SAN DIEGUITO WATER DISTRICT

Water Rate Study

DRAFT Report / December 8, 2015

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San Dieguito Water District

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December 8, 2015

Mr. Jeff Umbrasas
Administrative Services Manager
San Dieguito Water District
160 Calle Magdalena
Encinitas, CA 92024

Subject: Water Rate Study Report

Dear Mr. Umbrasas:

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 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.

Sudhir D. Pardiwala, PE
Executive Vice President

Steve Gagnon, PE
Senior Consultant

TABLE OF CONTENTS

1 EXECUTIVE SUMMARY 9

1.1 BACKGROUND 9

1.2 PROCESS 9

1.3 METHODOLOGY 9

1.4 RESULTS AND RECOMMENDATIONS 10

Factors Affecting Revenue Adjustments 10

Proposed Water Rates 11

Fixed Charge 11

Commodity Rate 12

Fire Line / Meter Service Charge 13

Drought Rates 14

Revenue Collection during a Drought 14

Customer Bills during a Drought 14

Drought Rate Adoption 15

2 WATER SYSTEM 16

2.1 WATER SOURCES AND SYSTEM FACILITIES 16

2.2 NUMBER OF ACCOUNTS 17

2.3 ACCOUNT AND WATER USE GROWTH ASSUMPTIONS 17

2.4 WATER USE 18

3 FINANCIAL PLAN 19

3.1 WATER SALES, PURCHASES AND INFLATIONARY ASSUMPTIONS 19

3.2 FINANCIAL PLAN 20

3.3 WATER SYSTEM EXPENSES 20

3.4 O&M EXPENSES 20

3.5 CAPITAL IMPROVEMENT PLAN 21

3.6 EXISTING AND PROPOSED DEBT SERVICE 21

3.7 PROPOSED FINANCIAL PLAN AND REVENUE ADJUSTMENTS 21

4 LEGAL FRAMEWORK AND RATE SETTING METHODOLOGY 27

4.1 LEGAL FRAMEWORK 27

California Constitution - Article XIII D, Section 6 (Proposition 218) 27

California Constitution - Article X, Section 2 27
4.2 COST-BASED RATE-SETTING METHODOLOGY 28
1) Calculate Revenue Requirement 28
2) Cost Of Service Analysis (COS) 28
3) Rate Design and Calculations 29
4) Rate Adoption 29
5 COST OF SERVICE ANALYSIS 30
5.1 ALLOCATION OF EXPENSES TO COST COMPONENTS 30
5.2 REVENUE REQUIREMENT DETERMINATION 36
5.3 UNIT COST COMPONENT DERIVATION 37
5.4 DISTRIBUTION OF COST COMPONENTS TO CUSTOMER CLASSES 41
6 RATE DERIVATION 43
6.1 EXISTING RATE STRUCTURE AND RATES 43
6.2 PROPOSED BASE METER FEES 44
Fixed Charge Fee Components 44
Meter Service Component 44
Customer Component 45
Total Fixed Charge 45
6.3 PROPOSED FIRE LINE / METER SERVICE CHARGE 45
6.4 COMMODITY RATES 47
Single Family Tier Definitions 47
Unit Rate Definitions 48
Unit Cost Derivation 48
Delivery Unit Cost 50
Peaking Unit Cost 50
Conservation Unit Cost 51
Revenue Offset 52
Final Rate Derivation 53
7 BILL IMPACTS 55
7.1 CUSTOMER BILL IMPACTS 55
Single Family Residential (SFR) Bill Impacts 55
Single Family with (-w-) Agriculture Bill Impacts 56
Single Family with Commercial 56
Multi-family Residential 57
Multi-family with Agriculture 57

Multi-family with Commercial 58
Agriculture (Now same rate as Commercial Class) 58
Commercial 58
Public (Now same rate as Institutional Class) 59
Government (Now same rate as Institutional Class) 59
Landscape 60
8 DROUGHT RATES 61
8.1 DROUGHT RATE BACKGROUND 61
Revenue Collection during a Drought 61
Customer Bills during a Drought 61
8.2 DROUGHT RATE CALCULATION 61
Drought Rate Adoption 65
9 APPENDIX A: CASH FLOW DETAIL 67
10 APPENDIX B: WATER SUPPLY COST DERIVATION 71

LIST OF TABLES

Table 1-1: Proposed Revenue Adjustments 10
Table 1-2: Current and Proposed Bi-Monthly Meter Service Charge 11
Table 1-3: Two Year Bi-Monthly Meter Service Charges 12
Table 1-4: Current and Proposed Bi-Monthly Commodity Rates ($/HCF) 13
Table 1-5: Fire Line / Meter Service Charges 13
Table 1-6: Drought Rates for each Drought Reduction Stage 15
Table 1-7: Drought Rates – Percentage Surcharge on Commodity Rates 15
Table 2-1: Estimated Accounts by Meter Size (Projected - FY 2016) 17
Table 2-2: Account Growth and Water Use Assumptions 17
Table 3-1: Water Purchase and Inflationary Assumptions 19
Table 3-2: Projected O&M Expenses 20
Table 3-3: Detailed Capital Improvement Plan 21
Table 3-4: Existing and Proposed Debt Service 21
Table 3-5: Proposed Rate Adjustments 22
Table 3-6: Five-Year Water Operating Cash Flow 23
Table 5-1: System-Wide Peaking Factors and Allocation to Cost Causation Components 31
Table 5-2: Allocation Bases used to Allocate O&M to Cost Causation Components 31
Table 5-3: Allocation of O&M Expenses to Cost Causation Components 33
Table 5-4: Allocation of Assets to Cost Causation Components 35
Table 5-5: Revenue Requirement Determination 37
Table 5-6: Derivation of Cost Component Units 38
Table 5-7: Unit Cost Calculation 40
Table 5-8: Derviation of the Cost to Serve Each Class 42
Table 6-1: Existing Rate Structure and Rates (Bi-monthly) 43
Table 6-2: Derivation of District Bi-Monthly Base Meter Fees 44
Table 6-3: Derivation of Private Fire Protection Charges 46
Table 6-4: Calculation of Bi-Monthly Private Fire Charges 47
Table 6-5: Water Sources and Costs 49
Table 6-6: Number of Accounts by Class 49
Table 6-7: Derivation of Supply Costs by User Class 49
Table 6-8: Derivation of Supply Costs by Single Family Tier 50
Table 6-9: Derivation of the Delivery Unit Cost 50
Table 6-10: Derivation of Peaking Unit Cost 51
Table 6-11: Derivation of Conservation Unit Costs 52
Table 6-12: Derivation of Revenue Offset 53
Table 6-13: Derivation of Rates by Tier and Class 54
Table 7-1: Single Family Bill Impacts (3/4” Meter) 55
Table 7-2: Single Family –w- Agriculture Bill Impacts (1.5” Meter) 56
Table 7-3: Single Family –w- Commercial Bill Impacts (1” Meter) 56
Table 7-4: Multi-family Residential Bill Impacts (5/8” Meter) 57

Table 7-5: Multi-family -w- Agriculture Bill Impacts (2" Meter) 57
Table 7-6: Multi-family -w- Commercial Bill Impacts (1" Meter) 58
Table 7-7: Agriculture Bill Impacts (1.5" Meter) 58
Table 7-8: Commercial Bill Impacts (5/8" Meter).....59
Table 7-9: Public Bill Impacts (2" Meter) 59
Table 7-10: Government Bill Impacts (2" Meter) 59
Table 7-11: Landscape Bill Impacts (2" Meter) 60
Table 8-1: Estimated Use Cutbacks in Percentages and HCF 62
Table 8-2: Calculation of Lost Revenue.....63
Table 8-3: Calculation of Drought Savings.....64
Table 8-4: Drought Rate Calculation.....65

LIST OF FIGURES

Figure 2-1: Water Use by Customer Class (AF) - FY 2014.....18
Figure 3-1: Proposed Revenue Adjustments 24
Figure 3-2: Proposed Operating Financial Plan.....25
Figure 3-3: Projected CIP and Funding Sources 25
Figure 3-4: Projected Operating Fund Ending Balances.....26

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1 EXECUTIVE SUMMARY

1.1 BACKGROUND

The San Dieguito Water District (District) staff aims to conduct a Water Rate Study every two years to ensure that water rates and charges are sufficient to meet water enterprise revenue requirements. The last study (which the Board approved) recommended revenue increases of 8.5% on September 1, 2013 and up-to 8.5% on July 1, 2014. The July 1, 2014 (second-year) revenue increase was later implemented at only 4.5% due to better than anticipated financial conditions for the District at the time of analysis.

In the spring of 2015, the San Dieguito Water District engaged Raftelis Financial Consultants (RFC) to conduct a Water Rate Study (Study) including a five-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 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.

1.2 PROCESS

The rate study started with two subcommittee meetings; 1) the first presented rate setting basics and a background on the financial condition of the District, 2) the second put forth four revenue adjustment options to subcommittee members. The subcommittee suggested providing three revenue adjustment options to the full Board. On November 18, 2015 District staff and RFC presented three Financial Plan (and corresponding rates) options to the District Board. The Board of Directors selected the third Financial Plan which consists of 6.5% revenue increases each in fiscal years (FY) 2016 and 2017. The FY 2016 increase would be effective In February of 2016 and the FY 2017 increase in January of 2017.

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 main[1] cost causation 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 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, fire connections and related mains and valves.

1.4 RESULTS AND RECOMMENDATIONS

Table 1-1 shows the estimated revenue adjustments that are part of the selected Financial Plan. Note that the revenue adjustments are for the District's rates only and do not include the San Diego County Water Authority (SDCWA) Infrastructure Access Charge (IAC) pass-through. The IAC is set by the SDCWA at the start of every calendar year.

Table 1-1: Proposed Revenue Adjustments

	FY 2016	FY 2017
Revenue Adjustment	6.5%	6.5%

Factors Affecting Revenue Adjustments

The following items affect the District's revenue requirement (i.e. costs) and thus the need for revenue adjustments. The District's expenses include Operation and Maintenance (O&M) expenses and capital expenses.

- **Wholesale Water Purchase Costs**: The District water purchase costs continue to rise. The District's combined wholesale fixed costs from the San Diego County Water Authority increased by 18% from FY 2015 to FY 2016. Even though the District is purchasing less water during the current drought, volumetric wholesale rates increased and the higher purchased water costs are spread over fewer units of water sold.

- **Unfunded Pension Liabilities:** The District must pay down Unfunded Accrued Liabilities (UAL) due to new valuations from the California Public Employees' Retirement System (CalPERS). The District's current valuation of UAL is approximately $4.6 Million. The financial plan that is part of this study assumes the CalPERS recommended payment schedule over 30 years.

- **O&M expenses:** Overall, the District's O&M expenses (excluding water costs) are expected to increase approximately 17% from FY 2015 to FY 2016. The District is purposely depleting reserves from FY 2015 to FY 2016 to minimize customer rate impacts – this is further discussed in Section 3.7.

[1] There can be other cost components such as conservation and supply, however the four mentioned here are the standard cost components used in rate studies.

- **Water System Capital Investment:** The District will invest approximately $15.5 million over the next five years in water treatment infrastructure. The average District capital investment over the next three years is approximately $3.1 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 4% decrease in water use from FY 2014 to FY 2015 and is setting rates assuming a further 7% decrease for FY 2016 reflecting "new normal" water sales. This combined 11% decrease in water sales increases water rates since the District's (mostly fixed) costs are spread over fewer units of water sold.

Proposed Water Rates

The District's potable water service fees are comprised of two components: (1) a fixed charge called a Meter Service Charge and (2) a Commodity Charge. The District also passes through the IAC from the SDCWA which is a fixed charge assessed to the District.

Fixed Charge

The fixed charge, which the District calls a Meter Service Charge, is based on the meter size serving a property, and is calculated to recover a portion of the District's fixed costs, such as the costs of billing and collecting, customer service, meter reading, meter maintenance, and a portion of extra-capacity related costs. A customer's total fixed charge also includes the SDCWA IAC.

Table 1-2 shows the existing bi-monthly (column 2) and proposed Meter Service Charge (column 3) along with the SDCWA IAC (column 4) by meter size. The District is proposing to set rates for the next two years and Table 1-3 shows the Bi-monthly Meter Service Charge for the next two years. Note that the charges in Table 1-3 do not include the SDCWA IAC pass-through. This fixed charge is derived in Section 6.2. The District may also implement monthly billing in the future – at which time the fixed charges shown below would be halved.

Table 1-2: Current and Proposed Bi-Monthly Meter Service Charge

Meter Size (1)	Existing Bi-Monthly Meter Service Charge (2)	February 2016 Proposed Meter Service Charge (3)	SDCWA IAC (4)	Proposed Total Fixed Charge (5)
5/8"	$35.05	$37.39	$5.52	$42.91
3/4"	$35.05	$37.39	$5.52	$42.91
1"	$55.73	$55.05	$8.83	$63.88
1.5"	$107.45	$98.82	$16.56	$115.38
2"	$169.50	$151.55	$28.70	$180.25
3"	$314.30	$274.67	$52.99	$327.66
4"	$521.14	$450.52	$90.52	$541.04
6"	$1,038.27	$889.76	$165.60	$1,055.36
8"	$1,658.82	$1,417.05	$287.04	$1,704.09

Table 1-3: Two Year Bi-Monthly Meter Service Charges

Meter Size (1)	February 2016 (2)	January 2017 (3)
5/8"	$37.39	$39.82
3/4"	$37.39	$39.82
1"	$55.05	$58.63
1.5"	$98.82	$105.24
2"	$151.55	$161.40
3"	$274.67	$292.52
4"	$450.52	$479.81
6"	$889.76	$947.59
8"	$1,417.05	$1,509.16

Commodity Rate

Table 1-4 shows the current and proposed two year 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. Note the Agriculture and Commercial classes have been combined resulting in one rate for both classes. Similarly, the Public and Governmental classes have been combined resulting in one rate for both classes. The basis for combining these classes is that they have similar peaking factors – meaning that the classes use water (during peak times of use) in a similar fashion and thus can be combined - since the basis for grouping customers together into classes is their peaking (extra capacity) demands on the water system. The District will likely implement monthly billing in the near future; at which time the commodity rates shown below would remain unchanged, however the tier breakpoints would be halved.

Table 1-4: Current and Proposed Bi-Monthly Commodity Rates ($/HCF)

Line No.	Customer Class	Tier	Tier Breakpoint	Existing Rate	February 2016	January 2017
1	Single Family Residence	Tier 1	12	$2.63	$2.64	$2.81
2		Tier 2	20	$3.93	$4.19	$4.46
3		Tier 3	40	$4.64	$5.18	$5.52
4		Tier 4	41+	$5.87	$5.89	$6.28
5	SFR-w-Agriculture	Tier 4	41+	$3.27	$5.18	$5.51
6	SFR-w-Commercial	Tier 4	41+	$3.69	$5.18	$5.51
7	Multi-family Residential	Tier 1	8	$2.63	$2.64	$2.81
8	(per dwelling unit)	Tier 2	12	$3.93	$4.19	$4.46
9		Tier 3	16	$4.64	$5.18	$5.52
10		Tier 4	17+	$5.87	$5.89	$6.28
11	MFR-w-Agriculture	Tier 4	17+	$3.27	$5.18	$5.51
12	MFR-w-Commercial	Tier 4	17+	$3.69	$5.18	$5.51
13						
14	Agriculture	Uniform Rate		$3.27	$4.48	$4.78
15	Commercial	Uniform Rate		$3.69	$4.48	$4.78
16	Public	Uniform Rate		$3.69	$4.91	$5.23
17	Government	Uniform Rate		$3.69	$4.91	$5.23
18	Landscaping	Uniform Rate		$4.64	$5.17	$5.51
19	Construction	Uniform Rate		$4.64	$5.26	$5.61

Together, the two components of the District's proposed water service fees are structured to recover the costs of providing water service to each customer class, encourage water use efficiency, and manage the District's water resources.

Fire Line / Meter Service Charge

Table 1-5 shows the existing and proposed Fire Line / Meter Service charges for private fire protection for the next two years. These charges are derived in Section 6.3.

Table 1-5: Fire Line / Meter Service Charges

Meter Size (1)	Existing (2)	February 2016 (3)	January 2017 (4)
3/4"	$7.37	$7.95	$8.47
1"	$7.37	$7.95	$8.47
1.5"	$13.74	$8.97	$9.55
2"	$24.72	$15.63	$16.65
3"	$64.17	$39.55	$42.12
4"	$132.20	$80.79	$86.04
6"	$376.37	$228.82	$243.69
8"	$797.51	$484.14	$515.61

Drought Rates

As a result of state mandated water use cutbacks, the District is facing lower water sales and therefore lower water revenue. To cover its fixed costs, the District has implemented Drought Rates and may adjust the Drought Rates depending on the severity of the drought and associated revenue loss.

The District is subject to penalties from the SDCWA should it exceed its water allocation. The District is also subject to penalties form the State Water Resources Control Board if it does not reach its mandated water use reduction of 28%. Drought Rates help maximize the probability that the District will escape penalties by encouraging reduced consumption. Currently the District is below its SDCWA allocation. However, depending on the severity of the drought, the District will need to maintain (or adjust) its Drought Rates to recoup lost revenues as District customers curtail their water consumption.

Revenue Collection during a Drought

During a drought, 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 costs are fixed (salaries, benefits, debt service, etc.) and therefore drought rates are required to recover lost revenue to cover its fixed costs. The District's drought revenue requirement is lower than its non-drought revenue requirement because as the District serves less water it also purchases and treats less water, thereby saving the associated costs.

Customer Bills during a Drought

Provided that customer's cutback their water use in line with the current drought cutback goal (currently set at 14%), their drought water bill should be lower than their non-drought bill. Conversely, those that do not cutback consumption will face higher charges.

Table 1-6 shows the Drought Rates, based on FY 2016 proposed non-drought rates, for each drought cutback stage along with the rates for the current 14% cutback in use.

