Rainbow Municipal Water District

Potable Water Cost of Service Study

November 10, 2015

RAFTELIS
FINANCIAL CONSULTANTS, INC.

RAINBOW
MUNICIPAL WATER DISTRICT
Committed to Excellence

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November 10, 2015

Mr. Tom Kennedy
General Manager
Rainbow Municipal Water District
3707 Old Highway 395
Fallbrook, CA 92028

Subject: Water Rate Study Report

Dear Mr. Kennedy:

Raftelis Financial Consultants, Inc. (RFC) is pleased to present this water rate study (Study) to the Rainbow Municipal Water District (District). The Study involved a comprehensive review of the District's Financial Plan, user classifications and alternative rate structures. We are confident that the results, based on cost of service principles, result in fair and equitable water rates for the District's customers and meet the requirements of Proposition 218.

The report includes a brief Executive Summary followed by study assumptions and a detailed rate derivation in subsequent sections. Water Usage Reduction Rates are presented in the final Section 8.

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

Andrea Boehling
Consultant

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1 EXECUTIVE SUMMARY

1.1 BACKGROUND

In early 2015, the Rainbow Municipal Water District (the District) contracted with Raftelis Financial Consultants (RFC) to conduct a Water Rate Study (Study) to include a five-year Financial Plan. This report presents the Financial Plan and the resulting rates for implementation on January 1, 2016.

This Executive Summary summarizes the water rates and contains a description of the rate study process, methodology, results, and recommendations for the District's water rates. The District's last rate adjustment was effective on January 1, 2014. The District wishes to establish fair and equitable rates that:

- Meet the District's fiscal needs in terms of operational expenses, reserve goals, and capital expenditures to maintain the system;
- Proportionately allocate the costs of providing service in accordance with California Constitution article XIII D, section 6 (commonly referred to as Proposition 218).

1.2 PROCESS

RFC first developed a Financial Plan for the District which projects revenues and expenses, incorporates capital expenditures, as well as proposed debt and reserve targets, and recommends total revenue adjustments during the five-year study period. RFC presented the Financial Plan forecasts to the Board of Directors (Board) and received their input and direction. Based on the Financial Plan forecast and direction from the Board, RFC proposes a 6% revenue increase in fiscal year ending (FYE) 2016 and FYE 2017 and 2% revenue increases in FYE 2018 through FYE 2020 in order to meet the operating and capital expenses and achieve minimum reserve targets by the end of FY 2020.

The proposed rate structure consists of four components: 1) A fixed monthly Operations and Maintenance (O&M) charge; 2) A fixed Pass-Through charge from San Diego County Water Authority (SDCWA); 3) Commodity or volumetric rates; and 4) A pumping charge comprised of a fixed and variable component. The proposed commodity rate structures consist of a 3-tier rate structure for single-family residential (SFR), Transitional Special Agriculture Water Rate (TSAWR) domestic, and agriculture customers with a domestic residence on the property and a uniform commodity rate structure for all other classes.

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 for distributing costs. Costs were separated into three components: "(1) base costs, (2) extra capacity costs, and (3) customer costs. Base costs are costs that are 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 associated with meeting peak demand. Customer costs are costs associated with serving customers, such as meter reading, billing, customer service, etc.

The rates are designed to meet the requirements of Proposition 218; all rates are charged to customers based on the cost of providing service. Tiered rates include supply under average conditions and peaking costs associated with each tier.

1.4 RESULTS AND RECOMMENDATIONS

Table 1-1 shows the recommended Financial Plan. Although Table 1-1 shows anticipated revenue adjustments for each year of the study period, the District will review and confirm the needed revenue adjustments on a yearly basis. Revenue adjustments represent the average increase in rates for the District as a whole; rate changes for individual classes and tiers will depend on the cost of service. These increases do not include increases in water costs after calendar year (CY) 2016.

Table 1-1: Financial Plan

	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
Revenue Adjustments	6.00%	6.00%	2.00%	2.00%	2.00%
Pass-through of SDCWA costs	No[1]	Yes	Yes	Yes	Yes
Water Demand Factor (Change from Prior Year)	94.00%	100.00%	100.00%	100.00%	100.00%
Proposed Debt (Proceeds)	$0	$0	$0	$0	$0
Capital Investment Plan	$2,478,680	$4,000,000	$4,120,000	$2,546,160	$2,622,545

Table 1-2 shows the recommended reserves and the target for each reserve.

Table 1-2: Recommended Reserves

Reserve	Target	FYE 2016 Target Balance	FYE 2017 Target Balance	FYE 2018 Target Balance	FYE 2019 Target Balance	FYE 2020 Target Balance
Operating Reserve	60 days of O&M	$2,819,814	$2,938,745	$3,002,141	$3,067,629	$3,135,281
Water Capital Projects Reserve	1 yr avg CIP	$3,322,176	$3,322,176	$3,322,176	$3,322,176	$3,322,176
Liability Self Insurance Reserve	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
New Water Sources Reserve	No min target					
Rate Stabilization Reserve	10% of Water Sales	$3,389,214	$3,640,694	$3,911,860	$4,126,775	$4,355,735

Factors Affecting Revenue Adjustments

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

[1] Rates for FYE 2016 already include the cost of purchased water from SDCWA. Future incremental increase in rates will be passed-through to the District's customers at the time of the increases.

