3,241,523	\$3,367,939
Total Untreated Water (AF) (Imported and Local) - SFID Only	10,973	10,202	10,269	10,346	10,424	10,502	10,502
Estimated Cost to Treat Untreated Water (\$/ AF)	\$ 288	\$ 268	\$ 281	\$ 290	\$ 299	\$ 309	\$ 321

Supply Costs by Source (\$/ AF)	Cost (\$ / AF)							Average
Water Source	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	
Imported Treated Water Rate - (Trtrd M&I Rate)	\$1,085	\$1,125	\$1,155	\$1,197	\$1,257	\$1,319	\$1,385	\$1,218
Imported Raw Water Rate (Untrtrd M&I Rate) - SFID Only	\$815	\$843	\$873	\$902	\$947	\$995	\$1,044	\$934
Unit Rate to Treat Imported Untrtrd M&I Water	\$288	\$268	\$281	\$290	\$299	\$309	\$321	\$295
Imported Raw Water	\$1,103	\$1,110	\$1,154	\$1,192	\$1,247	\$1,303	\$1,365	\$1,211
Local Raw Water (Lake Hodges - \$ /AF)	\$82	\$107	\$31	\$31	\$32	\$32	\$33	\$44
Cost to Treat Lake Hodges (Untreated Water)	\$288	\$268	\$281	\$290	\$299	\$309	\$321	\$295
Cost to Obtain and Treat Local Water (\$/ AF)	\$370	\$374	\$312	\$322	\$331	\$341	\$354	\$343

FY Used - >

FY 2016

Supply Source	Cost of Water Produced (\$ / AF)	Cost of Water Produced (\$ / HCF)	Cost Accounting for Lost Water (\$/ HCF)		Water Sold - Accting for Lost Water (AF) (HCF)		Total Cost of Water Sold	Total Cost of Water Produced (HCF)	Total Cost of Water Produced (HCF)	
			Qty Purchased (Supplied) (AF)	Qty Purchased (Supplied) (HCF)	Water Sold - Accting for Lost Water (AF)	Water Sold - Accting for Lost Water (HCF)				
Imported Treated Water - (Trtrd M&I Rate)	\$1,155	\$2.65	\$2.75	307	133,642	295	128,682	\$ 341,000	\$ 354,359	354,359
Imported Raw Water Rate (Untrtrd M&I Rate) - SFID Only	\$1,154	\$2.65	\$2.75	7,234	3,151,058	6,965	3,034,098	\$ 8,036,000	\$ 8,346,258	8,346,258
Local Raw Water (Lake Hodges, SFID only)	\$312	\$0.72	\$0.74	3,268	1,423,541	3,147	1,370,702	\$ 981,000	\$ 1,018,507	1,018,507

Total				10,809	4,708,241	10,407	4,533,482	\$9,358,000	\$9,719,123	\$9,719,123
Lost/Unsold Water		3.71%					174,759		(A)	
Total Water Sold				10,809	4,533,482	10,401				

(B)

Average Supply Cost	\$2.097									\$2.14 = A / B
Base Rate - COS	\$2.989									\$3.02
Average Supply Cost	\$2.097									\$2.14
Delivery Cost										\$0.87