Table 1-6: Drought Rates for each Drought Reduction Stage

Line No	Customer Class (1)	Tier (2)	Proposed Non-Drought Rate (3)	Up to 10% (4)	14% Reduction (5)	Up to 20% (6)	Up to 30% (7)	Up to 40% (8)	50% or Greater (9)
1									
2	SF Residential	Tier 1	$2.64	$2.92	$3.05	$3.25	$3.74	$4.32	$5.07
3		Tier 2	$4.19	$4.62	$4.83	$5.15	$5.93	$6.84	$8.03
4		Tier 3	$5.18	$5.72	$5.98	$6.37	$7.33	$8.46	$9.93
5		Tier 4	$5.89	$6.50	$6.80	$7.25	$8.34	$9.63	$11.30
6	Single Family - Agriculture	Tier 4	$5.18	$5.72	$5.98	$6.37	$7.33	$8.46	$9.93
7	Single Family - Commercial	Tier 4	$5.18	$5.72	$5.98	$6.37	$7.33	$8.46	$9.93
8	Multi-family	Tier 1	$2.64	$2.92	$3.05	$3.25	$3.74	$4.32	$5.07
9		Tier 2	$4.19	$4.62	$4.83	$5.15	$5.93	$6.84	$8.03
10		Tier 3	$5.18	$5.72	$5.98	$6.37	$7.33	$8.46	$9.93
11		Tier 4	$5.89	$6.50	$6.80	$7.25	$8.34	$9.63	$11.30
12	Multi-family - Agriculture	Tier 4	$5.18	$5.715	$5.98	$6.37	$7.33	$8.46	$9.93
13	Multi-family - Commercial	Tier 4	$5.18	$5.715	$5.98	$6.37	$7.33	$8.46	$9.93
14	Agriculture	Uniform	$4.48	$4.95	$5.17	$5.51	$6.34	$7.33	$8.60
15	Commercial	Uniform	$4.48	$4.95	$5.17	$5.51	$6.34	$7.33	$8.60
16	Public	Uniform	$4.91	$5.42	$5.66	$6.04	$6.94	$8.02	$9.41
17	Government	Uniform	$4.91	$5.42	$5.66	$6.04	$6.94	$8.02	$9.41
18	Landscaping	Uniform	$5.17	$5.70	$5.97	$6.36	$7.32	$8.45	$9.91
19	Construction	Uniform	$5.26	$5.81	$6.08	$6.47	$7.45	$8.60	$10.09

Drought Rate Adoption

The Board would adopt the drought rates separately from any other type of rate increase. Table 1-7 shows the percentage maximum rate increase per drought level. For the duration of the rate proposal period (2 years), the Board would have the ability to adopt Drought Rates by increasing the then current commodity rate without having to re-issue the Proposition 218 notice.

Table 1-7: Drought Rates – Percentage Surcharge on Commodity Rates

Up to 10% (1)	14% Reduction (2)	Up to 20% (3)	Up to 30% (4)	Up to 40% (5)	50% or Greater (6)
10.3%	15.4%	23.0%	41.5%	63.4%	91.7%

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 San Dieguito Water District provides potable (drinking) and recycled water to over 37,000 citizens through 11,670 connections in the communities of Leucadia, Old Encinitas, Cardiff and portions of New Encinitas. The remainder of the City is served by the Olivenhain Municipal Water District. The San Dieguito Water District is a subsidiary district of the City of Encinitas. The City Council also serves as the Board of Directors of the District.

For potable water, the District receives local runoff water from Lake Hodges and imported raw water from the San Diego County Water Authority. Both sources are treated at the R.E. Badger Filtration Plant located in Rancho Santa Fe. The plant is jointly owned with the Santa Fe Irrigation District. Treated water from the San Diego County Water Authority can also be delivered directly to the District.

The amount of water available from Lake Hodges varies from year to year; in fiscal year 2016 (FY16), the District projects to use 2,400 acre feet (AF) of local water from Lake Hodges and approximately 3,500 AF of imported water from SDCWA. The District also sells recycled water received from the San Elijo Joint Powers Authority (SEJPA). The District's current conservation objectives are driven by limited water resources, regional drought conditions, rapidly increasing costs of imported water and the volatility of local water supply.

The District operates and maintains 175 miles of pipelines, the 7.5 million gallon (MG) Encinitas Ranch reservoir, the 2.5 MG Balour Reservoir, 19 pressure reducing stations, 1 pump station, and 11,670 water meters. In addition, the District also jointly owns the 40 MGD Badger Filtration Plant, a 13 MG clear well, a hydroelectric plant, the San Dieguito Pump Station, the 850 AF San Dieguito Reservoir and 14 miles of transmission mains.

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 cost of imported water the District purchases from the SDCWA and the availability of local water supplies. Additionally, on May 5, 2015, the State Water Resources Control Board approved regulations, based on Governor Brown's Executive Order, mandating the District to reduce its water consumption by 28%.

2.2 NUMBER OF ACCOUNTS

Table 2-1 shows the estimated number of water accounts, including Fire Line, by meter size for FY 2016. The District provided the meter count data. The number of accounts are used to forecast the amount of fixed revenue the District will receive from Meter Service Charges. Note that the Agriculture and Commercial customers are combined into one class and so are the Public and Government classes. The District has decided to combine the Agricultural and Commercial classes into one Commercial class and the Public and Government classes into one Institutional class based on their similar peaking factors – meaning these classes use water in a similar manner and therefore have similar responsibility for peaking costs.

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

Meter Size	Single Family Residence (SFR)	Multi-Family Residence (MFR)	Agriculture / Commercial	Public / Government	Land-scaping	Total
5/8"	3,003	652	173	14	8	3,850
3/4"	4,866	479	88	4	35	5,473
1"	944	341	110	28	38	1,461
1.5"	113	144	108	22	54	441
2"	39	134	132	48	87	440
3"	-	-	2	-	-	2
4"	-	-	1	1	-	2
6"	-	-	-	-	-	-
8"	-	1	-	-	-	1
Total	8,965	1,751	614	117	222	11,670

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. The account growth assumed as part of this study is shown in Table 2-2. Table 2-2 also shows the assumed water sales/use in line 4. 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 "new normal" long term water use and implementing drought rates to cover the shortfall in revenue. Table 2-2 shows that this study assumes a FY 2016 decline in water use of 7.7% compared to FY 2015. The last line in Table 2-2 shows the net effect of account growth (which increases District-wide water use) and decreased water use (line 2) which result in the water sales in line 4.

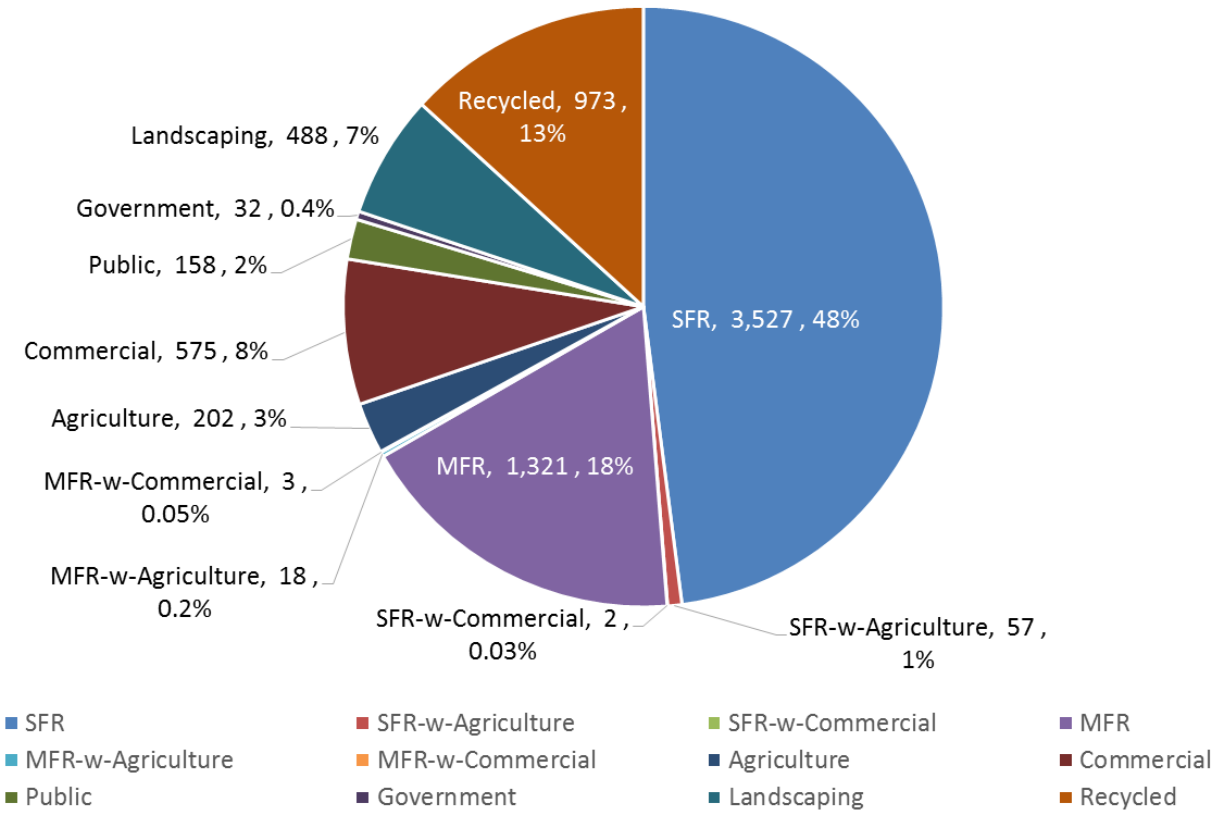
Table 2-2: Account Growth and Water Use Assumptions

Line No.		FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
1	Account Growth		0.5%	0.5%	0.5%	0.5%	0.5%
2	Water Use Growth/Decline		-7.7%	0.0%	0.0%	0.0%	0.0%
3	Net Water Demand Factor		92.7%	100.5%	100.5%	100.5%	100.5%
4	Potable Water Sales (Acre Feet)	6,124	5,678	5,707	5,735	5,764	5,793

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 acre feet (AF) followed by the percentage of total water used by that class. The total water use for FY 2014 is approximately 7,360 AF including recycled water.

Figure 2-1: Water Use by Customer Class (AF) - FY 2014



3 FINANCIAL PLAN

This section describes the assumptions used in projecting operating and capital expenses as well as calculating debt service coverage requirements that determine the overall revenue adjustments required to ensure the financial stability of the District. Revenue adjustments represent the average rate increase for District customers as a whole; rate increases 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 WATER SALES, PURCHASES AND INFLATIONARY ASSUMPTIONS

To ensure that future costs are reasonably projected, we make informed assumptions about water sales, purchases and inflationary factors. Table 3-1 shows the water sales, purchases and inflationary assumptions incorporated in the 5-year Financial Plan. Note the decreased water sales in FY 2016 reflecting the drought. The District is setting rates based on the level of sales shown and also enacting Drought Rates since true water sales for FY 2016 will be lower than those shown in Table 3-1. The inflationary factors shown in Table 3-1 reflect long term inflation, long term changes in energy prices and changes in the salary and benefit packages for District employees. 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	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Potable Water Sales (Acre Feet)	6,124	5,678	5,707	5,735	5,764	5,793
Water Purchases						
Imported Treated	301	260	260	260	260	260
Imported Raw	5,425	3,208	3,238	3,667	3,697	3,727
Local Water	603	2,400	2,400	2,000	2,000	2,000
Total Water Sourced	6,329	5,868	5,898	5,927	5,957	5,987
Escalatory Assumptions						
General	NA	Budgeted	0%	3%	3%	3%
Salary	NA	Budgeted	1%	2%	2%	3%
Benefits	NA	Budgeted	1%	1%	1%	1%
Benefits - Medical	NA	Budgeted	1%	1%	1%	1%
Benefits - CalPers	NA	Budgeted	0%	0%	0%	0%
Benefits- OPEB	NA	Budgeted	5%	5%	5%	5%
Utilities	NA	Budgeted	4%	4%	4%	4%
Internal Cost Allocation	NA	Budgeted	2%	2%	2%	2%

3.2 FINANCIAL PLAN

The assumptions shown in Table 3-1 were incorporated into the 5-yr Financial Plan. To develop the Financial Plan, RFC projected annual expenses and revenues, 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 with which rates were calculated (this is known as the test year) and fiscal year 2015 is shown for comparison. The O&M budget incorporates the inflationary factors discussed in Section 3.1. FY 2015 water purchase costs for imported untreated water are notably higher because the District imported more water that year compared to the amount estimated to be imported in FY 2016 (shown in Table 3-1).

Table 3-2: Projected O&M Expenses

Line	Expense (1)	FY 2015 (2)	FY 2016 (3)	FY 2017 (4)	FY 2018 (5)	FY 2019 (6)	FY 2020 (7)
1	Administration	1,198,560	1,661,055	1,658,030	1,729,181	1,804,088	1,881,815
2	Customer Service	736,296	805,024	810,309	827,340	844,782	864,818
3	Water Purchase and Treatment						
4	Treatement Costs	1,728,398	1,897,126	1,991,982	2,051,741	2,113,294	2,176,693
5	Imported Treated Water	348,093	300,778	316,237	334,296	351,011	368,561
6	Imported Untreated Water	4,592,996	2,806,665	2,963,506	3,557,615	3,765,683	3,985,823
7	Local Untreated Water	127,143	63,600	63,600	63,600	63,600	63,600
8	MWD Readiness to Serve	144,169	119,544	127,912	122,533	128,659	135,092
10	CWA Emergency Storage Charge	351,317	435,445	529,850	561,461	589,534	619,011
11	MWD Capacity Reservation	57,226	82,275	101,891	100,909	105,955	111,252
12	CWA Customer Service Charge	133,697	165,350	201,005	212,998	223,648	234,830
13	CWA Supply Reliability Charge	-	89,136	184,512	195,520	205,296	215,561
14	Subtotal Water Purchases and Treatment[1]	7,483,039	5,959,919	6,480,495	7,200,673	7,546,679	7,910,423
15	Field Operations	$1,870,058	$2,052,827	$2,031,841	$2,073,066	$2,115,262	$2,163,990
16	Planning and Engineering	$465,989	$477,807	$483,216	$492,155	$501,286	$512,294
17	**Total O&M**	**11,753,942**	**10,956,632**	**11,463,891**	**12,322,414**	**12,812,098**	**13,333,340**

[1]The SDCWA Infrastructure Access Charge ($500,000) is not shown since it is a pass-through

3.5 CAPITAL IMPROVEMENT PLAN

Table 3-3 shows the District's five-year Capital Improvement Plan summary. The District is funding capital investment through System Development Charges (Capacity Fees) and rate revenue (also known as PAY-GO funding).

Table 3-3: Detailed Capital Improvement Plan

Line No.	Capital Project	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
	(1)	(2)	(3)	(4)	(5)	(6)
1	Transmission Line Maintenance	$300,000	$300,000	$100,000	$0	$0
2	Joint Facilities Master Plan Projects	$1,750,000	$1,750,000	$2,000,000	$2,000,000	$2,200,000
3	Joint Facilities Capital Acquisitions	$150,000	$250,000	$250,000	$250,000	$250,000
4	Water Infrastructure Improvements	$550,000	$675,000	$600,000	$600,000	$600,000
5	Meter Replacement and Automation Program	$100,000	$100,000	$100,000	$100,000	$100,000
6	Water Rate Study Update (2-year)	$0	$100,000	$0	$75,000	$0
7	Potable Reuse Facilities Plan Study	$50,000	$0	$0	$0	$0
8	PW Yard Xeriscape	$50,000	$0	$0	$0	$0
9	Water Master Plan Update (10-year)	$0	$0	$0	$150,000	$0
10	**Total**	**$2,950,000**	**$3,175,000**	**$3,050,000**	**$3,175,000**	**$3,150,000**

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.

Table 3-4: Existing and Proposed Debt Service

Line No.	Debt Issue	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
	(1)	(2)	(3)	(4)	(5)	(6)
1	2007 Bonds	$626,144	$631,244	$626,619	$627,919	$623,619
2	2014 Bonds	$772,400	$770,075	$772,225	$773,775	$771,500
3	Total Debt Service	$1,398,544	$1,401,319	$1,398,844	$1,401,694	$1,395,119

3.7 PROPOSED FINANCIAL PLAN AND REVENUE ADJUSTMENTS

The proposed revenue adjustments strive to maintain adequate revenue to fund operating expenses, capital expenditures and compliance with bond covenants. Financial Plan modelling assumes the revenue adjustment occurs in February of 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 FY 2016 and 2017 revenue adjustments selected by the Board of Directors during a November 18, 2015 Board meeting. At this time, the District is setting rates for FY 2016 through FY 2017. The District evaluates rates on a two year basis and will reevaluate rates in FY

2018 – the revenue adjustments shown beyond FY 2018 are estimates for planning purposes. The rates presented in Section 6 are based on the proposed revenue adjustments shown in Table 3-5.

Table 3-5: Proposed Rate Adjustments

	FY 2016	FY 2017
Revenue Adjustment	6.5%	6.5%

Table 3-6 shows the cash flow detail over the next five years with the revenue adjustments shown in Table 3-5. Line number 10 shows the additional revenue from the revenue adjustments. Line 31 shows the District meets debt service coverage requirements during the study period.

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

Line No.	Operating Cash Flow				FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
					Budgeted	*Projected*	*Projected*	*Projected*	*Projected*
	(1)	(2)	(3)		(4)	(5)	(6)	(7)	(8)
1	**Revenue - Potable (Bi-Monthly)**								
2	Revenue from SDWD Rates				$12,893,754	$12,946,542	$12,999,645	$13,053,013	$13,106,648
3	Revenue from Rates				$12,893,754	$12,946,542	$12,999,645	$13,053,013	$13,106,648
4	Additional Revenue Needs:								
5	**Fiscal**	**Revenue**	**Month**						
6	**Year**	**Adjustment**	**Effective**						
7	FY 2016	6.5%	Feb	5	$349,206	$841,525	$844,977	$848,446	$851,932
1	FY 2017	6.5%	Jan	6		$448,112	$899,900	$903,595	$907,308
8	FY 2018	6.5%	Jan	6			$479,197	$962,328	$966,283
2	FY 2019	6.0%	Jan	6				$473,021	$949,930
9	FY 2020	1.0%	Jan	6					$83,911
10	Total Additional Revenue				$349,206	$1,289,637	$2,224,074	$3,187,391	$3,759,363
11	Total Rate Revenue				$13,242,959	$14,236,180	$15,223,719	$16,240,403	$16,866,011
12									
13	**Other Revenue**								
14	Misc Operating Revenue				$471,200	$471,200	$473,556	$475,924	$478,303
15	Property Taxes				$780,000	$794,000	$797,970	$801,960	$805,970
16	**Total Revenue**				**$14,494,159**	**$15,501,380**	**$16,495,245**	**$17,518,287**	**$18,150,284**
17	**O&M Expenses**								
18	Administration (Org 92690)				$1,661,055	$1,658,030	$1,729,181	$1,804,088	$1,881,815
19	Customer Service (Org 92691)				$805,024	$810,309	$827,340	$844,782	$864,818
20	Water Purchases and Treatment (Org 92692)				$5,959,919	$6,480,495	$7,200,673	$7,546,679	$7,910,423
21	Field Operations (Org 92694)				$2,052,827	$2,031,841	$2,073,066	$2,115,262	$2,163,990
22	Planning and Engineering (Org 92695)				$477,807	$483,216	$492,155	$501,286	$512,294
23	**Total O&M Expenses**				**$10,956,632**	**$11,463,891**	**$12,322,414**	**$12,812,098**	**$13,333,340**
24	**Debt Service**								
25	Existing Debt				$1,398,544	$1,401,319	$1,398,844	$1,401,694	$1,395,119
26	**Total Debt Service Expenses**				**$1,398,544**	**$1,401,319**	**$1,398,844**	**$1,401,694**	**$1,395,119**
27									
28	**Total Expenses**				**$12,355,176**	**$12,865,210**	**$13,721,258**	**$14,213,792**	**$14,728,459**
29									
30	**Net Cash Flow**				**$2,138,984**	**$2,636,170**	**$2,773,987**	**$3,304,495**	**$3,421,825**
31	Debt Coverage				253%	288%	298%	336%	345%

Figures 3-1 through 3-5 display the FY 2016 through FY 2020 Financial Plan in graphical format. Though we show the five 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 2017. Figure 3-1 shows the modeled revenue adjustments (blue bars) and also graphs the calculated and minimum debt coverage requirements as shown by the green and red lines, respectively.