- **O&M expenses:** Overall, the District's O&M expenses are expected to increase by approximately 3-5% from FY 2015 to FY 2016. Additionally, the District did not pass-through SDCWA rate increases in January 2015 and needs to adjust rates in order to recover the cost of purchased water. RFC recommends that future purchased water cost increases are passed through.

- **Water System Capital Investment:** The District is projecting approximately $6.5 million in capital expenditures for FYE 2016 and FYE 2017. These investments will be funded partially by reserves and partially by anticipated capacity fee revenue. The average reserve (rate) funded capital expenditures of these two fiscal years is approximately $2.5 million per year and the average capacity fee funded capital expenditures of these two fiscal years is approximately $0.67M per year.

- **Reserve Funding:** The District plans to use reserves during the study period to offset rate increases. By FY 2018, the Water Capital Projects Reserve will be completely depleted due to significant capital expenditures. However, with the proposed revenue adjustments and the anticipated capacity fee revenue, all reserves will reach minimum target levels by the end of FY 2020. Section 3 shows the reserve balances for the selected Financial Plan for each year of the Study Period.

- **Reduced Water Sales:** The State is requiring a cutback of 36% in domestic water use. State and local public outreach efforts to conserve water are affecting water use and revenues of the District. The District has seen a 10% decrease in water use from FYE 2014 to FYE 2015 and has projected another 6% decrease for FYE 2016[2]. Going forward, it is expected that sales will continue to be less than the norm before the drought. The reduced sales have resulted in lower revenues and depletion of reserves.

Proposed Water Rates

The District's water service fees are comprised of four components: (1) a RMWD O&M Fixed Charge, (2) a SDCWA Fixed Charge, (3) a Commodity Rate, and (4) a Pumping Charge. The O&M Charge is a fixed charge based on the size of meter serving a property, and is calculated to recover a portion of the District's fixed costs, such as the costs of billing and collections, customer service, meter reading, meter maintenance, and a portion of capacity related costs. The SDCWA Fixed Charge is based on the charges imposed by SDCWA and for which the District has no control. The commodity rates recover the costs associated with meeting base and extra capacity requirements. The pumping charges recover the costs associated with pumping water to higher elevations.

Table 1-3 shows the current and proposed monthly O&M charge by meter size. At the direction of the Board, RFC developed a separate fixed charge for agriculture customers.

[2] Based on District Staff, the District may see much larger reductions than originally anticipated. According to staff, the District has already seen a 25% reduction in usage.

Table 1-3: Current and Proposed Monthly O&M Charges ($/Meter)

Meter Size	Current RMWD O&M Charge	FY 2016 Proposed O&M Charge[3]	FY 2016 Proposed Ag O&M Charge[4]
5/8"	$28.35	**$23.82**	**$43.26**
3/4"	$35.45	**$23.82**	**$43.26**
1"	$46.10	**$37.20**	**$69.59**
1-1/2"	$70.90	**$70.64**	**$135.44**
2"	$124.05	**$110.78**	**$214.45**
3"	$212.70	**$237.86**	**$464.64**
4"	$354.50	**$425.15**	**$833.36**
6"	$602.60	**$873.31**	**$1,715.63**

Table 1-4 shows the current and proposed SDCWA Pass-Through monthly fixed charge by meter size. The District did not pass through the SDCWA January 2015 rate increases and therefore has been utilizing reserves to cover the additional costs.

Table 1-4: Current and Proposed Monthly SDCWA Pass-Through Charges ($/Meter)

Meter Size	Current SDCWA Domestic Fixed Charge	Current SDCWA TSAWR Domestic Fixed Charge	Current SDCWA Commercial Fixed Charge	Proposed SDCWA Pass-Through Charge[5]	Proposed TSAWR SDCWA Pass-Through Charge[6]
5/8"	$30.48	$30.48	$16.17	**$35.02**	**$17.05**
3/4"	$30.48	$30.48	$16.17	**$35.02**	**$17.05**
1"	$48.77	$48.77	$25.87	**$58.37**	**$28.42**
1-1/2"	$91.44	$91.44	$48.50	**$116.75**	**$56.84**
2"	$158.49	$91.44	$84.07	**$186.79**	**$90.94**
3"	$274.31	$91.44	$145.50	**$408.61**	**$198.93**
4"	$487.66	$91.44	$258.66	**$735.50**	**$358.08**
6"	$1,097.24	$91.44	$581.99	**$1,517.71**	**$738.90**

The proposed rates have been adjusted to recover the full costs from SDCWA. In addition, RFC recommends both TSAWR customer classes (domestic and commercial) be charged the same fixed Pass-Through charge based on their proportional share of the following SDCWA charges: Readiness-to-Serve Charge, Infrastructure Access Charge, Customer Service Charge, and the Capacity Reservation Charge. TSAWR customers receive water at a discounted rate because they have agreed to reduce usage during water shortages. Since they are required to reduce usage, they do not receive

[3] Proposed RMWD O&M monthly fixed charge for all customer classes except Agriculture, TSAWR Domestic, and TSAWR Commercial (i.e. SFR, MFR, Commercial, and Institutional)
[4] Proposed RMWD O&M monthly fixed charge for Agriculture, TSAWR Domestic, and TSAWR Commercial customer classes.
[5] Proposed SDCWA monthly Pass-Through charge for all customer classes except TSAWR (i.e. SFR, MFR, Commercial, Agriculture, and Institutional).
[6] Proposed SDCWA monthly Pass-Through charge for TSAWR Domestic and TSAWR Commercial customer classes.

the benefit of emergency storage or the guarantee of supply reliability and therefore do pay the Emergency Storage Charge or the Supply Reliability Charge.