Figure 3-1: Proposed Revenue Adjustments

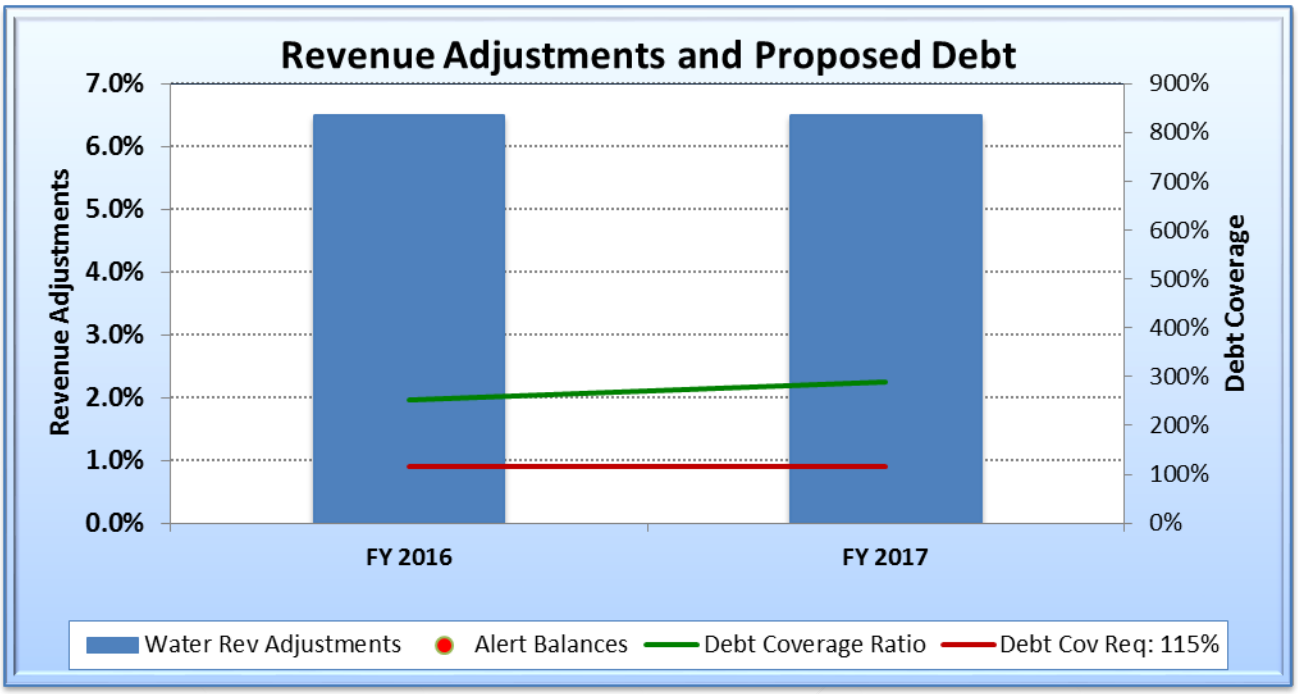


Figure 3-2 graphically illustrates the operating Financial Plan – it compares existing (current) and proposed revenues with projected expenses. Note that for graphical purposes, Figure 3-2 assumes revenue increases of 6.5%, 6.0% and 1.0% respectively in Fiscal Years 2018, 2019 and 2020, however, the District will reevaluate the necessary revenue adjustments in FY 2018. The expenses include O&M, purchased water, debt service and reserve funding and are shown by the stacked bars; and total revenues at existing and proposed rates are shown by the horizontal red and green lines, respectively. Current revenue from existing rates, in red, does not meet future total expenses and shows the need for revenue adjustments.

Figure 3-2: Proposed Operating Financial Plan

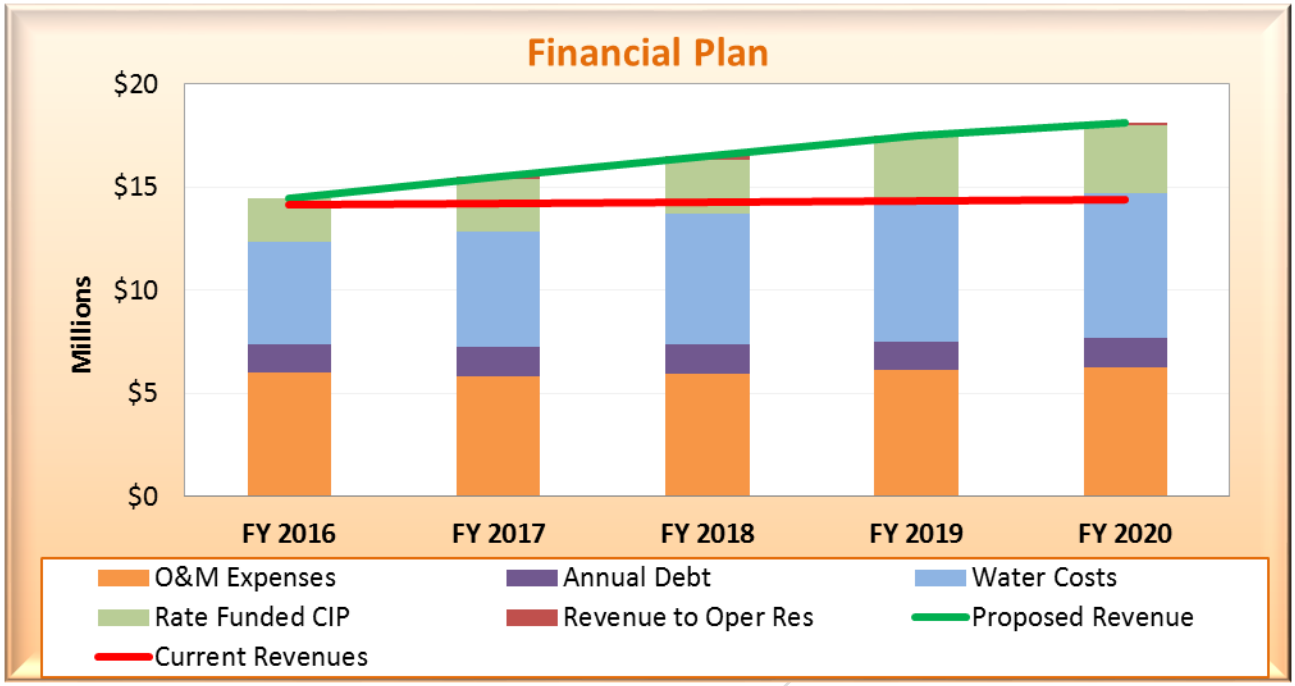


Figure 3-3 summarizes the projected CIP and its funding sources – which for this study is solely rate revenue (also known as PAY-GO) and a small amount of capacity fee revenue (not shown).

Figure 3-3: Projected CIP and Funding Sources

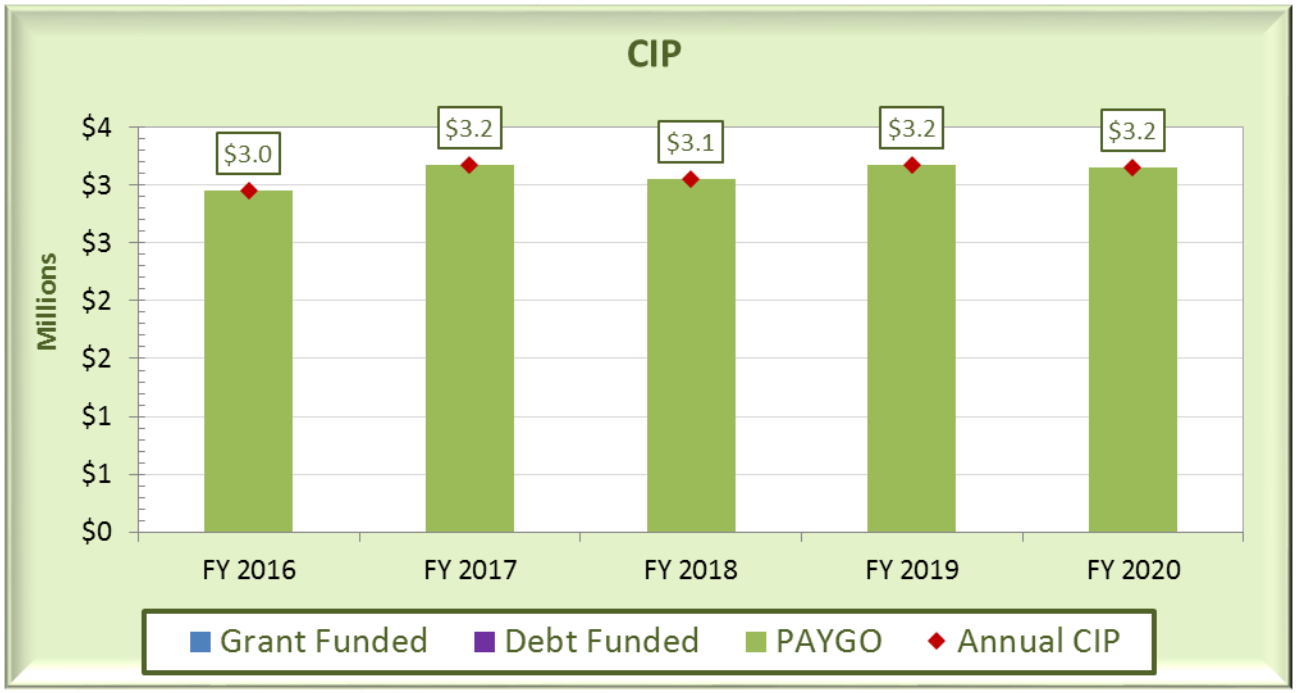
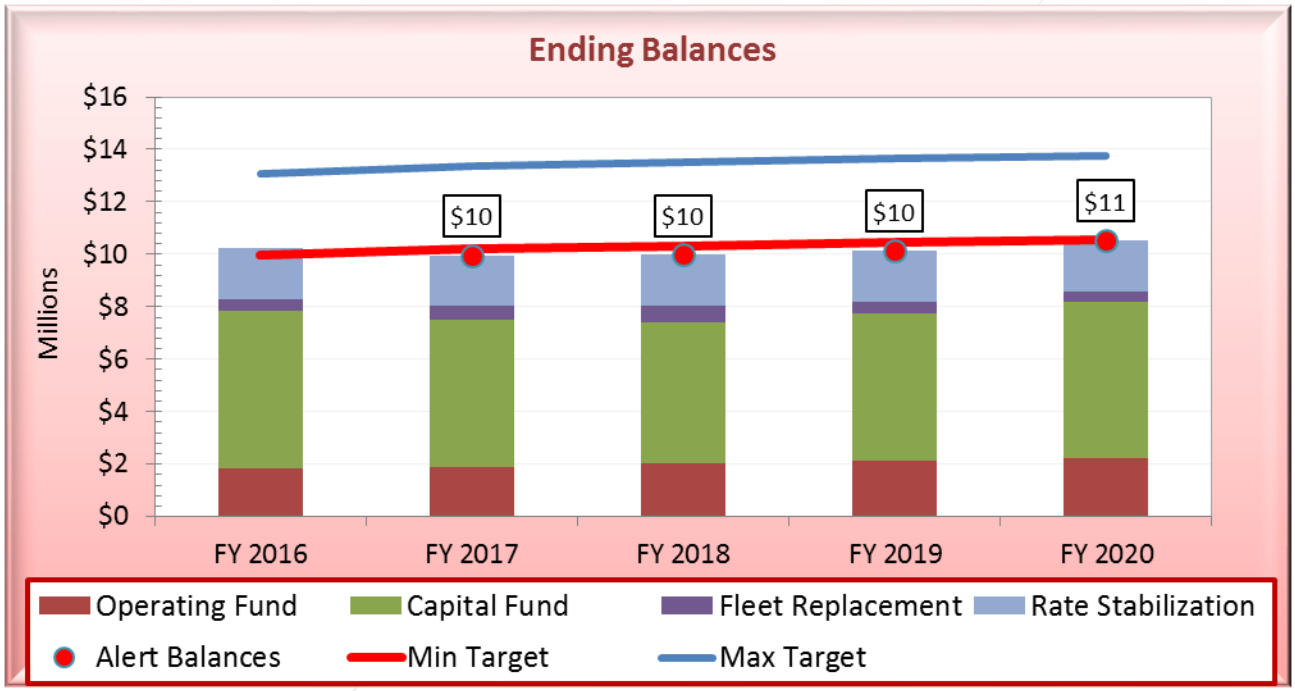


Figure 3-4 displays the ending balance of all the District's reserves combined. The red horizontal line is the total reserve target balance. The target reserve balances are as follows:

1) Operating Reserve: 60 days of O&M expenses,
2) Two times the average CIP expenditure over the next five years,
3) Fifteen percent of annual water revenues (commodity and meter service charges).

The selected revenue adjustments create reserve balances that nearly meet the target minimum reserves throughout the study period (based on revenue and expense assumption described in Table 3-1). The District desires to minimize customer rate impacts by using reserves during FY 2016.

Figure 3-4: Projected Operating Fund Ending Balances



Appendix A – Five 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, reflected in the California Constitution as Article XIII D, was enacted in 1996 to ensure that rates and fees are reasonable and proportional to the cost of providing service. The principal requirements for fairness of the fees, as they relate to public water service are as follows:

1. A property-related charge (such as water rates) imposed by a public agency on a parcel shall not exceed the costs required to provide the property related service.
2. Revenues derived by the charge shall not be used for any other purpose other than that for which the charge was imposed.
3. The amount of the charge imposed upon any parcel shall not exceed the proportional cost of service attributable to the parcel.
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property.
5. No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.
6. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing, when the agency considers all written protests against the charge.

As stated in AWWA's *M1 Manual*, "water rates and charges should be recovered from classes of customers in proportion to the cost of serving those customers." Proposition 218 requires that water rates cannot be "arbitrary and capricious," meaning that the rate-setting methodology must be sound and that there must be a nexus between costs and the rates charged. 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 proportionate cost of providing water services.

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."

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 District established single-family and multi-family tiered rates to incentivize customers to conserve water. The tiered rates (as well as rates for the remaining classes) need to be based on the proportionate costs incurred to provide water to customer classes to achieve compliance with Proposition 218.

Tiered Rates – "Inclining" block rate structures (which are synonymous with "increasing" block rate structures and 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. Tiered rates meet the requirements of Proposition 218 as long as the tiered rates reflect the proportionate cost of providing service.

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. Examples of functions are supply, treatment, transmission, distribution, storage, meter servicing and customer billing and collection.
2. Allocating functionalized costs to cost causation components. Cost causation components include base, maximum day, maximum hour[2], meter service, customer servicing and conservation costs.
3. Identifying the service units for each customer class and determining the unit costs associated with each cost causation component.

[2] *Collectively maximum day and maximum hour costs are known as peaking costs or capacity costs.*

4. Distributing the cost causation 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 demands).[3] 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 imposing such costs on the utility. 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.

[3] 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) costs[4]
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, and the O&M costs associated with those facilities, are designed to meet the peaking demands of customers. Therefore, extra capacity[5] 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 causation component allocation bases (i.e., percentages) shown in columns 3 through 5 of Table 5-1. Expenses are then allocated to the cost causation 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, let us derive the maximum bi-monthly base (line 2) allocation bases which attributes 81% (1.00/1.24) of the demand (and therefore costs) to base (average daily demand) use and the remaining 19% to maximum day (peaking) use. Expenses allocated using the maximum day bases assume 54% (1.00/1.70 – half of fire allocation) of costs are due to base demands with the remaining proportion, less fire, (100%-54%-10% (fire)) of costs allocated to the maximum day cost component. Ten percent of costs allocated using the max day bases is allocated to fire protection. Lastly, expenses allocated using the maximum hour bases attribute 30% of the costs to the base cost component, 20% to maximum day and 40% to maximum hour and 10% to fire protection using a similar derivation as

[4] The base component can be further divided into supply and base/delivery costs components as discussed in Section 6.3.
[5] The terms extra capacity, peaking and capacity costs are used interchangeably.

for maximum day. Collectively the maximum day and hour cost causation components are known as peaking costs.

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

Line No.	Cost Component Allocation Bases (1)	System Wide Peaking Factor (2)	Base (3)	Max Day (4)	Max Hour (5)	Fire[3] (6)	Total (7)	System MDD[2] / System Max Bi-Month Demand (8)	Max Hour / Max Day Ratio (9)
1	Base	1.00	100%				100%		
2	Max Bi-monthly / Avg Bi-monthly[1]	1.24	81%	19%		0%	100%		
3	Max Day	1.70	54%	36%	0%	10%	100%	1.37	
4	Max Hour	3.00	30%	20%	40%	10%	100%		1.76

[1]Source: File Titled "Water Usage Information" from SDWD

[2]MDD = Maximum Day Demand

[3]Fire Service Costs remain as found in the 2012 District Water Rate Model

Tables 5-2 shows the allocation bases, most of which were derived in Table 5-1, that are used to assign District expenses in Table 5-3 to the cost causation components. Table 5-2 includes six more allocation bases (compared to Table 5-1) shown in lines 5 through 10. The billing and customer service allocation bases allocates 14% of costs to conservation since the billing and customer service budget includes conservation program costs[6]. The remaining allocation bases are allocated to cost causation components with the same name.