Table 1-5 shows the current commodity rates by user class.

Table 1-5: Current Monthly Commodity Rates ($/HCF)

Customer Class	Tier Width	Current Commodity Rate ($/HCF[7])
Domestic (A, D, MF)		
Tier 1	1-6 HCF	**$3.00**
Tier 2	7 & above	**$3.15**
Commercial		**$3.15**
Construction		**$3.15**
TSAWR/Domestic		
Tier 1	1-6 HCF	**$3.00**
Tier 2	7 - 26 HCF	**$3.15**
Tier 3	27 & above	**$2.83**
TSAWR/Commercial		**$2.83**

RFC recommends splitting the current Domestic class into various classes as shown in Table 1-6. The tiers are designed to provide essential indoor use in the first tier, average single family outdoor use in the second tier and usage above that falls into the top tier. A separate rate for each class based on the peaking (i.e., extra capacity) needs of each class was developed. For these customers, the commodity rate is a distinct uniform rate per hundred cubic feet (HCF) of water usage. Cost of service principles justify higher rates for classes with higher peaking ratios as shown in Table 1-6. The rates are fully derived in Sections 5 and 6 of this Study.

Table 1-7 shows the current and proposed Pumping Charges. The Pumping Charges consist of a fixed component designed to recover the general maintenance and salaries costs related to the pumping facilities and a commodity component designed to recover the electricity costs associated with pumping water to the higher elevations.

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

[7] HCF = Hundred Cubic Feet

Table 1-6: Proposed Monthly Commodity Rates ($/HCF)

Customer Class	Tier Width	Proposed FY 2016 Commodity Rate ($/HCF)
Single Family Residential		
Tier 1	1-10 HCF	**$3.31**
Tier 2	11 - 26 HCF	**$3.48**
Tier 3	27 & above	**$3.81**
Agriculture (with residence)		
Tier 1	1-10 HCF	**$3.31**
Tier 2	11 - 26 HCF	**$3.48**
Tier 3	27 & above	**$3.24**
TSAWR Domestic		
Tier 1	1-10 HCF	**$3.31**
Tier 2	11 - 26 HCF	**$3.48**
Tier 3	27 & above	**$2.77**
Agriculture (w/o residence)		**$3.24**
TSAWR Commercial		**$2.77**
MFR		**$3.40**
Commercial		**$3.51**
Institutional		**$3.58**
Construction		**$4.30**

Table 1-7: Current and Proposed Monthly Pumping Charges

		Current Pumping Charge	Proposed Pumping Charge
Fixed Pumping Charge ($/Month)		$8.77	**$9.51**
Commodity Rates ($/HCF)			
Zone 1	Rainbow Heights	$0.43	**$0.77**
Zone 2	Improvement District U-1	$0.27	**$0.48**
Zone 3	Vallecitos	$0.15	**$0.27**
Zone 4	Northside	$0.05	**$0.09**
Zone 5	Morro Tank	$0.08	**$0.14**
Zone 6	Huntley	$0.31	**$0.55**
Zone 7	Magee Tank	$1.42	**$2.53**

2 WATER SYSTEM

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

2.1 WATER SOURCES AND SYSTEM FACILITIES

The Rainbow Municipal Water District serves the unincorporated communities of Rainbow, Bonsall, and portions of Fallbrook and Vista - covering approximately 51,200 acres. While the service area is rather large, the District has a relatively small customer base consisting primarily of agricultural customers and domestic residential customers. Agricultural customers currently account for over 60% of the District's total water usage.

The District is a water retailer and currently relies entirely on water purchased from the SDCWA and Metropolitan Water District of Southern California (MWD). Currently, the rate structure consists of both fixed monthly charges based on meter size and variable commodity charges based on units of water. Additionally, the rates include a pumping charge to account for pumping, electricity, and maintenance costs that are associated with delivering potable water to 7 unique elevation zones. The District's rates include a pass-through component to account for increases in the price of water purchased from SDCWA.

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 SDCWA. 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 36% percent for June 2015 through February 2016 as compared to the same months in 2013. Agricultural customers were exempted from the State mandate. However, SDCWA has implemented its Drought Management Plan which includes a mandatory 15% cutback for TSAWR customers.

2.2 NUMBER OF ACCOUNTS

Table 2-1 shows the estimated number of potable water accounts by meter size for FYE 2016. RFC estimated the number of accounts by tabulating FYE 2015 (actual) account data provided by the District and escalating the number of accounts using the growth factors described in Section 2.3. The number of accounts are used to forecast the amount of fixed revenue the District will receive from the Fixed Charges.