Table 5-2: Allocation Bases used to Allocate O&M to Cost Causation Components

Line No.	Allocation Basis (1)	Base (2)	Max Day (3)	Max Hour (4)	Fire Protection (5)	Meter Service / Capacity (6)	Customer (7)	Con-servation (8)	General (9)	Total (10)
1	Base	100%	0%	0%						100%
2	Max Bi-mnth / Avg Bi-mnth[1]	81%	19%	0%						100%
3	Max Day	54%	36%	0%	10%					100%
4	Max Hour	30%	20%	40%	10%					100%
5	Average of Max Day and Hour	42%	28%	20%	10%					100%
6	Meter Service				0%	100%				100%
7	Billing & Customer Service				0%		86%	14%		100%
8	Conservation							100%		100%
9	General & Administration								100%	100%
10	Fire				100%					

[1]Stands for Max Bi-monthly / Average Bi-monthly

Table 5-3 allocates O&M expenses for FY 2016 shown earlier in column 3 of Table 3-2. We allocate costs to each cost causation component using the bases shown in column 1 of Table 5-2. We multiply the total expense for each line in column 11(lines 14 through 30), by the respective percentage in the top portion of the table. For example, the total in column 11 for Administration (line 14), is multiplied by the percentages for each cost component in line 1 to yield the amounts shown in line 14. For Administration, 100% of the costs is allocated to the General component as shown in line 14.

The allocation bases are chosen based on the type of cost for each line item and the proportion of those cost associated with each cost component. For example treatment costs are allocated using the max

[6] RFC discussed with District staff the approximate amount of the billing and collection budget that was for Conservation

bi-monthly / average bi-monthly basis since we estimate most of treatment cost (81%) is associated with meeting base demands with a small portion of max day demands. Field operations costs are associated with base, max day and max hour demands and therefore allocated according to average of max day and max hour. In other words, field operations time and expenses is spent on projects that serve base demand[7] and peak demands (this is the sum of max day and max hour) which would involve working on the transmission, distribution and storage systems. A similar logic is used for the remaining expenses in each line items.

We note that the total in line 29, column 11 of Table 5-3 equals the total O&M in column 3 of Table 3-2 as intended. The resulting allocation of the District's O&M costs to each cost component is shown in line 30. This resulting allocation is used to allocate the District's operating revenue requirement (discussed in Section 5.2) to the cost components.

[7] Base demand refers to average daily demand.

Table 5-3: Allocation of O&M Expenses to Cost Causation Components

Line No.	O&M Expense (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	Administration (Org 92690)	General & Administration	0%	0%	0%	0%	0%	0%	0.0%	100%	100%
2	Customer Service (Org 92691)	Billing & Customer Service	0%	0%	0%	0%	0%	86%	14.0%	0%	100%
3	Water Purchases and Treatment (Org 92692)										
4	Treatement Costs	Max Bi-mnth / Avg Bi-mnth[1]	81%	19%	0%	0%	0%	0%	0%	0%	100%
5	Imported Treated Water	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%
6	Imported Untreated Water	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%
7	Local Untreated Water	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%
8	MWD Readiness to Serve	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%
9	CWA Emergency Storage Charge	Meter Service	0%	0%	0%	0%	100%	0%	0%	0%	100%
10	MWD Capacity Reservation	Max Day	54%	36%	0%	10%	0%	0%	0%	0%	100%
10	CWA Customer Service Charge	Meter Service	0%	0%	0%	0%	100%	0%	0%	0%	100%
11	CWA Supply Reliability Charge	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%
12	Field Operations (Org 92694)	Average of Max Day and Hour	42%	28%	20%	10%	0%	0%	0%	0%	100%
13	Planning and Engineering (Org 92695)	General & Administration	0%	0%	0%	0%	0%	0%	0%	100%	100%

		Base	Max Day	Max Hour	Fire Protection	Meter Service	Customer	Con-servation	General	Total
14	Administration (Org 92690)	$0	$0	$0	$0	$0	$0	$0	$1,661,055	$1,661,055
15	Customer Service (Org 92691)	$0	$0	$0	$0	$0	$692,321	$112,703	$0	$805,024
16	Water Purchases and Treatment (Org 92692)									
17	Treatement Costs	$1,529,940	$367,186	$0	$0	$0	$0	$0	$0	$1,897,126
18	Imported Treated Water	$300,778	$0	$0	$0	$0	$0	$0	$0	$300,778
19	Imported Untreated Water	$2,806,665	$0	$0	$0	$0	$0	$0	$0	$2,806,665
20	Local Untreated Water	$63,600	$0	$0	$0	$0	$0	$0	$0	$63,600
21	MWD Readiness to Serve	$119,544	$0	$0	$0	$0	$0	$0	$0	$119,544
22	CWA Emergency Storage Charge	$0	$0	$0	$0	$435,445	$0	$0	$0	$435,445
23	MWD Capacity Reservation	$44,283	$29,764	$0	$8,228	$0	$0	$0	$0	$82,275
24	CWA Customer Service Charge	$0	$0	$0	$0	$165,350	$0	$0	$0	$165,350
25	CWA Supply Reliability Charge	$89,136	$0	$0	$0	$0	$0	$0	$0	$89,136
27	Field Operations (Org 92694)	$860,376	$576,603	$410,565	$205,283	$0	$0	$0	$0	$2,052,827
28	Planning and Engineering (Org 92695)	$0	$0	$0	$0	$0	$0	$0	$477,807	$477,807
29	**Subtotal**	**$5,814,323**	**$973,553**	**$410,565**	**$213,510**	**$600,795**	**$692,321**	**$112,703**	**$2,138,862**	**$10,956,632**
30	**Allocation to Cost Components**	**53.1%**	**8.9%**	**3.7%**	**1.9%**	**5.5%**	**6.3%**	**1.0%**	**19.5%**	**100.0%**

[1]Stands for Max Bi-monthly / Average Bi-monthly

We also allocate the District's assets to the cost causation 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 9 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 using the resulting asset allocation shown in line 25 of Table 5-4. Line 24 reallocates the general cost component to the other cost causation components in proportion to the percentage of each cost causation component.

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

Line No.		Allocation Basis	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conservation	General	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Supply	Base	100%	0%	0%	0%	0%	0%	0%	0%	100%
2	Transmission	Max Bi-mnth / Avg Bi-mnth[1]	81%	19%	0%	0%	0%	0%	0%	0%	100%
3	Distribution	Max Hour	30%	20%	40%	10%	0%	0%	0%	0%	100%
4	Trans & Dist	Max Day	54%	36%	0%	10%	0%	0%	0%	0%	100%
5	Storage (Distribution)	Max Hour	30%	20%	40%	10%	0%	0%	0%	0%	100%
6	Meters	Meter Service	0%	0%	0%	0%	100%	0%	0%	0%	100%
7	Billing & Collection	Billing & Customer Service	0%	0%	0%	0%	0%	86%	14%	0%	100%
8	General & Admin	General & Administration	0%	0%	0%	0%	0%	0%	0%	100%	100%
9	Fire	Fire	0%	0%	0%	100%	0%	0%	0%	0%	100%
10											
11			Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Conservation	General	Total
12											
13	Supply		$323,190	$0	$0	$0	$0	$0	$0	$0	$323,190
14	Transmission		$1,591,924	$382,062	$0	$0	$0	$0	$0	$0	$1,973,985
15	Distribution		$3,536,447	$2,357,631	$4,715,263	$1,178,816	$0	$0	$0	$0	$11,788,157
16	Trans & Dist		$12,754,224	$8,572,511	$0	$2,369,637	$0	$0	$0	$0	$23,696,372
17	Storage (Distribution)		$0	$0	$0	$0	$0	$0	$0	$0	$0
18	Meters		$0	$0	$0	$0	$1,959,011	$0	$0	$0	$1,959,011
19	Billing & Collection		$0	$0	$0	$0	$0	$0	$0	$0	$0
20	General & Admin		$0	$0	$0	$0	$0	$0	$0	$7,632,945	$7,632,945
21	Fire		$0	$0	$0	$95,240	$0	$0	$0	$0	$95,240
22											
23	Total Assets		$18,205,785	$11,312,204	$4,715,263	$3,643,693	$1,959,011	$0	$0	$7,632,945	$47,468,901
24	Reallocation of General & Admin		**$21,694,185**	**$13,479,729**	**$5,618,752**	**$4,341,859**	**$2,334,376**	**$0**	**$0**		**$47,468,901**
25	Resulting Allocation (with Gen & Admin Reallocated)		**45.7%**	**28.4%**	**11.8%**	**9.1%**	**4.9%**	**0.0%**	**0.0%**	**0.0%**	

5.2 REVENUE REQUIREMENT DETERMINATION

Table 5-5 shows the revenue requirement derivation with the total revenue required from District rates shown in line 25. The total in column 1, line 25 is the O&M revenue requirement that is allocated to the cost causation components using the percentages derived in line 30 of Table 5-3. The total capital revenue requirement, in line 24, column 2 is allocated to the cost causation components using the percentages derived in line 25 of Table 5-4.

RFC calculated the revenue requirement using Fiscal Year 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 25, column 3, we subtract revenue offsets from other (non-rate) revenues as shown in lines 14 through 17. In line 16, we also allocate revenue offsets to each cost component in the same proportion as O&M expenses (line 30, Table 5-3). However, line 17 shows that half of property taxes were allocated to a revenue offset component so that the District could apply this revenue offset to specific tiers and classes. The revenue offset cost component is shown in later tables in this report. We also make adjustments for annual cash balances and for the fact that the impending rate adjustment will take place eight months into the fiscal year and we must therefore annualize the rate increase (lines 21 and 22). 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 25 column 3. **This is the amount that District fixed charges and commodity rates must collect.**

The revenue offsets shown in Table 5-5 are taken from lines 14 and 15, column 4 in Table 3-6. The adjustment for cash balance, in line 21 of Table 5-5, is the net cash balance taken from line 30, column 4, in Table 3-6. The adjustment for mid-year increase in line 22 annualizes the revenue adjustments we have modeled in the cash flow table – line 7, column 4, of Table 3-6. It annualizes this revenue adjustment to reflect the fact that the District is implementing rates more than half way through the fiscal year. We must design rates to collect the annualized amounts shown in line 7 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	Administration (Org 92690)	$1,661,055		$1,661,055
5	Customer Service (Org 92691)	$805,024		$805,024
6	Water Purchases and Treatment (Org 92692)	$5,959,919		$5,959,919
7	Field Operations (Org 92694)	$2,052,827		$2,052,827
8	Planning and Engineering (Org 92695)	$477,807		$477,807
9	Total Debt Service Expenses		$1,398,544	$1,398,544
10				
11	**Total Revenue Requirement**	**$10,956,632**	**$1,398,544**	**$12,355,176**
12				
13	**Revenue Offsets**			
14	Subtotal CWA & MWD Revenue	$0		$0
15	Misc Operating Revenue	$471,200		$471,200
16	Property Taxes - General Offset[1]	$390,000		$390,000
17	Property Taxes - Applied to Specific Tiers	$390,000		$390,000
18	**Total Revenue Offsets**	**$1,251,200**	**$0**	**$1,251,200**
19				
20	**Adjustments**			
21	Adjustment for Cash Balance	($2,138,984)		($2,138,984)
22	Adjustment for Mid-year Increase	($488,888)		($488,888)
23	**Total Adjustments**	**($2,627,872)**	**$0**	**($2,627,872)**
24				
25	**Revenue Required from Rates**	**$12,333,304**	**$1,398,544**	**$13,731,848**

[1]Half of property taxes are a general offset that is allocated to the cost components exactly as O&M expenses were allocated to the cost components

5.3 UNIT COST COMPONENT DERIVATION

Our end goal is to allocate the revenue requirement in line 25, column 3 of Table 5-5 to the cost causation components and then distribute the cost causation components to each user class. To do so we must calculate the cost causation 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 38. Table 5-6 also shows the peaking factors for each tier and class in column 2[8]. 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 6-10 of Section 6.

[8] 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 allocate peaking costs to each class and tier.

Table 5-6: Derivation of Cost Component Units

Line No	Customer Class	Max Bi-Mnth / Avg Bi-Mnth Peaking Factors[1]	Tier Breakpoint	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)	Hydraulically Equivalent Meters	Number of Bills	Private Fire Line
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	Single Family Residence													
2	Tier 1	1.07	12	533,690	1,462	1.4631	2,139	677.1	2.5819	3,775.1	1,636			
3	Tier 2	1.16	20	251,719	690	1.5964	1,101	411.3	2.8172	1,942.9	842			
4	Tier 3	1.32	40	331,439	908	1.8137	1,647	738.9	3.2006	2,906.3	1,259			
5	Tier 4	1.61	41+	231,558	634	2.2058	1,399	765.0	3.8926	2,469.5	1,070			
6		1.24		1,348,406	3,694	1.7017	6,286	2,592.2	3.0030	11,093.8	4,807			
7	Single Family - Agriculture	1.24				1.6984			2.9972					
8	Tier 1	1.07	12	1,736	5	1.4631	7	2.2	2.5819	12.3	5			
9	Tier 2	1.16	20	1,152	3	1.5964	5	1.9	2.8172	8.9	4			
10	Tier 3	1.32	40	2,724	7	1.8137	14	6.1	3.2006	23.9	10			
11	Tier 4	1.33	41+	15,826	43	1.8196	78.89	35.5	3.2110	139.2	60.33			
12	Single Family - Commercial	1.24			0.00	1.6984	0.00	0.0	2.9972	0.0	0.00			
13	Tier 1	1.07	12	452	1.24	1.4631	1.81	0.6	2.5819	3.2	1.38			
14	Tier 2	1.16	20	192	0.53	1.5964	0.84	0.3	2.8172	1.5	0.64			
15	Tier 3	1.32	40	124	0.34	1.8137	0.62	0.3	3.2006	1.1	0.47			
16	Tier 4	1.33	41+	3	0.01	1.8196	0.01	0.0	3.2110	0.0	0.01			
17	Multi-family	1.24			0.00	1.6984	0.00	0.0	2.9972	0.0	0.00			
18	Tier 1	1.07	8	304,217	833.47	1.4631	1,219.41	385.9	2.5819	2,151.9	932.49			
19	Tier 2	1.16	12	85,916	235.39	1.5964	375.78	140.4	2.8172	663.1	287.36			
20	Tier 3	1.32	16	45,094	123.55	1.8137	224.07	100.5	3.2006	395.4	171.35			
21	Tier 4	1.61	17+	73,769	202.11	2.2058	445.81	243.7	3.8926	786.7	340.91			
22	Multi-family - Agriculture	1.24			0.00	1.6984	0.00	0.0	2.9972	0.0	0.00			
23	Tier 1	1.07	8	297	0.81	1.4631	1.19	0.4	2.5819	2.1	0.91			
24	Tier 2	1.16	12	148	0.41	1.5964	0.65	0.2	2.8172	1.1	0.50			
25	Tier 3	1.32	16	146	0.40	1.8137	0.73	0.3	3.2006	1.3	0.56			
26	Tier 4	1.33	17+	6,244	17.11	1.8196	31.13	14.0	3.2110	54.9	23.80			
27	Multi-family - Commercial	1.24			0.00	1.6984	0.00	0.0	2.9972	0.0	0.00			
28	Tier 1	1.07	8	134	0.37	1.4631	0.54	0.2	2.5819	0.9	0.41			
29	Tier 2	1.16	12	67	0.18	1.5964	0.29	0.1	2.8172	0.5	0.22			
30	Tier 3	1.32	16	57	0.15	1.8137	0.28	0.1	3.2006	0.5	0.21			
31	Tier 4	1.33	17+	609	1.67	1.8196	3.04	1.4	3.2110	5.4	2.32			
32	Commercial	1.18		311,720	854	1.6221	1,385.28	531.3	2.8482	2,432.4	1,059.3			
33	Institutional	1.34		72,039	197	1.8395	363.06	165.7	3.2455	640.5	277.6			
34	Landscaping	1.39		189,725	519.80	1.9056	990.55	470.8	3.3629	1,748.0	757.48			
35	Construction	1.56		12,623	34.58	2.1387	73.96	39.4	3.7742	130.5	56.56			
36	All Classes											15,683	70,018	10,440
37	Fire Protection Meters											3,115		
38	**Subtotal**			**2,473,419**	**6,776**			**4,733**			**8,802**	**15,683**	**70,018**	**10,440**

Table 5-7 shows the cost causation component unit cost derivation in line 18. The operating revenue requirement on line 18 plus line 25, in column 1, of Table 5-5 are added and allocated to the cost causation components using the O&M allocation from line 30 of Table 5-3. Similarly the capital revenue requirement in column 2 (line 25) of Table 5-5 is allocated to the cost causation components using the asset allocation from line 24 of Table 5-4. Lines 15 and 16 (revenue offsets which total $861k) of Table 5-5 are allocated to the cost components using the O&M allocation from line 30 of Table 5-3. This portion of revenue offset is allocated to all cost components and therefore is an offset to all classes and tiers. Line 17 ($390k) of the revenue offsets in Table 5-5, is allocated directly to the revenue offset component shown in column 9 of Table 5-7 so that it can be applied to specific tiers and is further discussed in Section 6. General and Administrative costs are redistributed in proportion to the resulting allocation of the other cost components – this is shown in lines 5 and 6 of Table 5-7. Line 8 allocates a portion of meter service costs to fire meters to cover costs associated with reading and maintaining fire meters. Line 9 allocates a portion of customer costs to fire protection to reflect the costs of billing fire customers. Line 10 allocates public fire protection costs to the meter service component to distribute public fire protection costs to all customers.

Lastly, we allocate a portion of extra capacity related costs to the meter service component in line 12 of Table 5-7 (column 6). The positive value in column 6, line 12, equals the total of the two negative values in columns 3 and 4 of line 12 – showing the allocation of extra capacity to the meter service component. 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 resulting allocation of the revenue requirement (column 11, line 13) to cost components is shown in line 13. The total for each cost component in line 13 is divided by the units of service in line 15 (derived in Table 5-6) to calculate the unit cost in line 18. For example, the unit cost for the base component is determined by dividing the total base cost by total water use in 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, shown in line 18, are used to distribute the cost components to the customer classes in Section 5.4.