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

Meter Size	Residential	MFR	Commercial	Agriculture	TSAWR Domestic	TSAWR Commercial	Institutional	Total
5/8"	208	-	1	8	1	1	-	219
3/4"	2,116	4	26	265	97	9	4	2,521
1"	1,896	39	79	821	573	72	4	3,484
1-1/2"	127	10	26	135	210	76	5	589
2"	51	34	26	97	144	94	5	451
3"	3	-	6	7	6	10	1	33
4"	-	3	3	4	1	3	-	14
6"	-	-	-	1	-	-	-	1
Total	**4,401**	**90**	**167**	**1,338**	**1,032**	**265**	**19**	**7,312**

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, and existing rates. The District has realized relatively low account growth over the past few years however significant residential account growth is anticipated over the next 5 – 10 years. Due to the timing and uncertainty of anticipated development projects, District staff and the Board directed RFC to utilize the growth assumptions shown in Table 2-2[8]. Like most water purveyors, the District realized reduced water use due to conservation. Conservation is expected to continue both during the drought and moving forward as customer's water usage patterns and behaviors have been altered. Therefore RFC assumed a reduction in water use as shown in Table 2-2 to account for the new normal of reduced usage.

Table 2-2: Account Growth and Water Use Assumptions

	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
Growth Rates					
Domestic / SFR	0.00%	2.00%	5.00%	5.00%	5.00%
Non-SFR	0.00%	0.00%	0.00%	0.00%	0.00%
Reduction in Water Use (%)	6.00%	0.00%	0.00%	0.00%	0.00%
Water Use (AF[9])	18,017 AF	18,260 AF	18,877 AF	19,526 AF	20,207 AF

The projected water usage increase shown in Table 2-2 is due to growth in accounts.

2.4 WATER USE

Figure 2-1 shows the FYE 2015 water use by current customer class. The first number shown in the pie chart is the water use in acre feet (AF) per year followed by the percentage of total water used by the class. The total water use for FYE 2015 is 19,163 AF. Figure 2-2 shows the projected FYE 2016 water use (approximately 18,000 AF) by customer class assuming an anticipated 6% water reduction. The user codes from the consumption files in conjunction with the adjusted

[8] The Domestic / SFR growth assumptions utilized in the study were more conservative than the development projections of 2.10%. 13.30%, 14.60%, and 10.70% for FYE 2017 through FYE 2020.
[9] AF = Acre feet

classifications[10], provided by the District, were used to classify each account into the customer classes shown in the Figure 2-2.

Figure 2-1: Water Use by Customer Class - FYE 2015

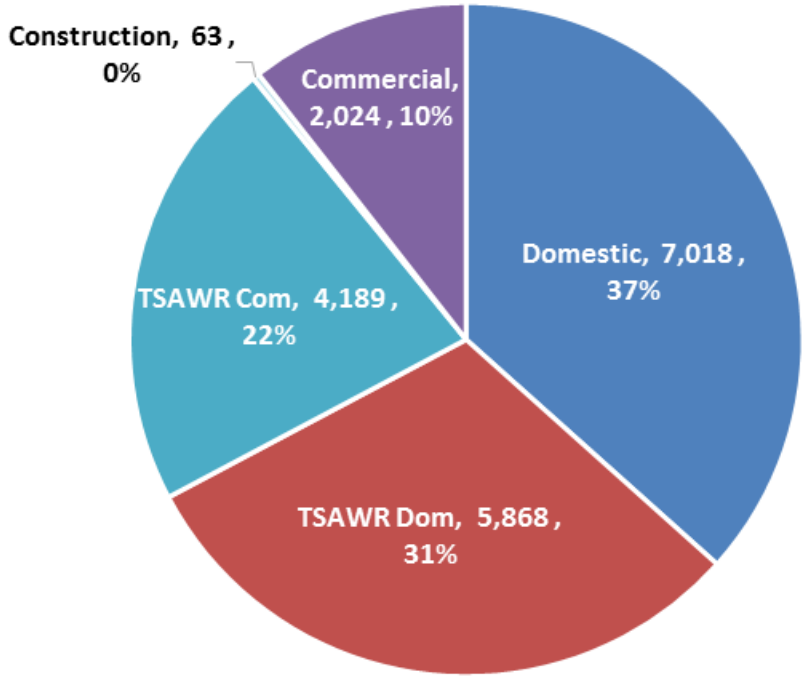
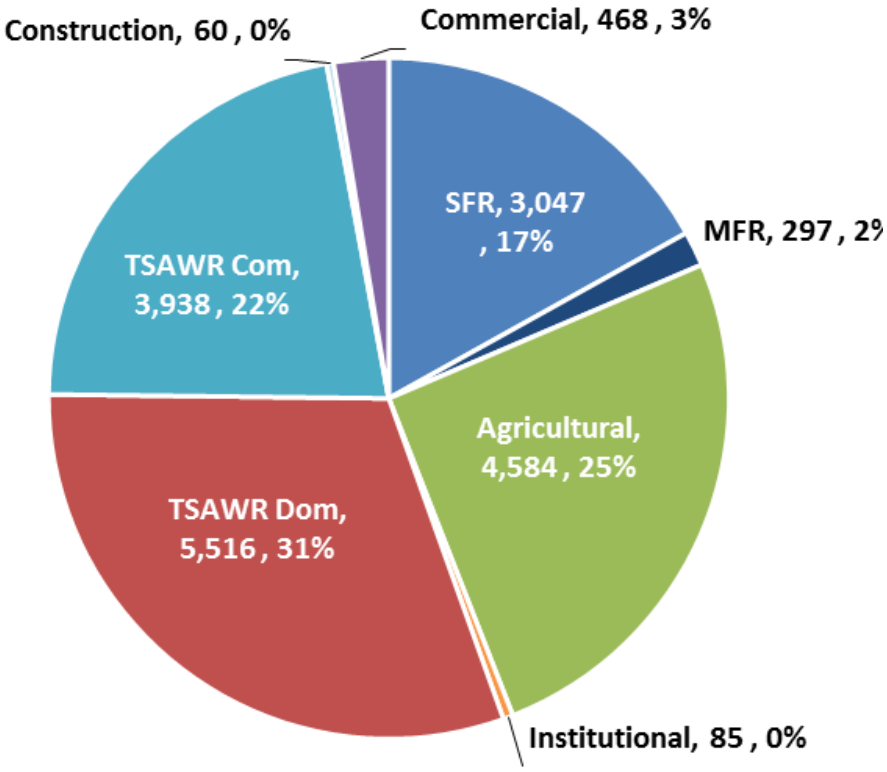


Figure 2-2: Projected Water Use by Customer Class - FYE 2016



[10] The District reclassified various customers based on guidelines in regulations from the State Water Resources Control Board. Customers with over an acre of irrigation use were reclassified as agricultural.

3 FINANCIAL PLAN

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

3.1 INFLATIONARY AND OTHER ASSUMPTIONS

To ensure that future costs are reasonably projected, we make informed assumptions about inflationary factors and water costs and use. Table 3-1 shows the inflationary assumptions and water purchases incorporated in the Financial Plan. Interest rates earned on reserves are based on the low interest rates (for money market accounts) of the past several years.

Table 3-1: Inflationary Assumptions

	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
Inflationary Assumptions					
General	budget[11]	3.0%	3.0%	3.0%	3.0%
Salary and Benefits	budget	3.0%	3.0%	3.0%	3.0%
Capital	budget	2.0%	2.0%	2.0%	2.0%
Energy	budget	5.0%	5.0%	5.0%	5.0%
Interest on Reserves	1.0%	2.0%	2.0%	2.0%	2.0%
Water Purchase Assumptions					
Total Projected Water Purchases (AF)	18,825	19,078	19,723	20,401	21,113
SDCWA Purchases[12]	9,538	9,667	9,994	10,337	10,698
Direct Purchases (MWD)[13]	9,286	9,411	9,730	10,064	10,415
Number of Accounts	7,312	7,427	7,720	8,028	8,351

3.2 FINANCIAL PLAN

The assumptions shown in Table 3-1 were incorporated into the five-year Financial Plan. To develop the Financial Plan, RFC projected annual expenses and revenues, modeled reserve balances and transfers between funds, and capital expenditures to estimate the amount of additional rate revenue needed each 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.

[11] Costs for FYE 2016 were provided in the budget, no escalation needed
[12] These purchases are charged the Melded Untreated M&I Supply Rate, the Melded M&I Treatment Rate, and the Transportation Rate.
[13] The Direct Purchases are charged the Melded Untreated M&I Supply Rate and the Melded M&I Treatment Rate but do not get charged the Transportation Rate.

3.3 UTILITY EXPENSES

The District's expense 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 Financial Plan study period is from FYE 2016 to FYE 2020. The O&M budget incorporates the inflationary factors discussed in Section 3.1. The slight increases in SDCWA water purchases anticipated for each year of the study period are due to the assumed growth rates discussed in Section 2.3 and not due to increases in the cost of purchased water. Increases in purchased water costs from SDCWA will be passed through to District customers at the time rates are increased. The Total Expenses shown on line 16 excludes the CIP expenditures discussed in Section 3.5.

Table 3-2: Projected Water O&M Expenses

Line No.	Operating Expenses (1)	Actual FYE 2015 (2)	Calculated FYE 2016 (3)	Projected FYE 2017 (4)	Projected FYE 2018 (5)	Projected FYE 2019 (6)	Projected FYE 2020 (7)
1	Water Purchases	$20,490,103	$19,759,584	$20,222,558	$20,906,757	$21,625,166	$22,379,495
2	Transportation	$1,001,850	$979,603	$1,014,988	$1,049,329	$1,085,387	$1,123,247
3	Ready to Serve Charge	$516,828	$527,580	$527,580	$527,580	$527,580	$527,580
4	Infrastructure Access Charge	$426,000	$435,546	$436,656	$436,656	$436,656	$436,656
5	Customer Service Charge	$1,203,396	$1,204,944	$1,205,412	$1,205,412	$1,205,412	$1,205,412
6	Capacity Reservation Charge	$514,386	$622,440	$657,756	$657,756	$657,756	$657,756
7	Emergency Storage Charge	$1,895,022	$1,778,478	$1,714,356	$1,714,356	$1,714,356	$1,714,356
8	Supply Reliability Charge	$0	$369,888	$739,776	$739,776	$739,776	$739,776
9	AG Credit-SAWR	($1,619,526)	($1,768,355)	($1,813,987)	($1,875,360)	($1,939,802)	($2,007,466)
10	Salaries and Benefits	$6,194,504	$6,287,561	$6,476,188	$6,670,474	$6,870,588	$7,076,706
11	Services and Supplies	$3,361,173	$3,727,282	$3,840,066	$3,956,283	$4,076,037	$4,199,436
12	Pumping	$441,000	$480,587	$504,616	$529,847	$556,340	$584,157
13	Capital Outlay	$0	$504,976	$515,076	$525,377	$535,885	$546,602
14	Total O&M Expenses	$34,424,736	$34,910,114	$36,041,042	$37,044,243	$38,091,135	$39,183,712
15	Existing Debt Service	$214,334	$377,367	$1,104,794	$1,104,794	$1,104,794	$1,104,794
16	**Total Expenses**	**$34,639,070**	**$35,287,481**	**$37,145,837**	**$38,149,037**	**$39,195,929**	**$40,288,507**

3.5 CAPITAL IMPROVEMENT PLAN

Table 3-3 shows the District's detailed five-year CIP along with the anticipated funding sources. Line 22 represents the anticipated connection fee revenue that will be generated from several residential developments coming online over the next 5 years. The anticipated capacity fee revenue from these developments will be available to fund CIP. Line 23 shows the anticipated rate and/or reserve (cash) funded CIP.