Table 5-7: Unit Cost Calculation

Line No.	(1)	Base (2)	Max Day (3)	Max Hour (4)	Fire Protection (5)	Meter Service / (6)	Customer (7)	Con-servation (8)	Rev Offset (9)	General (10)	Total (11)
1	Operating Expenses	$7,208,847	$1,207,053	$509,037	$264,719	$744,891	$858,369	$139,734	$0	$2,651,853	$13,584,504
2	Capital Expenses	$639,161	$397,144	$165,541	$127,921	$68,776	$0	$0	$0	$0	$1,398,544
3	Revenue Offsets	($457,010)	($76,522)	($32,271)	($16,782)	($47,223)	($54,417)	($8,859)	($390,000)	($168,116)	($1,251,200)
4	**Total Cost of Service**	**$7,390,998**	**$1,527,675**	**$642,307**	**$375,858**	**$766,445**	**$803,952**	**$130,876**	**($390,000)**	**$2,483,737**	**$13,731,848**
5	Allocation of General Cost %	68%	14%	6%	3%	7%		1%			
6	Allocation of General Cost	$1,694,391	$350,220	$147,249	$86,166	$175,708	$0	$30,003	$0	($2,483,737)	
7	Total Fire Protection Cost				$462,024	$942,153	$803,952				
8	Allocation of Meter Service to Fire (Maintain Fire meters)				$28,265	($28,265)					
9	Allocation of Customer Billing to Fire				$32,158		($32,158)				
10	Allocation of Public Fire Protection				($366,601)	$366,601					
11	**Allocated Cost of Service**	**$9,085,388**	**$1,877,895**	**$789,557**	**$155,846**	**$1,280,489**	**$771,794**	**$160,879**	**($390,000)**		**$13,731,848**
12	Adjustment to Collect Capacity in Meter Servic		($845,053)	($355,300)		$1,200,353					
13	**Adjusted Cost of Service**	**$9,085,388**	**$1,032,842**	**$434,256**	**$155,846**	**$2,480,842**	**$771,794**	**$160,879**	**($390,000)**		**$13,731,848**
14											
15	Unit of Service	2,473,419	4,733	8,802		15,683	70,018		2,271,070		
16	Units	HCF	HCF / day	HCF / day		Hyd Eq. Mtrs	# of Bills		HCF		
17											
18	**Unit Cost**	**$3.67**	**$218.20**	**$49.34**		**$26.36**	**$11.02**		**($0.17)**		

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 18. **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 2, 3, 4, 8 and 9 of Table 5-8 are collected through the commodity (volumetric) rate ($/HCF). The cost components shown in columns 5, 6, and 7 are collected through the District's bimonthly fixed charge providing fixed revenue. The existing versus proposed proportion of fixed revenue is approximately 23% and 25% respectively (excluding the SDCWA IAC).

To derive the cost to serve each class, the unit costs from line 18 in Table 5-7 are multiplied by the units shown in Table 5-6 (columns 4, 8 and 11) for each class. For example, the base costs for the Multi-family class is calculated by multiplying the base unit cost (line 18, column 2, Table 5-7) by the annual Multi-family use in each tier (lines 18 through 21, column 4, Table 5-6). Similarly the Multifamily *customer* costs are derived by multiplying the *customer* unit cost (line 18, column 7 in Table 5-7) by the number of Multifamily bills (not shown but equal to 10,454 bills, the total number for all classes is shown in line 36, column 13 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 9 of Table 5-8. Note that the total cost of service (column 9) is equal to the revenue requirement in line 25 of Table 5-5 as intended. **We have now calculated the cost to serve each user class (and tier) in column 10, as well as the amount to be collected via fixed and commodity charges in columns 10 and 11.** We can now proceed to derive rates to collect the cost to serve each class.

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

Line No.	(1)	Base (2)	Max Day (3)	Max Hour (4)	Fire Protection (5)	Meter Service / Capacity (6)	Customer (7)	Con-servation (8)	Rev Offset (9)	Total COS[1] (10)	Total Commodity Revenue (11)	Total Fixed Revenue (12)
1	Single Family Residence	$4,952,980	$565,622	$237,181		$1,569,893	$590,817	$105,968	($231,555)	$7,790,906	$5,630,196	$2,160,710
2	Tier 1	$1,960,356	$147,735	$80,710				$41,942	($91,648)			
3	Tier 2	$924,616	$89,748	$41,538				$19,782	($43,226)			
4	Tier 3	$1,217,445	$161,223	$62,137				$26,047	($56,916)			
5	Tier 4	$850,563	$166,915	$52,796				$18,198	($39,764)			
6	Single Family - Agriculture					$14,441	$1,653	$0	($3,681)	$105,066	$88,972	$16,094
7	Tier 1	$6,376	$480	$262				$0	($298)			
8	Tier 2	$4,230	$411	$190				$0	($198)			
9	Tier 3	$10,006	$1,325	$511				$0	($468)			
10	Tier 4	$58,131	$7,754	$2,977				$0	($2,718)			
11	Single Family - Commercial					$2,268	$463	$0	($132)	$5,808	$3,077	$2,731
12	Tier 1	$1,659	$125	$68				$0	($78)			
13	Tier 2	$705	$68	$32				$0	($33)			
14	Tier 3	$456	$60	$23				$0	($21)			
15	Tier 4	$10	$1	$1				$0	($0)			
16	Multi-family					$461,319	$115,236	$40,001	($87,408)	$2,674,214	$2,097,659	$576,555
17	Tier 1	$1,117,452	$84,213	$46,007				$23,908	($52,242)			
18	Tier 2	$315,589	$30,633	$14,178				$6,752	($14,754)			
19	Tier 3	$165,640	$21,935	$8,454				$3,544	($7,744)			
20	Tier 4	$270,969	$53,175	$16,820				$5,797	($12,668)			
21	Multi-family - Agriculture					$3,479	$397	$0	($1,174)	$32,346	$28,471	$3,875
22	Tier 1	$1,090	$82	$45				$0	($51)			
23	Tier 2	$545	$53	$24				$0	($25)			
24	Tier 3	$538	$71	$27				$0	($25)			
25	Tier 4	$22,935	$3,059	$1,174				$0	($1,072)			
26	Multi-family - Commercial					$1,529	$199	$0	($149)	$5,303	$3,575	$1,728
27	Tier 1	$490	$37	$20				$0	($23)			
28	Tier 2	$245	$24	$11				$0	($11)			
29	Tier 3	$208	$28	$11				$0	($10)			
30	Tier 4	$2,238	$298	$115				$0	($105)			
31	Agriculture	$301,142	$32,964	$14,174		$63,606	$5,886	$0	($14,079)	$403,693	$334,201	$69,492
32	Commercial	$843,871	$82,957	$38,091		$180,727	$34,722	$0	($39,452)	$1,140,916	$925,468	$215,449
31	Commercial	$1,145,012	$115,921	$52,265		$244,333	$40,608	$0	($53,530)	$1,544,609	$1,259,668	$284,941
33	Public	$218,066	$29,709	$11,273		$53,186	$6,614	$0	($10,195)	$308,653	$248,854	$59,800
34	Government	$46,548	$6,445	$2,424		$11,755	$1,124	$0	($2,176)	$66,121	$53,241	$12,879
32	Institutional	$264,614	$36,154	$13,698		$64,941	$7,738	$0	($12,371)	$374,774	$302,095	$72,679
35	Landscaping	$696,901	$102,718	$37,372		$118,639	$14,682	$14,910		$985,224	$851,902	$133,322
36	Construction	$46,367	$8,593	$2,791						$57,751	$57,751	$0
37	Private Fire Line				$155,846		$0			$155,846		$155,846
38												
39	**TOTAL**	**$9,085,388**	**$1,032,842**	**$434,256**	**$155,846**	**$2,480,842**	**$771,794**	**$160,879**	**($390,000)**	**$13,731,848**	**$10,323,366**	**$3,408,482**
40	**TOTAL less Private Fire Line Revenue**											**$3,252,636**

[1]Cost of Service

6 RATE DERIVATION

6.1 EXISTING RATE STRUCTURE AND RATES

The District's existing rate structure consists of a bi-monthly fixed charge by meter size. The District also has a four-tier commodity rate for residential customers, and a uniform commodity rate for all remaining classes. Table 6-1 shows the existing rate structure and rates.

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

	Existing Fixed Charges		
Meter Size	Potable	Fire Line	SDCWA IAC
5/8"	$35.05	NA	$5.52
3/4"	$35.05	$7.37	$5.52
1"	$55.73	$7.37	$8.83
1.5"	$107.45	$13.74	$16.56
2"	$169.50	$24.72	$28.70
3"	$314.30	$64.17	$52.99
4"	$521.14	$132.20	$90.52
6"	$1,038.27	$376.37	$165.60
8"	$1,658.82	$797.51	$287.04

Customer Class		Tier Breakpoint	Existing Rate
Single Family Residence (SFR)	Tier 1	12	$2.63
	Tier 2	20	$3.93
	Tier 3	40	$4.64
	Tier 4	41+	$5.87
SFR-w-Agriculture	Tier 4	41+	$3.27
SFR-w-Commercial	Tier 4	41+	$3.69
Multi-family Residential (MFR)	Tier 1	8	$2.63
(per dwelling unit)	Tier 2	12	$3.93
	Tier 3	16	$4.64
	Tier 4	17+	$5.87
MFR-w-Agriculture	Tier 4	17+	$3.27
MFR-w-Commercial	Tier 4	17+	$3.69
Agriculture	Uniform Rate		$3.27
Commercial	Uniform Rate		$3.69
Public	Uniform Rate		$3.69
Government	Uniform Rate		$3.69
Landscaping	Uniform Rate		$4.64
Construction	Uniform Rate		$4.64

6.2 PROPOSED BASE METER FEES

Table 6-2 shows the derivation of the District's Meter Service Charge in column 6. The cost of service analysis derived in Table 5-8 feeds into the Fixed Charge derivation as the Fixed Charge is designed to collect the amount of revenue shown in line 40, column 11 of Table 5-8. Table 6-2 shows the bi-monthly fixed charge in column 6 without the SDCWA IAC pass-through in column 9. Column 7 shows the existing Meter Service charge before IAC pass-through. The District may implement monthly billing in the future– in which case the Meter Service Charges shown in Table 6-2 would be halved. Column 10 shows the total monthly Meter Service Charge including the SDCWA IAC pass through charge.

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)	Total Bi-monthly Meter Service Charge (5)	Current Bi-monthly Meter Service Charge (6)	Dollar Difference (7)	Bi-monthly SDCWA IAC (8)	Total Bi-monthly Fixed Charge including SDCWA IAC (9)
5/8"	1.00	$26.36	$11.02	$37.39	$35.05	$2.34	$5.52	$42.91
3/4"	1.00	$26.36	$11.02	$37.39	$35.05	$2.34	$5.52	$42.91
1"	1.67	$44.03	$11.02	$55.05	$55.73	($0.68)	$8.83	$63.88
1.5"	3.33	$87.79	$11.02	$98.82	$107.45	($8.63)	$16.56	$115.38
2"	5.33	$140.52	$11.02	$151.55	$169.50	($17.95)	$28.70	$180.25
3"	10.00	$263.65	$11.02	$274.67	$314.30	($39.63)	$52.99	$327.66
4"	16.67	$439.50	$11.02	$450.52	$521.14	($70.62)	$90.52	$541.04
6"	33.33	$878.73	$11.02	$889.76	$1,038.27	($148.51)	$165.60	$1,055.36
8"	53.33	$1,406.03	$11.02	$1,417.05	$1,658.82	($241.77)	$287.04	$1,704.09

Fixed Charge Fee Components

There are two components that comprise the District's Fixed Charge: 1) meter service and 2) the customer service component as shown in columns 3 and 4 respectively; they are described below. The total Meter Service Charge recognizes the fact that the District incurs fixed costs related to maintaining meters, billing customers and answering customer calls regardless of customer water use.

Meter Service Component

The meter service component collects extra 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. This assumes that larger meters have the potential to demand more capacity, or said differently, exert more peaking characteristics compared to smaller meters. The potential capacity demanded is proportional to the potential flow through each meter size as established by the AWWA hydraulic capacity ratios which 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 3/4-inch meter. For example, column 2 shows that the potential flow through a 2-inch meter is 5.3 times that of a 3/4-inch meter and therefore the meter

service component of the Fixed Charge is 5.3 times that of the 3/4-inch meter. The meter service component for a 3/4-inch meter is derived in column 6, line 18 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. The 5/8-inch and 3/4-inch meters are considered to be equivalent as they serve most single family residences.

The meter service component also recovers costs associated with maintaining and servicing meters. We assume that 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 7, line 18 of Table 5-7.

Total Fixed Charge

The total monthly Fixed Charge includes the meter service component, customer component and the SDCWA Infrastructure Access Charge (IAC) and is shown in column 10, Table 6-2.

6.3 PROPOSED FIRE LINE / METER SERVICE CHARGE

Table 6-3 shows the derivation of the private fire protection charges. Total fire protection costs are allocated to private and public fire protection in proportion to the potential demand of each - this is calculated and shown in column 6 of Table 6-4. Line 15 of Table 6-3 shows that 9% of total fire protection costs are due to private fire connections.

Table 6-3: Derivation of Private Fire Protection Charges

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 Protecion Cost (6)
1	Residential	1, 2.5" & 1, 4" D	1,028	49	50,836	
2	Commercial	2, 2.5" & 1, 4" D	211	61	12,783	
3	Commercial	1, 2.5" & 2, 4" D	211	88	18,520	
4			1,450		82,139	**91%**
Line No.	**Private Fire Connections**	**Connection Size (in)**	**Number in Service**	**Demand Factor[1]**	**Demand Units**	**% of Total Fire Protecion Cost**
5		0.75	1	1.00	1	
6		1.0	1,654	1.00	1,654	
7		1.5	1	2.90	3	
8		2.0	13	6.19	80	
9		3.0	-	18	0	
10		4.0	35	38	1,341	
11		6.0	30	111	3,339	
12		8.0	6	237	1,423	
13		10.0	-	427	0	
14	Subotal		1,740		7,842	**9%**
15	**Total**		**3,190**		**89,981**	**100%**

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

Table 6-4 shows the derivation of the bi-monthly private fire charge. The lower portion of Table 6-4 shows that the Fire Line Service charge is comprised of three different components: 1) a monthly fire charge which covers costs associated with providing fire protection, 2) a customer billing charge which covers costs to bill customers, 3) a meter service charge which covers costs associated with the reading and servicing of the ¾-inch and 1-inch fire meters.

The annual fire protection component, shown in column 7, line 5, is calculated by dividing the private fire protection cost (column 7, line 1) by the total number of private fire demand units (column 5, line 14 in Table 6-3). This annual charge for the ¾-inch and 1-inch meters is then divided by 6 to calculate a bi-monthly charge and scaled up using the demand factors shown in column 4 of Table 6-3. The billing component is calculated by dividing the billing costs (column 3, line 1) by the number of bills per year (which is the number of meters in service, column 3, line 14 of Table 6-3, multiplied by 6). The meter service component is calculated by taking the meter service costs (column 4, line 1, Table 6-4) and dividing by the number of annual bills for the ¾-inch and 1-inch meters (which is line 6, column 4 of Table 6-4, multiplied by 6). Should the District implement monthly billing, these charges would be halved. We note that only the ¾" and 1" meters have the meter service charge since the District must read and service these meters. The other, larger fire connections do not have meters and therefore do not require reading and service.

Table 6-4: Calculation of Bi-Monthly Private Fire Charges

Line No. (1)	Total Fire Protection Cost (2)	Billing (3)	Private Meter Service (4)	Remaining Fire Protection Cost (5)	Public Protection Cost (6)	Private Protection Cost (7)
1	$462,024	$32,158	$28,265	$401,601	$366,601	$95,423
2						
3	Bi-Monthly Billing Charge	$3.08				
4	Demand Units					7,842
5	Annual Charge / Unit Demand					$12.17
6	No. of Compound Fire Meters		1,655			
7	Bi-monthly Meter Charge		$2.85			

Line No. (1)	Connection Size (inch) (2)	Fire Monthly Charge (3)	Bi-monthly Customer Billing Charge (4)	Bi-monthly Meter Service (5)	Proposed Bi-monthly Charge (6)	Current Bi-monthly Charge (7)
8	0.75	$2.03	$3.08	$2.85	**$7.95**	**$7.37**
9	1.0	$2.03	$3.08	$2.85	**$7.95**	**$7.37**
10	1.5	$5.89	$3.08	$0.00	**$8.97**	**$13.74**
11	2.0	$12.55	$3.08	$0.00	**$15.63**	**$24.72**
12	3.0	$36.47	$3.08	$0.00	**$39.55**	**$64.17**
13	4.0	$77.71	$3.08	$0.00	**$80.79**	**$132.20**
14	6.0	$225.74	$3.08	$0.00	**$228.82**	**$376.37**
15	8.0	$481.06	$3.08	$0.00	**$484.14**	**$797.51**
16	10.0	$865.11	$3.08	$0.00	**N/A**	**N/A**

6.4 COMMODITY RATES

Single Family Tier Definitions

The breakpoints for the District's tiers remain unchanged. The first tier approximately equates to a 2.5-person household using 60 gallons per day per person (gpcd) bi-monthly. Sixty gallons per person per day is a reasonable indoor water use as established by a research paper by the AWWA Research Foundation titled *Residential End Uses of Water*. Tier 1 use is approximately 38% of Single Family water use.

The Tier 1 rate, for indoor use, is set using the lowest cost water sources, has the lowest peaking unit rate, no conservation costs, and has revenue offsets to provide affordability. Tiers 2-3 are assigned progressively higher water supply costs, peaking and conservation costs to those users in the upper tiers who place more demands on the system and generate the associated costs. Additionally, Tier 2 has revenue offsets to provide affordability for average irrigation needs. Tier 2 and 3 usage are approximately 18% and 25% respectively. Tier 4 represents approximately 18% of Single Family usage and is targeted for conservation.

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 and,
5. Revenue Offset

Water Supply costs are costs associated with obtaining and treating water to make it ready for transmission and distribution. The District has three possible sources of water, 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 comprised 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 were allocated to Tier 4 for which conservation programs are designed to promote water efficiency. Allocation of conservation costs to upper tiers helps provide a strong price signal for conservation, consistent with Article X Section 2 of the State of California Constitution, and 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 6-5 shows the estimated volume (water sold) and cost of each District water source.