Table 3-3: Detailed Capital Improvement Plan

Line No.	CIP Description	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
1	2015 Urban Water Management Plan	$150,000	$0	$0	$0	$0
2	Highway 76 Water Realignment - Water Lines	$469,223	$0	$0	$0	$0
3	Gird to Monserate Hill Water Line	$0	$750,000	$0	$0	$0
4	Wrightwood to Cottontail Water Line	$200,000	$0	$0	$0	$0
5	Tarek Terrace Water Line	$200,000	$0	$0	$0	$0
6	Regional Recycled Water Study	$142,919	$0	$0	$0	$0
7	San Luis Rey Groundwater Study	$150,000	$0	$0	$0	$0
8	Morro Tank Structural Repair	$133,587	$0	$0	$0	$0
9	Ranchos Amigos Pressure Stations	$10,016	$0	$0	$0	$0
10	Water Master Plan	$22,865	$0	$0	$0	$0
11	Afton Farms Water Line	$271,847	$0	$0	$2,400,000	$2,400,000
12	Lake Vista Estates Loop	$286,394	$0	$0	$0	$0
13	Pressure Reducing Stations	$143,829	$130,000	$140,000	$0	$0
14	Corrosion Control Implementation	$130,000	$120,000	$106,364	$0	$0
15	SDCWA Shutdown Pump Stations	$13,000	$130,000	$140,000	$0	$0
16	Other Infrastructure Replacements	$130,000	$2,870,000	$3,613,636	$0	$0
17	Parking Lot Paving	$25,000	$0	$0	$0	$0
18	**Total CIP**	$2,478,680	$4,000,000	$4,000,000	$2,400,000	$2,400,000
19	**Inflated Total CIP**[14]	$2,478,680	$4,000,000	$4,120,000	$2,546,160	$2,622,545
20						
21	**Funding Sources:**					
22	Capacity/Connection Fee Revenue	$597,434	$739,942	$1,793,680	$2,509,133	$2,618,497
23	**Rate / Reserve Funded Capital**	$1,881,246	$3,260,058	$2,326,320	$37,027	$4,048

[14] Assumes 3% Escalation Factor for Projected CIP (FYE 2018 and beyond). A detailed CIP Masterplan review and update is currently underway at the District.

3.6 EXISTING AND PROPOSED DEBT SERVICE

Table 3-4 shows the District's existing debt service payments, we are not recommending any new debt. Existing debt consists of two "State of California – State Water Resources Control Board, Drinking Water State Revolving Fund" loans. The first principal payments begin in FYE 2017. No future debt issuance is proposed at this time.

Table 3-4: Existing and Proposed Debt Service

Debt Service	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
Existing Debt Service	$377,367	$1,104,794	$1,104,794	$1,104,794	$1,104,794
Proposed Debt Service	$0	$0	$0	$0	$0
Total Debt Service	**$377,367**	**$1,104,794**	**$1,104,794**	**$1,104,794**	**$1,104,794**

3.7 PROPOSED FINANCIAL PLAN AND REVENUE ADJUSTMENTS

The proposed revenue adjustments help ensure adequate revenue to fund operating expenses, capital expenditures, and recommended reserve targets. Financial Plan modeling assumes the revenue adjustments occurs on January 1. The proposed revenue adjustments enable the District to execute the CIP shown in Table 3-3 and meet or exceed minimum reserve targets by FYE 2020.

Table 3-5 shows the Financial Plan selected by the Board. Although Table 3-4 shows anticipated revenue adjustments for each year of the Study period, the District will review and confirm the needed revenue adjustments on a yearly basis. The rates presented in Section 6 are based on this Financial Plan.

Table 3-5: Proposed Rate Adjustments and Debt Issues

	FYE 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
Revenue Adjustments	6.00%	6.00%	2.00%	2.00%	2.00%
Pass-through of SDCWA costs	No[15]	Yes	Yes	Yes	Yes
Water Demand Factor (as % reduction from prior year)	94.00%	100.00%	100.00%	100.00%	100.00%
Proposed Debt (Proceeds)	$0	$0	$0	$0	$0
Capital Investment Plan	$2,478,680	$4,000,000	$4,120,000	$2,546,160	$2,622,545

Table 3-6 shows the cash flow detail over the next five years assuming the selected Financial Plan. Line number 7 shows the additional revenue from the revenue adjustments assuming they become effective January 1 of each year. The changes in expenses over the study period as shown on Lines 15 through 32 are due to the growth projections discussed in Section 2.3 and do not account for any future increases from SDCWA. Future increases from SDCWA will be passed-through to the District's customers at the time of the increases.

[15] Rates for FYE 2016 already include the cost of purchased water from SDCWA. Future incremental increase in rates will be passed-through to the District's customers at the time of the increases.

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

Line No.	Rainbow Municipal Water District Cash Flow			Calculated FYE 2016	Projected FYE 2017	Projected FYE 2018	Projected FYE 2019	Projected FYE 2020
1	Rate Revenue Under Existing Rates			$32,904,986	$33,345,797	$34,470,712	$35,651,476	$36,891,641
	Additional Revenue Required:							
	Fiscal Year	Revenue Adjustment	Months Effective					
2	2016	6.00%	January	$987,150	$2,000,748	$2,068,243	$2,139,089	$2,213,498
3	2017	6.00%	January		$1,060,396	$2,192,337	$2,267,434	$2,346,308
4	2018	2.00%	January			$387,313	$801,160	$829,029
5	2019	2.00%	January				$408,592	$845,610
6	2020	2.00%	January					$431,261
7	Total Additional Revenue			$987,150	$3,061,144	$4,647,893	$5,616,274	$6,665,706
8	Total Service Charge Revenue			$33,892,136	$36,406,941	$39,118,604	$41,267,749	$43,557,347
	Other Revenue							
9	Other Operating Revenue			$95,500	$97,410	$99,358	$101,345	$103,372
10	Interest Income			$0	$96,099	$138,989	$106,408	$134,307
11	Property Taxes - Parcel Charge RTS			$486,481	$486,481	$486,481	$486,481	$486,481
12	Non-Operating Revenue			$346,383	$346,383	$346,383	$346,383	$346,383
13	**Subtotal Other Revenue**			$928,364	$1,026,373	$1,071,211	$1,040,617	$1,070,543
14	**TOTAL REVENUE**			**$34,820,500**	**$37,433,314**	**$40,189,816**	**$42,308,367**	**$44,627,890**
	EXPENSES							
	O&M Expenses							
15	Water Purchases			$19,759,584	$20,222,558	$20,906,757	$21,625,166	$22,379,495
16	Transportation			$979,603	$1,014,988	$1,049,329	$1,085,387	$1,123,247
17	Ready to Serve Charge			$527,580	$527,580	$527,580	$527,580	$527,580
18	Infrastructure Access Charge			$435,546	$436,656	$436,656	$436,656	$436,656
19	Customer Service Charge			$1,204,944	$1,205,412	$1,205,412	$1,205,412	$1,205,412
20	Capacity Reservation Charge			$622,440	$657,756	$657,756	$657,756	$657,756
21	Emergency Storage Charge			$1,778,478	$1,714,356	$1,714,356	$1,714,356	$1,714,356
22	Supply Reliability Charge			$369,888	$739,776	$739,776	$739,776	$739,776
23	AG Credit-SAWR			($1,768,355)	($1,813,987)	($1,875,360)	($1,939,802)	($2,007,466)
24	Salaries and Benefits			$6,287,561	$6,476,188	$6,670,474	$6,870,588	$7,076,706
25	Services and Supplies			$3,727,282	$3,840,066	$3,956,283	$4,076,037	$4,199,436
26	Pumping			$480,587	$504,616	$529,847	$556,340	$584,157
27	Capital Outlay			$504,976	$515,076	$525,377	$535,885	$546,602
28	**Total O&M Expenses**			**$34,910,114**	**$36,041,042**	**$37,044,243**	**$38,091,135**	**$39,183,712**
	Debt Service							
29	Existing Debt Service			$377,367	$1,104,794	$1,104,794	$1,104,794	$1,104,794
30	Proposed Debt Service			$0	$0	$0	$0	$0
31	**Total Debt Service Expenses**			**$377,367**	**$1,104,794**	**$1,104,794**	**$1,104,794**	**$1,104,794**
32	**TOTAL EXPENSES**			**$35,287,481**	**$37,145,837**	**$38,149,037**	**$39,195,929**	**$40,288,507**
33	**Transfers to (from) Reserves**[1]			**($466,982)**	**$287,477**	**$2,040,779**	**$3,112,437**	**$4,339,383**

[1] before capital expenses

Figures 3-1 through 3-5 display the FYE 2016 through FYE 2020 Financial Plan in graphical format. Figure 3-1 shows the revenue adjustments (blue bars) for the next five years. The District is setting rates for FYE 2016 and revenue adjustments for FYE 2017 and beyond will be evaluated on a yearly basis.