Table 6-5: Water Sources and Costs

Line No.	Water Souce (1)	Supply Cost ($ / HCF) (2)	HCF Sold (3)
1	Treated Local Water	$0.87	1,011,550
2	Imported Treated Water	$2.74	109,585
3	Imported Untreated Water (Treated in Badger Plant)	$2.88	1,352,284
4	Average Supply Cost ($ / HCF)	$2.05	2,473,419

The water sources shown in Table 6-5 were allocated to each customer class in proportion to the number of accounts in each class. The number of accounts and percent of accounts in each class is shown in Table 6-6.

Table 6-6: Number of Accounts by Class

Line No.		SFR / MFR (1)	Commercial (2)	Institutional (3)	Landscaping (4)	Construction (5)	Total (6)
1	Total Accounts	10,717	614	117	222	10	11,680
2	% of Accounts	91.8%	5.3%	1.0%	1.9%	0.1%	100%

Table 6-7 column 7, shows the total water *sold* (used) from each source. The use is allocated to each class in proportion to the number of accounts in each class shown in Table 6-6. To calculate the average supply cost by customer class, we take the weighted average - weighted by the use from each source - of the ***supply cost for each source*** (column 1, Table 6-7). Appendix B shows the derivation of these supply costs. The average ***supply cost for each class*** is shown in line 5 of Table 6-7. This is the first component of the rate derivation for each class.

Table 6-7: Derivation of Supply Costs by User Class

Line No.	Water Source	Supply Cost ($ / HCF) (1)	SFR / MFR (2)	Commercial (3)	Institutional (4)	Landscaping (5)	Construction (6)	Total (7)
1	Treated Local Water	$0.87	928,146	53,178	10,133	19,227	866	1,011,550
3	Imported Treated Water	$2.74	100,549	5,761	1,098	2,083	94	109,585
2	Imported Untreated Water[1]	$2.88	858,616	252,781	60,808	168,415	11,663	1,352,284
4	Total Use by Class (HCF)		1,887,311	311,720	72,039	189,725	12,623	2,473,419
5	**Average Supply Cost ($ / HCF)**		**$1.88**	**$2.53**	**$2.59**	**$2.67**	**$2.74**	**$2.05**

[1] Includes cost to treat water at the Badget Filtration Plant

We must also derive the supply unit cost for each single family and multi-family tier. Table 6-8 shows this derivation. The water allocated to the single family class, shown in column 2 of Table 6-7, is allocated to each tier as shown in column 4 of Table 6-8. Tier 1 is allocated local water. Tier 2 is allocated the remaining amount of local water, all the imported treated water and imported untreated water in that order to meet its water demand. Tiers 3 and 4 are allocated solely 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 6-9), weighted by the use in each tier (line 1 through 4)

to produce the average ***supply cost by tier*** shown in column 9 of Table 6-8. Note that the average supply cost for the residential class as a whole, shown in the bottom right corner, is the same as that shown in Table 6-7 column 2. The average supply cost by tier in column 9, lines 1 through 4, is the supply component of the calculated rate for each tier.

Table 6-8: Derivation of Supply Costs by Single Family Tier

SFR and MFR					Total Water Supply by Source (HCF)				
					Treated Local Water	Imported Treated Water	Imported Untreated Water	TOTAL	Average
Line No.	Tier	Bi-Monthly BreakPoint	% of Use	Use by Tier	928,146	100,549	858,616	1,887,311	Average Supply Cost by Tier
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Tier 1	12	44.5%	840,524	840,524	-	-	840,524	**$0.87**
2	Tier 2	20	18.0%	339,194	87,622	100,549	151,023	339,194	**$2.32**
3	Tier 3	40	20.1%	379,584	-	-	379,584	379,584	**$2.88**
4	Tier 4	41+	17.4%	328,009	-	-	328,009	328,009	**$2.88**
5			100.0%	1,887,311	928,146	100,549	858,616	1,887,311	
6									
7	**Average Supply Cost by Water Source ($ / HCF)**				**$0.87**	**$2.74**	**$2.88**		**$1.88**

Delivery Unit Cost

We derive the delivery unit cost in Table 6-9 by subtracting the weighted average water supply rate from the District's cost to obtain, treat and deliver water (known as the base rate and shown in line 1). This base rate was derived in line 18, column 2 of Table 5-7. The base rate is the cost to supply and deliver water under average daily demand conditions. By subtracting the average supply rate, line 5, column 7 of Table 6-7, we identify the cost to *deliver* water under the same conditions. This delivery cost is the same for all classes and for all single family tiers.

Table 6-9: Derivation of the Delivery Unit Cost

Line No.		Unit Rate ($ / HCF)
1	Fully Loaded Base Rate (Obtain, Treat and Deliver Water)[1]	$3.67
2	Less Weighted Average Supply Rate	$2.05
3	**Delivery Cost**	**$1.62**

[1]Column 2, Table 5-7

Peaking Unit Cost

Table 6-10 shows the derivation of the unit peaking costs for all classes. The peaking costs shown in column 4 were derived in the cost of service section and are the sum of columns 3 and 4, 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 (column 3) – a higher peaking factor correlates to a higher peaking rate. Also note that the total peaking costs in column 4 of Table 6-10 matches the total peaking costs (summing max day and max hour) shown in columns 3 and 4 in Table 5-8.

Table 6-10: Derivation of Peaking Unit Cost

Derivation of Peaking Costs						
Line No.	Tier / Class (1)	Tier Breakpoint (2)	Peaking Factor (3)	Peaking Costs (4)	Use (HCF) (5)	Peaking Rate ($ / HCF) (6)
1	Single Family Residence		1.24			
2	Tier 1	12	1.07	$228,445	533,690	**$0.43**
3	Tier 2	20	1.16	$131,286	251,719	**$0.52**
4	Tier 3	40	1.32	$223,360	331,439	**$0.67**
5	Tier 4	41+	1.61	$219,712	231,558	**$0.95**
7	Single Family - Agriculture		1.24			
8	Tier 1	12	1.07	$743	1,736	**$0.43**
9	Tier 2	20	1.16	$601	1,152	**$0.52**
10	Tier 3	40	1.32	$1,836	2,724	**$0.67**
11	Tier 4	41+	1.33	$10,731	15,826	**$0.68**
13	Single Family - Commercial		1.24			
14	Tier 1	12	1.07	$193	452	**$0.43**
15	Tier 2	20	1.16	$100	192	**$0.52**
16	Tier 3	40	1.32	$84	124	**$0.67**
17	Tier 4	41+	1.33	$2	3	**$0.68**
19	Multi-family		1.24			
20	Tier 1	8	1.07	$130,220	304,217	**$0.43**
21	Tier 2	12	1.16	$44,810	85,916	**$0.52**
22	Tier 3	16	1.32	$30,389	45,094	**$0.67**
23	Tier 4	17+	1.61	$69,995	73,769	**$0.95**
25	Multi-family - Agriculture		1.24			
26	Tier 1	8	1.07	$127	297	**$0.43**
27	Tier 2	12	1.16	$77	148	**$0.52**
28	Tier 3	16	1.32	$99	146	**$0.67**
29	Tier 4	17+	1.33	$4,234	6,244	**$0.68**
31	Multi-family - Commercial		1.24			
32	Tier 1	8	1.07	$57	134	**$0.43**
33	Tier 2	12	1.16	$35	67	**$0.52**
34	Tier 3	16	1.32	$38	57	**$0.67**
35	Tier 4	17+	1.33	$413	609	**$0.68**
39	Agriculture/Commercial		1.18	$168,186	$311,720	**$0.54**
41	Public/Government		1.34	$49,852	$72,039	**$0.69**
42	Landscaping		1.39	$140,091	189,725	**$0.74**
43	Construction		1.56	$11,384	12,623	**$0.90**
44	**Total**			**$1,467,098**	**2,473,419**	

Conservation Unit Cost

Table 6-11 shows the derivation of the conservation unit costs by class and tier. The total conservation costs were derived in Table 5-7, line 13, column 8. The District concentrates its conservation efforts on SFR and MFR Tier 4 users and the Landscape customer class. Therefore

conservation costs are allocated to these customers accordingly as shown in Table 6-11 column 2. We note that the total conservation costs from Table 5-7, line 13 matches the conservation cost in line 3, column 3 in Table 6-11. The remaining classes are not allocated conservation costs, since the District does not focus on reducing their water use and therefore these classes do not have a conservation rate.

Table 6-11: Derivation of Conservation Unit Costs

Derivation of Conservation Rate by Class					
Line No.	Class / Tier (1)	% of Time / Resources (2)	Allocated Conservation Cost (3)	Use (4)	Conservation Rate ($ /HCF) (5)
1	SFR and MFR - Tier 4	84%	$135,139	305,328	**$0.44**
2	Landscape	16%	$25,741	189,725	**$0.14**
3	Total	100%	$160,879	495,053	

Revenue Offset

As mentioned in Section 5.2, half of the District's property tax revenue was allocated specifically to Tiers 1 and 2 and the Commercial (which comprises the former Agricultural and Commercial classes) class as shown in Table 6-12. The revenue offsets for each customer class were previously shown in Table 5-8 in Section 5.4. In Table 5-8 the revenue offset was allocated to each customer class based on water use. We reallocate this $390k in property tax in Table 6-12 below. Note that the total in column 8, Table 5-8 is equal to the total in column 2 in Table 6-12. In Table 6-12 column 2, we reallocate the total property tax for the residential class to Tiers 1 and 2 (only) by using the allocation factors in column 3. The resulting allocation of property tax is shown in column 7. The revenue offset in column 8 is calculate by dividing column 7 by the use in column 5.

The commercial class revenue offset is calculated by dividing column 2 by the use in column 4. We note that the institutional class receives no revenue offset set since these are public/government customers who do not pay property tax and therefore should not receive associated revenue offset benefits.[9] Since property tax is non-rate revenue, the District has discretion on how to use this revenue and has chosen to apply a portion of it to reduce the rates to promote affordability for Tiers 1 and 2 as well as the Commercial class.

[9] The property tax revenue that was allocated to the Institutional (Public/Government) class based on flow in Table 5-8 was reallocated to the Commercial class.

Table 6-12: Derivation of Revenue Offset

Derivation of Revenue Offset (Property Tax)									
Line No.	Tier / Class (1)	Tier Breakpoint (HCF)	Revenue Offset (2)	Allocation Factor (3)	Use (HCF) (4)	Weighted Allocation Factor (5)	Percent Allocation of Prop Tax to each Tier (6)	Allocated Revenue Offset (7)	Revenue Offset ($ / HCF) (8)
1	**SFR and MFR - All Classes**								
2	Tier 1	12	($144,339)	1.0	840,524	840,524	71%	($230,914)	**($0.27)**
3	Tier 2	20	($58,248)	1.0	339,194	339,194	29%	($93,185)	**($0.27)**
4	Tier 3	40	($65,184)	0.0	379,584	-	0%	$0	**$0.00**
5	Tier 4	41+	($56,327)	0.0	328,009	-	0%	$0	**$0.00**
6			($324,099)		1,887,311	1,179,718	100%	($324,099)	**($0.17)**
7	Commercial		($65,901)		311,720				**($0.21)**
8			($390,000)		2,271,070				

Final Rate Derivation

We have calculated the unit rates for supply, delivery, peaking, conservation and revenue offset for residential tiers and for each class in Tables 6-5 through 6-12. Table 6-13 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 9. We note that the total revenue shown in line 44, column 11, approximates the commodity revenue requirement derived in Table 5-8 line 39 with a slight difference due to rounding.

Table 6-13: Derivation of Rates by Tier and Class

Total Rate Derivation											
Line No.	User Class / Tier (1)	Bi-monthly Breakpoint (HCF) (2)	Peaking Factors (3)	Supply ($ / HCF) (4)	Delivery ($ / HCF) (5)	Peaking ($ / HCF) (6)	Con-servation ($ / HCF) (7)	Revenue Offset ($ / HCF) (8)	Total Proposed Rate ($ / HCF) (9)	Use (HCF) (10)	Commodity Revenue ($) (11)
1	Single Family Residence		1.24								
2	Tier 1	12	1.07	$0.87	$1.62	$0.43	$0.00	-$0.27	**$2.64**	533,690	$1,410,498
3	Tier 2	20	1.16	$2.32	$1.62	$0.52	$0.00	-$0.27	**$4.19**	251,719	$1,054,604
4	Tier 3	40	1.32	$2.88	$1.62	$0.67	$0.00	$0.00	**$5.18**	331,439	$1,716,853
5	Tier 4	41+	1.61	$2.88	$1.62	$0.95	$0.44	$0.00	**$5.89**	231,558	$1,364,727
6											$5,546,682
7	Single Family - Agriculture		1.24								
8	Tier 1	12	1.07	$0.87	$1.62	$0.43	$0.00	-$0.27	**$2.64**	1,736	$4,587
9	Tier 2	20	1.16	$2.32	$1.62	$0.52	$0.00	-$0.27	**$4.19**	1,152	$4,825
10	Tier 3	40	1.32	$2.88	$1.62	$0.67	$0.00	$0.00	**$5.18**	2,724	$14,111
11	Tier 4	41+	1.33	$2.88	$1.62	$0.68	$0.00	$0.00	**$5.18**	15,826	$81,977
12											$105,500
13	Single Family - Commercial		1.24								
14	Tier 1	12	1.07	$0.87	$1.62	$0.43	$0.00	-$0.27	**$2.64**	452	$1,193
15	Tier 2	20	1.16	$2.32	$1.62	$0.52	$0.00	-$0.27	**$4.19**	192	$804
16	Tier 3	40	1.32	$2.88	$1.62	$0.67	$0.00	$0.00	**$5.18**	124	$644
17	Tier 4	41+	1.33	$2.88	$1.62	$0.68	$0.00	$0.00	**$5.18**	3	$14
18											$2,656
19	Multi-family		1.24								
20	Tier 1	8	1.07	$0.87	$1.62	$0.43	$0.00	-$0.27	**$2.64**	304,217	$804,020
21	Tier 2	12	1.16	$2.32	$1.62	$0.52	$0.00	-$0.27	**$4.19**	85,916	$359,957
22	Tier 3	16	1.32	$2.88	$1.62	$0.67	$0.00	$0.00	**$5.18**	45,094	$233,587
23	Tier 4	17+	1.61	$2.88	$1.62	$0.95	$0.44	$0.00	**$5.89**	73,769	$434,770
24											$1,832,333
25	Multi-family - Agriculture		1.24								
26	Tier 1	8	1.07	$0.87	$1.62	$0.43	$0.00	-$0.27	**$2.64**	297	$784
27	Tier 2	12	1.16	$2.32	$1.62	$0.52	$0.00	-$0.27	**$4.19**	148	$622
28	Tier 3	16	1.32	$2.88	$1.62	$0.67	$0.00	$0.00	**$5.18**	146	$759
29	Tier 4	17+	1.33	$2.88	$1.62	$0.68	$0.00	$0.00	**$5.18**	6,244	$32,343
30											$34,508
31	Multi-family - Commercial		1.24								
32	Tier 1	8	1.07	$0.87	$1.62	$0.43	$0.00	-$0.27	**$2.64**	134	$353
33	Tier 2	12	1.16	$2.32	$1.62	$0.52	$0.00	-$0.27	**$4.19**	67	$280
34	Tier 3	16	1.32	$2.88	$1.62	$0.67	$0.00	$0.00	**$5.18**	57	$293
35	Tier 4	17+	1.33	$2.88	$1.62	$0.68	$0.00	$0.00	**$5.18**	609	$3,156
36											$4,081
37	Agriculture		1.22	$2.53	$1.62	$0.54	$0.00	-$0.21	**$4.48**	81,983	$367,658
38	Commercial		1.17	$2.53	$1.62	$0.54	$0.00	-$0.21	**$4.48**	229,736	$1,030,264
39	Public		1.34	$2.59	$1.62	$0.69	$0.00	$0.00	$4.91	59,367	$291,437
40	Government		1.35	$2.59	$1.62	$0.69	$0.00	$0.00	$4.91	12,672	$62,209
41	Landscaping		1.39	$2.67	$1.62	$0.74	$0.14	$0.00	**$5.17**	189,725	$981,042
42	Construction		1.56	$2.74	$1.62	$0.90	$0.00	$0.00	**$5.26**	12,623	$66,460
43											
44	Total									**2,473,419**	**10,324,829**
45	Commodity Revenue Requirement										**10,323,366**
46	Difference										**$1,463**

7 BILL IMPACTS

Section 7 shows the customer bi-monthly bill impacts for each customer class. The tables shown include the SDCWA IAC pass- through charges for calendar year 2016 so that the bill represents the total customer bill. The sample customer bills below assume monthly billing and compare bills under current monthly rates/charges with proposed monthly rates/charges.

7.1 CUSTOMER BILL IMPACTS

Single Family Residential (SFR) Bill Impacts

Table 7-1 shows the Single Family bill impacts for various use points and assuming a ¾-inch meter – which is the most numerous meter for Single Family customers. The average Single Family use is 13 HCF monthly. The dollar and percent bill impacts for the average SFR customer are shown in line 3 of Table 7-1. Customers with slightly above average water use will see the largest bill impacts since the Tier 3 rate has increased the most compared to existing rates. We note that the bill impacts are a result of setting tiered rates based on Cost of Service.[10]

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

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	0.0	$21.45	$0.00	**$21.45**	**$20.29**	$1.17	5.8%
2	6.0	$21.45	$15.86	**$37.31**	**$36.07**	$1.25	3.5%
3	13.0	$21.45	$48.16	**$69.61**	**$65.71**	$3.90	5.9%
4	19.0	$21.45	$79.24	**$100.69**	**$93.55**	$7.14	7.6%
5	25.0	$21.45	$113.88	**$135.34**	**$127.54**	$7.80	6.1%
6	31.0	$21.45	$149.25	**$170.70**	**$162.76**	$7.94	4.9%
7	37.0	$21.45	$184.61	**$206.06**	**$197.98**	$8.09	4.1%
8	43.0	$21.45	$219.97	**$241.42**	**$233.20**	$8.23	3.5%

[10] In the post San Juan Capistrano litigation environment, tiered rates must have a nexus with the costs associated with serving water in the tier.

Single Family with (-w-) Agriculture Bill Impacts

Table 7-2 shows Single Family with Agriculture bill impacts for various use points and assuming a 1.5-inch meter – which is the most common meter. The Single Family with Agriculture monthly average use is approximately 77 HCF.

Table 7-2: Single Family –w- Agriculture Bill Impacts (1.5" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	0	$57.69	$0.00	**$57.69**	**$62.01**	-$4.32	-7.0%
2	40	$57.69	$188.02	**$245.70**	**$205.31**	$40.40	19.7%
3	80	$57.69	$395.22	**$452.90**	**$336.11**	$116.80	34.8%
4	120	$57.69	$602.42	**$660.10**	**$466.91**	$193.20	41.4%
5	160	$57.69	$809.62	**$867.30**	**$597.71**	$269.60	45.1%
6	200	$57.69	$1,016.82	**$1,074.50**	**$728.51**	$346.00	47.5%
7	240	$57.69	$1,224.02	**$1,281.70**	**$859.31**	$422.40	49.2%
8	280	$57.69	$1,431.22	**$1,488.90**	**$990.11**	$498.80	50.4%

Single Family with Commercial

Table 7-3 shows the Single Family with Commercial bill impacts for various use points and assuming a 1-inch meter – the most numerous meter for this class. The average monthly use is approximately 10 HCF.

Table 7-3: Single Family –w- Commercial Bill Impacts (1" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	0	$31.94	$0.00	**$31.94**	**$32.28**	-$0.34	-1.1%
2	5	$31.94	$13.21	**$45.16**	**$45.43**	-$0.27	-0.6%
3	10	$31.94	$32.62	**$64.56**	**$63.78**	$0.78	1.2%
4	15	$31.94	$58.52	**$90.46**	**$86.98**	$3.48	4.0%
5	20	$31.94	$84.42	**$116.36**	**$110.18**	$6.18	5.6%
6	25	$31.94	$110.32	**$142.26**	**$128.63**	$13.63	10.6%
7	30	$31.94	$136.22	**$168.16**	**$147.08**	$21.08	14.3%
8	35	$31.94	$162.12	**$194.06**	**$165.53**	$28.53	17.2%

Multi-family Residential

Table 7-4 shows the Multi-family Residential bill impacts for various use points, assuming a 4 dwelling unit complex and assuming a 1-inch meter – the most numerous meter for this class. The average monthly use is approximately 26 HCF.

Table 7-4: Multi-family Residential Bill Impacts (5/8" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	0	$21.45	$0.00	**$21.45**	**$20.29**	$1.17	5.8%
2	10	$21.45	$26.43	**$47.88**	**$46.59**	$1.30	2.8%
3	20	$21.45	$59.05	**$80.50**	**$78.09**	$2.41	3.1%
4	30	$21.45	$106.88	**$128.34**	**$121.65**	$6.69	5.5%
5	40	$21.45	$164.39	**$185.85**	**$177.89**	$7.96	4.5%
6	50	$21.45	$223.33	**$244.78**	**$236.59**	$8.20	3.5%
7	60	$21.45	$282.27	**$303.72**	**$295.29**	$8.43	2.9%
8	70	$21.45	$341.20	**$362.66**	**$353.99**	$8.67	2.4%

Multi-family with Agriculture

Table 7-5 shows the Multi-family with Agriculture bill impacts for various use points, assuming a 4 dwelling unit complex and assuming a 2-inch meter – the most numerous meter for this class. The average monthly use is approximately 100 HCF. The decrease for low/no water users shown is due to the slight decrease in the Meter Service Charge for 2 inch meters.

Table 7-5: Multi-family -w- Agriculture Bill Impacts (2" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	0	$90.12	$0.00	**$90.12**	**$99.10**	-$8.98	-9.1%
2	25	$90.12	$122.42	**$212.55**	**$177.26**	$35.29	19.9%
3	50	$90.12	$210.48	**$300.61**	**$268.60**	$32.01	11.9%
4	75	$90.12	$339.98	**$430.11**	**$350.35**	$79.76	22.8%
5	100	$90.12	$469.48	**$559.61**	**$432.10**	$127.51	29.5%
6	125	$90.12	$598.98	**$689.11**	**$513.85**	$175.26	34.1%
7	150	$90.12	$728.48	**$818.61**	**$595.60**	$223.01	37.4%
8	175	$90.12	$857.98	**$948.11**	**$677.35**	$270.76	40.0%

Multi-family with Commercial

Table 7-6 shows the Multi-family with Commercial bill impacts for various use points and assuming a 1-inch meter – the most numerous meter for this class. The average monthly use is approximately 26 HCF.

Table 7-6: Multi-family -w- Commercial Bill Impacts (1" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	0	$31.94	$0.00	**$31.94**	**$32.28**	-$0.34	-1.1%
2	10	$31.94	$26.43	**$58.37**	**$58.58**	-$0.21	-0.4%
3	20	$31.94	$59.05	**$90.99**	**$90.08**	$0.91	1.0%
4	30	$31.94	$106.88	**$138.82**	**$133.64**	$5.18	3.9%
5	40	$31.94	$158.68	**$190.62**	**$172.44**	$18.18	10.5%
6	50	$31.94	$210.48	**$242.42**	**$209.34**	$33.08	15.8%
7	60	$31.94	$262.28	**$294.22**	**$246.24**	$47.98	19.5%
8	70	$31.94	$314.08	**$346.02**	**$283.14**	$62.88	22.2%

Agriculture (Now same rate as Commercial Class)

Table 7-7 shows the bill impacts for current Agriculture customers. Table 7-7 shows various use points and assuming a 2-inch meter – the most numerous meter for this class. The average monthly use is approximately 95 HCF in FY 2014.

Table 7-7: Agriculture Bill Impacts (1.5" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	45.0	$90.12	$201.80	**$291.93**	**$246.25**	$45.68	18.5%
2	95.0	$90.12	$426.03	**$516.16**	**$409.75**	$106.41	26.0%
3	140.0	$90.12	$627.84	**$717.96**	**$556.90**	$161.06	28.9%

Commercial

Table 7-8 shows the bill impacts for current Commercial customers who going forth are now combined with Agricultural. Table 7-8 shows various use points and assuming a 5/8-inch meter – the most numerous meter for this class. The average monthly use is approximately 40 HCF.

Table 7-8: Commercial Bill Impacts (5/8" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	20	$21.45	$89.69	**$111.14**	**$94.09**	$17.06	18.1%
2	40	$21.45	$179.38	**$200.84**	**$167.89**	$32.95	19.6%
3	60	$21.45	$269.07	**$290.53**	**$241.69**	$48.84	20.2%

Public (Now same rate as Institutional Class)

Table 7-9 shows the bill impacts for current Public customers who going forth are now combined with Governmental to form the Institutional class. Table 7-9 shows various use points and assuming a 2-inch meter – the most numerous meter for this class. The average monthly use is approximately 64 HCF.

Table 7-9: Public Bill Impacts (2" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	30	$90.12	$147.27	**$237.40**	**$209.80**	$27.60	13.2%
2	60	$90.12	$294.55	**$384.67**	**$320.50**	$64.17	20.0%
3	90	$90.12	$441.82	**$531.94**	**$431.20**	$100.74	23.4%

Government (Now same rate as Institutional Class)

Table 7-10 shows the bill impacts for current Government customers who going forth are now combined with Public customers to form the Institutional class. Table 7-10 shows various use points and assuming a 2-inch meter – the most numerous meter for this class. The average monthly use is approximately 106 HCF.

Table 7-10: Government Bill Impacts (2" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	50	$90.12	$245.45	**$335.58**	**$283.60**	$51.98	18.3%
2	100	$90.12	$490.91	**$581.03**	**$468.10**	$112.93	24.1%
3	150	$90.12	$736.36	**$826.49**	**$652.60**	$173.89	26.6%

Landscape

Table 7-11 shows the Landscape bill impacts for various use points and assuming a 2-inch meter – the most numerous meter for this class. The average Landscape use is about 86 HCF bi-monthly.

Table 7-11: Landscape Bill Impacts (2" Meter)

Line No.	Monthly Usage (HCF)	Proposed Monthly Meter Service Charge	Proposed Commodity Charge	Total Proposed Monthly Charge	Total Current Monthly Charge	Difference ($)	Difference (%)
1	60	$90.12	$310.25	**$400.37**	**$377.50**	$22.87	6.1%
2	90	$90.12	$465.38	**$555.50**	**$516.70**	$38.80	7.5%
3	120	$90.12	$620.50	**$710.63**	**$655.90**	$54.73	8.3%

8 DROUGHT RATES

8.1 DROUGHT RATE BACKGROUND

Consistent with its Water Supply Shortage Response Plan, the District can establish drought rates to:

1. Recover lost revenue due to decreased consumption during a drought; and
2. Encourage water conservation to meet the desired conservation goals for each drought stage.

The District is subject to penalties from the SDCWA should it exceed its water allocation. Also, due to the drought, the District is subject to penalties form the State Water Resources Control Board if it does not reach its mandated water use reduction of 28%. Drought Rates help maximize the probability that the District will escape penalties. Currently the District is below its SDCWA allocation but not meeting its state-mandated water use reduction. However, Drought Rates will still be needed to recoup lost revenues as District customers curtail their water consumption.

Revenue Collection during a Drought

During a drought, 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 costs are fixed (salaries, benefits, debt service, etc.) and therefore Drought Rates are required to recover lost revenue to cover its fixed costs. The District's drought revenue requirement is lower than its non-drought revenue requirement because as the District serves less water, it also purchases and treats less water, thereby saving the associated costs.

Customer Bills during a Drought

Provided that customers cutback their water use in line with the drought cutback goal, their total water bill should be lower than their bill during "normal" water/rainfall years. Conversely, those that do not cutback consumption will face higher charges.

8.2 DROUGHT RATE CALCULATION

The first step in calculating drought rates is to estimate the cutback in use from each customer class. RFC estimated the cutback in use by using District customer use data and assuming various cutbacks (%) for each tier.

1. For the Residential classes (SFR and MFR), RFC assumed that Tier 1 cutback (12 HCF bi-monthly) would not occur until cutbacks of over 30% are required.
2. For all remaining classes for cutbacks of less than 30%, RFC assumed that water use during a classes' minimum billing cycle (winter use) was each customer's essential/minimum use and therefore further cutbacks were unlikely. For cutbacks of over 30%, RFC had to assume that these classes cutback water use beyond their winter use in order to reach the total cutback goal.

Table 8-1 shows the estimated cutbacks, in percent, for each class and tier in columns 4, 6, 8, 10 and 12 and the volume cutbacks in columns 5, 7, 9, 11 and 13. The resulting total cutback in HCF and percent for each drought level is shown in lines 44 and 45.

Table 8-1: Estimated Use Cutbacks in Percentages and HCF

Line No.	Customer Class (1)	Bi-monthly Tier Breakpoint (2)	FY 2016 Estimated Water Use (HCF) (3)	Up to 10% (4)	Up to 10% (5)	Up to 20% (6)	Up to 20% (7)	Up to 30% (8)	Up to 30% (9)	Up to 40% (10)	Up to 40% (11)	50% or Greater (12)	50% or Greater (13)
				Estimated Cutback (%)	Estimated Cutback (HCF)	Estimated Cutback (%)	Estimated Cutback (HCF)	Estimated Cutback (%)	Estimated Cutback (HCF)	Estimated Cutback (%)	Estimated Cutback (HCF)	Estimated Cutback (%)	Estimated Cutback (HCF)
1	Single Family Residence												
2	Tier 1	12	533,690	0%	-	0%	-	0%	-	5%	26,684	20%	106,738
3	Tier 2	20	251,719	5%	12,586	10%	25,172	20%	50,344	35%	88,102	45%	113,273
4	Tier 3	40	331,439	20%	66,288	35%	116,004	45%	149,147	60%	198,863	80%	265,151
5	Tier 4	41+	231,558	25%	57,890	50%	115,779	80%	185,247	95%	219,981	100%	231,558
6			1,348,406										
7	Single Family - Agriculture												
8	Tier 1	12	1,736	0%	-	0%	-	0%	-	5%	87	20%	347
9	Tier 2	20	1,152	5%	58	10%	115	20%	230	35%	403	45%	518
10	Tier 3	40	2,724	20%	545	35%	953	45%	1,226	60%	1,634	80%	2,179
11	Tier 4	41+	15,826	25%	3,956	50%	7,913	80%	12,661	95%	15,034	100%	15,826
12			21,437										
13	Single Family - Commercial												
14	Tier 1	12	452	0%	-	0%	-	0%	-	5%	23	20%	90
15	Tier 2	20	192	5%	10	10%	19	20%	38	35%	67	45%	86
16	Tier 3	40	124	20%	25	35%	43	45%	56	60%	75	80%	99
17	Tier 4	41+	3	25%	1	50%	1	80%	2	95%	3	100%	3
18			771										
19	Multi-family												
20	Tier 1	8	304,217	0%	-	0%	-	0%	-	5%	15,211	20%	60,843
21	Tier 2	12	85,916	5%	4,296	10%	8,592	20%	17,183	35%	30,071	45%	38,662
22	Tier 3	16	45,094	20%	9,019	35%	15,783	45%	20,292	60%	27,056	80%	36,075
23	Tier 4	17+	73,769	25%	18,442	50%	36,885	80%	59,015	95%	70,081	100%	73,769
24			508,996										
25	Multi-family - Agriculture												
26	Tier 1	8	297	0%	-	0%	-	0%	-	5%	15	20%	59
27	Tier 2	12	148	5%	7	10%	15	20%	30	35%	52	45%	67
28	Tier 3	16	146	20%	29	35%	51	45%	66	60%	88	80%	117
29	Tier 4	17+	6,244	25%	1,561	50%	3,122	80%	4,995	95%	5,932	100%	6,244
30			6,835										
31	Multi-family - Commercial												
32	Tier 1	8	134	0%	-	0%	-	0%	-	5%	7	20%	27
33	Tier 2	12	67	5%	3	10%	7	20%	13	35%	23	45%	30
34	Tier 3	16	57	20%	11	35%	20	45%	25	60%	34	80%	45
35	Tier 4	17+	609	25%	152	50%	305	80%	487	95%	579	100%	609
36			866										
37	Agriculture		81,983	15.0%	12,297	25.0%	20,496	45.0%	36,892	55.0%	45,091	55.0%	45,091
38	Commercial		229,736	5.0%	11,487	9.0%	20,676	10.0%	22,974	10.0%	22,974	10.0%	22,974
39	Public		59,367	15.0%	8,905	35.0%	20,778	37.0%	21,966	40.0%	23,747	40.0%	23,747
40	Government		12,672	15.0%	1,901	29.0%	3,675	30.0%	3,802	35.0%	4,435	35.0%	4,435
42	Landscaping		189,725	25.0%	47,431	50.0%	94,863	80.0%	151,780	95.0%	180,239	100.0%	189,725
43	Construction		12,623	0.0%	-	0.0%	-	0.0%	-	0.0%	-	0.0%	-
44	**Total Cutback - HCF**		**2,473,419**		**256,900**		**491,266**		**738,473**		**976,589**		**1,238,390**
45	**Total Cutback - %**				**10.4%**		**19.9%**		**29.9%**		**39.5%**		**50.1%**

Using the estimated cutbacks in water use from Table 8-1, we can calculate the estimated lost revenue as shown in Table 8-2 - line 42.

Table 8-2: Calculation of Lost Revenue

Line No.	Customer Class (1)	(2)	Up to 10% (3)	Up to 20% (4)	Up to 30% (5)	Up to 40% (6)	50% or Greater (7)
	SF Residential	Proposed Non-Drought Rate	Lost Revenue	Lost Revenue	Lost Revenue	Lost Revenue	Lost Revenue
1	Tier 1	$2.64	$0	$0	$0	$70,525	$282,100
2	Tier 2	$4.19	$52,730	$105,460	$210,921	$369,111	$474,572
3	Tier 3	$5.18	$343,371	$600,899	$772,584	$1,030,112	$1,373,482
4	Tier 4	$5.89	$341,182	$682,364	$1,091,782	$1,296,491	$1,364,727
5							
7	Single Family - Agriculture						
8	Tier 1	$2.64	$0	$0	$0	$229	$917
9	Tier 2	$4.19	$241	$482	$965	$1,689	$2,171
10	Tier 3	$5.18	$2,822	$4,939	$6,350	$8,467	$11,289
11	Tier 4	$5.18	$20,494	$40,988	$65,582	$77,878	$81,977
12							
13	Single Family - Commercial						
14	Tier 1	$2.64	$0	$0	$0	$60	$239
15	Tier 2	$4.19	$40	$80	$161	$281	$362
16	Tier 3	$5.18	$129	$225	$290	$386	$515
17	Tier 4	$5.18	$4	$7	$12	$14	$14
18							
19	Multi-family						
20	Tier 1	$2.64	$0	$0	$0	$40,201	$160,804
21	Tier 2	$4.19	$17,998	$35,996	$71,991	$125,985	$161,980
22	Tier 3	$5.18	$46,717	$81,756	$105,114	$140,152	$186,870
23	Tier 4	$5.89	$108,692	$217,385	$347,816	$413,031	$434,770
24							
25	Multi-family - Agriculture						
26	Tier 1	$2.64	$0	$0	$0	$39	$157
27	Tier 2	$4.19	$31	$62	$124	$218	$280
28	Tier 3	$5.18	$152	$266	$341	$455	$607
29	Tier 4	$5.18	$8,086	$16,172	$25,875	$30,726	$32,343
30							
31	Multi-family - Commercial						
32	Tier 1	$2.64	$0	$0	$0	$18	$71
33	Tier 2	$4.19	$14	$28	$56	$98	$126
34	Tier 3	$5.18	$59	$103	$132	$176	$234
35	Tier 4	$5.18	$789	$1,578	$2,524	$2,998	$3,156
36							
37	Agriculture / Commercial	$4.48	$106,662	$184,638	$268,472	$305,238	$305,238
38	Public / Government	$4.91	$53,047	$120,044	$126,494	$138,348	$138,348
39	Landscaping	$5.17	$245,261	$490,521	$784,834	$931,990	$981,042
40	Construction	$5.26	$0	$0	$0	$0	$0
41							
42	**Total Lost Revenue**		**$1,348,520**	**$2,583,992**	**$3,882,419**	**$4,984,915**	**$5,998,390**

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 each drought stage in line 5. The savings is calculated by multiplying the estimated cutback for each drought level (shown in line 4) by the variable water purchase and treatment costs shown in line 3 – which are the estimated variable costs associated with treating water. We then subtract the savings for each drought stage from the total

lost revenue shown in line 42 of Table 8-2 – the results is shown in line 6 of Table 8-3. This is the net lost revenue by drought stage.

Table 8-3: Calculation of Drought Savings

Line No.	Variable Costs (1)	FY 2016 (2)	Up to 10% (3)	Up to 20% (4)	Up to 30% (5)	Up to 40% (6)	50% or Greater (7)
1	Imported Trtd & Raw Water	$3,107,443					
2	Treatement Costs	$948,563					
3	Subtotal Variable Costs	$4,056,006					
4	Cutback (%)		10.4%	19.9%	29.9%	39.5%	50.1%
5	**Total Drought Savings**		**$421,275**	**$805,597**	**$1,210,976**	**$1,601,447**	**$2,030,760**
6	**Net Revenue Lost After Savings (For One Year)**		**$927,245**	**$1,778,394**	**$2,671,443**	**$3,383,468**	**$3,967,631**
7							
8	**Drought Volumetric Revenue Requirement - All Classes**		**$9,903,554**	**$9,519,231**	**$9,113,853**	**$8,723,381**	**$8,294,069**

Lastly, we calculate the percentage increase that must be applied to all rates to recoup the lost revenue. The percentage increase needed for each drought level is calculated by dividing the lost revenue (adjusted for savings, line 1, Table 8-4) by the expected drought 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 to yield the drought rates shown in columns 3, 5, 7, 9 and 11. Table 8-4 also shows the dollar increase for each drought stage in columns 4, 6, 8, 10 and 12.

Table 8-4: Drought Rate Calculation

Line No.			Up to 10%		Up to 20%		Up to 30%		Up to 40%		50% or Greater	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1	**Estimated Lost Revenue (after savings)**		**$927,245**		**$1,778,394**		**$2,671,443**		**$3,383,468**		**$3,967,631**	
2	**Expected Vol[1] Drought Revenue**		**$8,976,309**		**$7,740,837**		**$6,442,410**		**$5,339,914**		**$4,326,439**	
3	**Drought Vol Revenue Requirement**		**$9,903,554**		**$9,519,231**		**$9,113,853**		**$8,723,381**		**$8,294,069**	
4	**% Increase**		**10.3%**		**23.0%**		**41.5%**		**63.4%**		**91.7%**	
5		Proposed Non-Drough	Drought Rate	$ Increase	Drought Rate	$ Increase	Drought Rate	$ Increase	Drought Rate	$ Increase	Drought Rate	$ Increase
6	SF Residential											
7	Tier 1	$2.64	$2.92	$0.27	$3.25	$0.61	$3.74	$1.10	$4.32	$1.67	$5.07	$2.42
8	Tier 2	$4.19	$4.62	$0.43	$5.15	$0.96	$5.93	$1.74	$6.84	$2.65	$8.03	$3.84
9	Tier 3	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
10	Tier 4	$5.89	$6.50	$0.61	$7.25	$1.35	$8.34	$2.44	$9.63	$3.73	$11.30	$5.40
11	Single Family - Agriculture											
12	Tier 1	$2.64	$2.92	$0.27	$3.25	$0.61	$3.74	$1.10	$4.32	$1.67	$5.07	$2.42
13	Tier 2	$4.19	$4.62	$0.43	$5.15	$0.96	$5.93	$1.74	$6.84	$2.65	$8.03	$3.84
14	Tier 3	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
15	Tier 4	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
16	Single Family - Commercial											
17	Tier 1	$2.64	$2.92	$0.27	$3.25	$0.61	$3.74	$1.10	$4.32	$1.67	$5.07	$2.42
18	Tier 2	$4.19	$4.62	$0.43	$5.15	$0.96	$5.93	$1.74	$6.84	$2.65	$8.03	$3.84
19	Tier 3	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
20	Tier 4	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
21	Multi-family											
22	Tier 1	$2.64	$2.92	$0.27	$3.25	$0.61	$3.74	$1.10	$4.32	$1.67	$5.07	$2.42
23	Tier 2	$4.19	$4.62	$0.43	$5.15	$0.96	$5.93	$1.74	$6.84	$2.65	$8.03	$3.84
24	Tier 3	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
25	Tier 4	$5.89	$6.50	$0.61	$7.25	$1.35	$8.34	$2.44	$9.63	$3.73	$11.30	$5.40
26	Multi-family - Agriculture											
27	Tier 1	$2.64	$2.92	$0.27	$3.25	$0.61	$3.74	$1.10	$4.32	$1.67	$5.07	$2.42
28	Tier 2	$4.19	$4.62	$0.43	$5.15	$0.96	$5.93	$1.74	$6.84	$2.65	$8.03	$3.84
29	Tier 3	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
30	Tier 4	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
31	Multi-family - Commercial											
32	Tier 1	$2.64	$2.92	$0.27	$3.25	$0.61	$3.74	$1.10	$4.32	$1.67	$5.07	$2.42
33	Tier 2	$4.19	$4.62	$0.43	$5.15	$0.96	$5.93	$1.74	$6.84	$2.65	$8.03	$3.84
34	Tier 3	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
35	Tier 4	$5.18	$5.72	$0.54	$6.37	$1.19	$7.33	$2.15	$8.46	$3.28	$9.93	$4.75
38	Agriculture / Commercial	$4.48	$4.95	$0.46	$5.51	$1.03	$6.34	$1.86	$7.33	$2.84	$8.60	$4.11
41	Public / Government	$4.91	$5.42	$0.51	$6.04	$1.13	$6.94	$2.04	$8.02	$3.11	$9.41	$4.50
42	Landscaping	$5.17	$5.70	$0.53	$6.36	$1.19	$7.32	$2.14	$8.45	$3.28	$9.91	$4.74
43	Construction	$5.26	$5.81	$0.54	$6.47	$1.21	$7.45	$2.18	$8.60	$3.34	$10.09	$4.83

[1]Vol = Volumetric

We have calculated water shortage rates for different water use cutback levels in the above table. Should the District plan to implement drought rates for a percent cutback not shown in Table 8-4, the drought rates would be obtained by using linear interpolation between the drought levels which fall on either side of the desired cutback. The District currently has implemented drought rates for a 14% cutback; the drought rates were obtained by using linear interpolation between the rate for the 10% and 20% drought levels. This is shown in Table 1-6 in the Executive Summary.

Drought Rate Adoption

The Board would adopt the drought rates separately from any other type of rate increase. Table 8-4 shows the percentage maximum rate increase per water shortage level in line 4. For the duration of

the rate proposal period (2 years), the Board would have the ability to adopt Water Shortage Rates by increasing the then current commodity rate without having to re-issue the Proposition 218 notice.

9 APPENDIX A: CASH FLOW DETAIL

Line No.	Operating Cash Flow				FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
					Budgeted	*Projected*	*Projected*	*Projected*	*Projected*
	(1)	(2)	(3)		(4)	(5)	(6)	(7)	(8)
1	**Revenue - Potable (Bi-Monthly)**								
2	Revenue from SDWD Rates				$12,893,754	$12,946,542	$12,999,645	$13,053,013	$13,106,648
3	Revenue from Rates				$12,893,754	$12,946,542	$12,999,645	$13,053,013	$13,106,648
4	Additional Revenue Needs:								
5	**Fiscal**	**Revenue**	**Month**						
6	**Year**	**Adjustment**	**Effective**						
7	FY 2016	6.5%	Feb	5	$349,206	$841,525	$844,977	$848,446	$851,932
1	FY 2017	6.5%	Jan	6		$448,112	$899,900	$903,595	$907,308
8	FY 2018	6.5%	Jan	6			$479,197	$962,328	$966,283
2	FY 2019	6.0%	Jan	6				$473,021	$949,930
9	FY 2020	1.0%	Jan	6					$83,911
10	Total Additional Revenue				$349,206	$1,289,637	$2,224,074	$3,187,391	$3,759,363
11	Total Rate Revenue				$13,242,959	$14,236,180	$15,223,719	$16,240,403	$16,866,011
12									
13	**Other Revenue**								
14	Misc Operating Revenue				$471,200	$471,200	$473,556	$475,924	$478,303
15	Property Taxes				$780,000	$794,000	$797,970	$801,960	$805,970
16	**Total Revenue**				**$14,494,159**	**$15,501,380**	**$16,495,245**	**$17,518,287**	**$18,150,284**
17	**O&M Expenses**								
18	Administration (Org 92690)				$1,661,055	$1,658,030	$1,729,181	$1,804,088	$1,881,815
19	Customer Service (Org 92691)				$805,024	$810,309	$827,340	$844,782	$864,818
20	Water Purchases and Treatment (Org 92692)				$5,959,919	$6,480,495	$7,200,673	$7,546,679	$7,910,423
21	Field Operations (Org 92694)				$2,052,827	$2,031,841	$2,073,066	$2,115,262	$2,163,990
22	Planning and Engineering (Org 92695)				$477,807	$483,216	$492,155	$501,286	$512,294
23	**Total O&M Expenses**				**$10,956,632**	**$11,463,891**	**$12,322,414**	**$12,812,098**	**$13,333,340**
24	**Debt Service**								
25	Existing Debt				$1,398,544	$1,401,319	$1,398,844	$1,401,694	$1,395,119
26	**Total Debt Service Expenses**				**$1,398,544**	**$1,401,319**	**$1,398,844**	**$1,401,694**	**$1,395,119**
27									
28	**Total Expenses**				**$12,355,176**	**$12,865,210**	**$13,721,258**	**$14,213,792**	**$14,728,459**
29									
30	**Net Cash Flow**				**$2,138,984**	**$2,636,170**	**$2,773,987**	**$3,304,495**	**$3,421,825**
31	Debt Coverage				253%	288%	298%	336%	345%

			2016 Budgeted	2017 Projected	2018 Projected	2019 Projected	2020 Projected
32	**Operating Reserve**						
33	**Beginning Balance**		$2,008,758	$1,885,844	$1,974,975	$2,121,763	$2,210,966
34	Net Cash Flow		$2,138,984	$2,636,170	$2,773,987	$3,304,495	$3,421,825
35	Intermediate Balance		$4,147,742	$4,522,014	$4,748,962	$5,426,258	$5,632,791
36	Transfers In - Rate Stabilization Res		$76,436	$31,527	$31,190	$31,306	$31,427
37	Transfer Out - Fleet Stabilization Res		($133,900)	($124,628)	($100,885)	($104,599)	($147,813)
38	Transfer Out - Rate Stabilization Res		$0	$0	$0	$0	$0
39	Intermediate Balance		$4,090,278	$4,428,913	$4,679,267	$5,352,965	$5,516,405
40	Transfers Out - Capital Repl. Res		($2,264,172)	($2,518,265)	($2,625,531)	($3,217,615)	($3,294,182)
41	**Ending Balance**		**$1,826,105**	**$1,910,648**	**$2,053,736**	**$2,135,350**	**$2,222,223**
42	*Interest Income*		*$59,738*	*$64,327*	*$68,027*	*$75,616*	*$78,550*
43	**Fund Requirements**						
44	Policy - Target						
45	*Average of current year operatin*	60 Days	$1,826,105	$1,910,648	$2,053,736	$2,135,350	$2,222,223
47	**Capital Replacement Reserve**		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
48	**Beginning Balance**		$6,590,958	$6,131,091	$5,691,410	$5,477,525	$5,731,116
49	Federal Capital Grants		$0	$0	$0	$0	$0
50	Capital Contributions (Capacity Fees)		$100,000	$100,000	$100,000	$100,000	$100,000
51	Transfers In - Capital		$0	$0	$0	$0	$0
52	Other Revenues		$0	$0	$0	$0	$0
53	Market Debt Proceeds - Proposed		$0	$0	$0	$0	$0
54	SRF Proceeds - Proposed		$0	$0	$0	$0	$0
55	CIP		($2,950,000)	($3,175,000)	($3,050,000)	($3,175,000)	($3,150,000)
56	Intermediate Balance		$3,740,958	$3,056,091	$2,741,410	$2,402,525	$2,681,116
57	Transfers In - From Operating Reserve		$2,264,172	$2,518,265	$2,625,531	$3,217,615	$3,294,182
58	**Ending Balance**		**$6,005,130**	**$5,574,356**	**$5,366,941**	**$5,620,140**	**$5,975,298**
59	*Interest Income*		*$125,961*	*$117,054*	*$110,584*	*$110,977*	*$117,064*
60	**Fund Requirements**						
61	Policy Minimum						
62	*% of 5-year average CIP costs*	200%	$6,200,000	$6,340,000	$6,330,000	$6,376,000	$6,381,200
63							

64	**Fleet Replacement Fund Balance**		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
65	**Beginning Balance**		$355,659	$457,611	$552,238	$614,676	$454,865
66	Transfers In from Operations		$133,900	$124,628	$100,885	$104,599	$147,813
67	Purchases		($40,000)	($40,000)	($50,000)	($275,000)	($215,000)
68	**Ending Balance**		**$449,559**	**$542,239**	**$603,123**	**$444,275**	**$387,678**
69	*Interest Income*		*$8,052*	*$9,999*	*$11,554*	*$10,590*	*$8,425*
70							
71	**Rate Stabilization**						
72	**Beginning Balance**		$2,010,499	$1,973,509	$1,981,136	$1,989,258	$1,997,424
73	Transfers In		$0	$0	$0	$0	$0
74	Use of Funds for Drought		$0	$0	$0	$0	$0
75	Transfers Out		($76,436)	($31,527)	($31,190)	($31,306)	($31,427)
76	**Ending Balance**		**$1,934,063**	**$1,941,981**	**$1,949,947**	**$1,957,952**	**$1,965,997**
77	*Interest Income*		*$39,446*	*$39,155*	*$39,311*	*$39,472*	*$39,634*
78	**Fund Requirements**						
80	Policy Minimum		$1,934,063	$1,941,981	$1,949,947	$1,957,952	$1,965,997
81	*% of annual potable water rate a*	15%					

10 APPENDIX B: WATER SUPPLY COST DERIVATION

Volume of Water Purchased By Source			Volume (Acre Feet)					
Water Source	FY 2014 (1)	FY 2015 (2)	FY 2016 (3)	FY 2017 (4)	FY 2018 (5)	FY 2019 (6)	FY 2020 (7)	Average (8)
Imported Treated Water - (Trtd M&I Rate)	308	301	260	260	260	260	260	273
Imported Raw Water Rate (Untrtd M&I Rate)	5,290	5,425	3,208	3,238	3,667	3,697	3,727	4,036
Tier 2 Use	-	-	-	-	-	-	-	-
Local Raw Water (Lake Hodges)	1,136	603	2,400	2,400	2,000	2,000	2,000	1,791
Total	6,734	6,329	5,868	5,898	5,927	5,957	5,987	6,100

Source: See Expenses Worksheet

Estimated Cost to Treat Surface Water (not to obtain water)	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Water Treatment Costs	$1,728,398	$1,897,126	$1,991,982	$2,051,741	$2,113,294	$2,176,693
Subtotal - Cost to Treat Local Water - SFID Costs Only	$1,728,398	$1,897,126	$1,991,982	$2,051,741	$2,113,294	$2,176,693
Total Untreated Water (AF) (Imported and Local)	6,028	5,608	5,638	5,667	5,697	5,727
Estimated Cost to Treat Untreated Water ($/ AF)	$ 287	$ 338	$ 353	$ 362	$ 371	$ 380

Supply Costs by Source ($/ AF)		Cost ($ / AF)					
Water Source	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Average
Imported Treated Water Rate - (Trtd M&I Rate) (FY Rate)	**$1,128**	**$1,157**	**$1,216**	**$1,286**	**$1,350**	**$1,418**	**$1,259**
Imported Raw Water Rate (Untrtd M&I Rate)	$847	$875	$915	$970	$1,019	$1,070	$949
Unit Rate to Treat Imported Untrtd M&I Water	$287	$338	$353	$362	$371	$380	$349
Treat - Imported Untrtd M&I Water	**$1,133**	**$1,213**	**$1,269**	**$1,332**	**$1,390**	**$1,450**	**$1,298**
Local Raw Water (Lake Hodges - $ /AF)	$211	$27	$27	$32	$32	$32	$60
Cost to Treat Lake Hodges (Untreated Water)	$287	$338	$353	$362	$371	$380	$349
Cost to Obtain and Treat Local Water ($/ AF)	**$498**	**$365**	**$380**	**$394**	**$403**	**$412**	**$408**

Supply Source	Cost of Water Produced ($ / AF)	Cost of Water Produced ($ / HCF)	Cost Accounting for Lost Water ($/ HCF)	Qty Purchased (Supplied) (AF)	Qty Purchased (Supplied) (HCF)	Water Sold - Accting for Lost Water (AF)	Water Sold - Accting for Lost Water (HCF)	Total Cost of Water Sold	Total Cost of Water Produced (HCF)	Total Cost of Water Produced (HCF)
Imported Treated Water - (Trtd M&I Rate)	$1,157	$2.66	$2.74	260	113,256	252	109,585	$ 291,000	$ 300,778	300,778
Imported Raw Water Rate (Untrtd M&I Rate)	$1,213	$2.78	$2.88	3,208	1,397,589	3,104	1,352,284	$ 3,765,800	$ 3,891,958	3,891,958
Local Raw Water (Lake Hodges)	$365	$0.84	$0.87	2,400	1,045,440	2,322	1,011,550	$ 847,100	$ 875,433	875,433
Total				5,868	2,556,285	5,678	**2,473,419**	$4,903,900	$5,068,169	$5,068,169
Lost/Unsold Water		3.24%		190	82,867					
Total Water Sold				5,678	**2,473,419**					
Average Supply Cost					$2.05					
Base Rate - COS					$3.67					
Average Supply Cost					$2.05					
Delivery Cost					**$1.62**					

Line No.		SFR / MFR (1)	Commercial (2)	Institutional (3)	Landscaping (4)	Construction (5)	Total (6)
1	Total Accounts	10,717	614	117	222	10	11,680
2	% of Accounts	91.8%	5.3%	1.0%	1.9%	0.1%	100%

Line No.	Water Source	Supply Cost ($ / HCF) (1)	SFR / MFR (2)	Commercial (3)	Institutional (4)	Landscaping (5)	Construction (6)	Total (7)
1	Treated Local Water	$0.87	928,146	53,178	10,133	19,227	866	1,011,550
3	Imported Treated Water	$2.74	100,549	5,761	1,098	2,083	94	109,585
2	Imported Untreated Water[1]	$2.88	858,616	252,781	60,808	168,415	11,663	1,352,284
4	Total Use by Class (HCF)		1,887,311	311,720	72,039	189,725	12,623	2,473,419
5	**Average Supply Cost ($ / HCF)**		**$1.88**	**$2.53**	**$2.59**	**$2.67**	**$2.74**	**$2.05**

[1] Includes cost to treat water at the Badget Filtration Plant