Figure 3-1: Proposed Revenue Adjustments

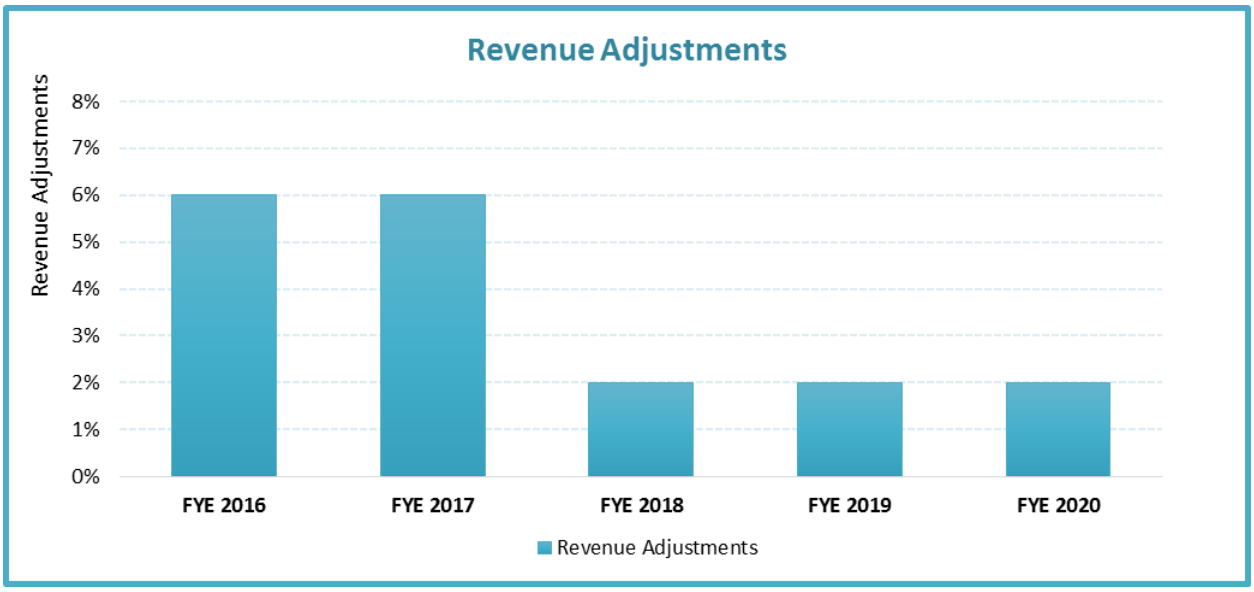


Figure 3-2 graphically illustrates the operating Financial Plan – it compares existing and proposed revenues with projected expenses. The expenses include O&M, purchased water, debt service, and reserve funding and are shown by the stacked bars; and total revenues at existing and proposed rates are shown by the horizontal black and purple lines, respectively. Current revenue from existing rates, does not meet future total expenses and shows the need for revenue adjustments.

Figure 3-2: Proposed Operating Financial Plan

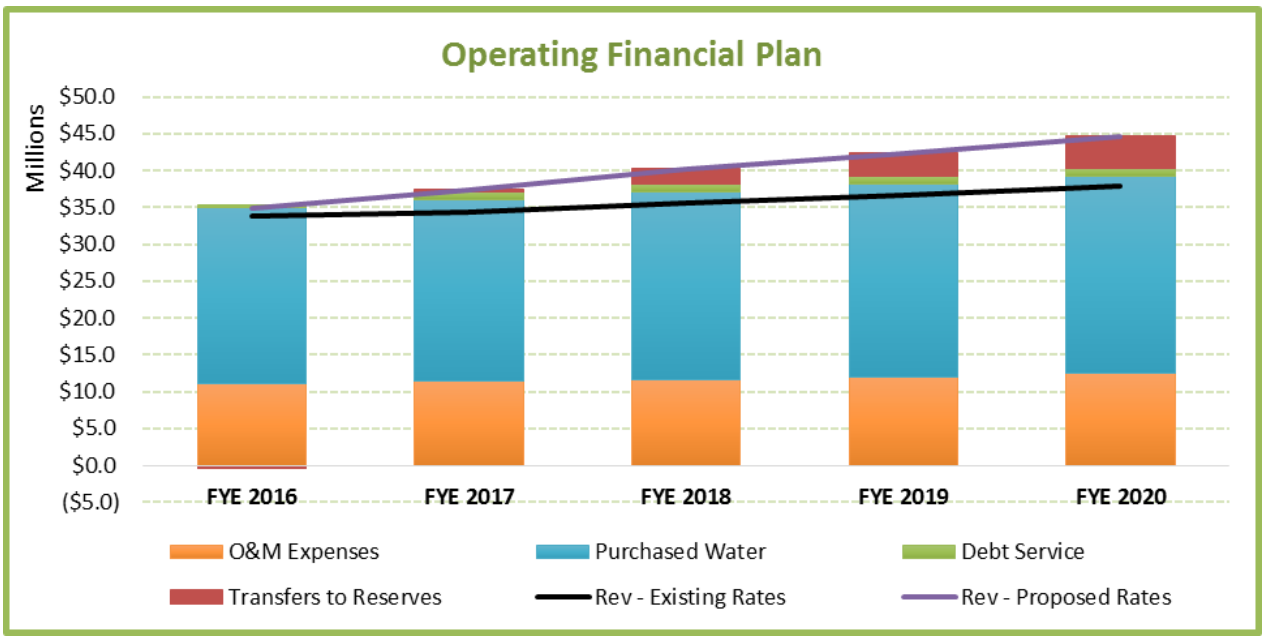


Figure 3-3 summarizes the projected CIP and the projected funding sources – debt, capacity fees, or rate funded. As shown, the District plans to have higher than average capital expenditures in FYE 2017 and FYE 2018. The anticipated capacity fee revenue from residential developments will help fund planned CIP. It does not appear that additional debt issuance is needed at this time, therefore none of the CIP is proposed to be funded through debt during the Study Period. A Master Plan Study has been initiated at the District but has not yet been completed. It is anticipated that once the Master Plan Study is finalized there may be additional capital expenditures in future years.

Figure 3-3: Projected CIP and Funding Sources

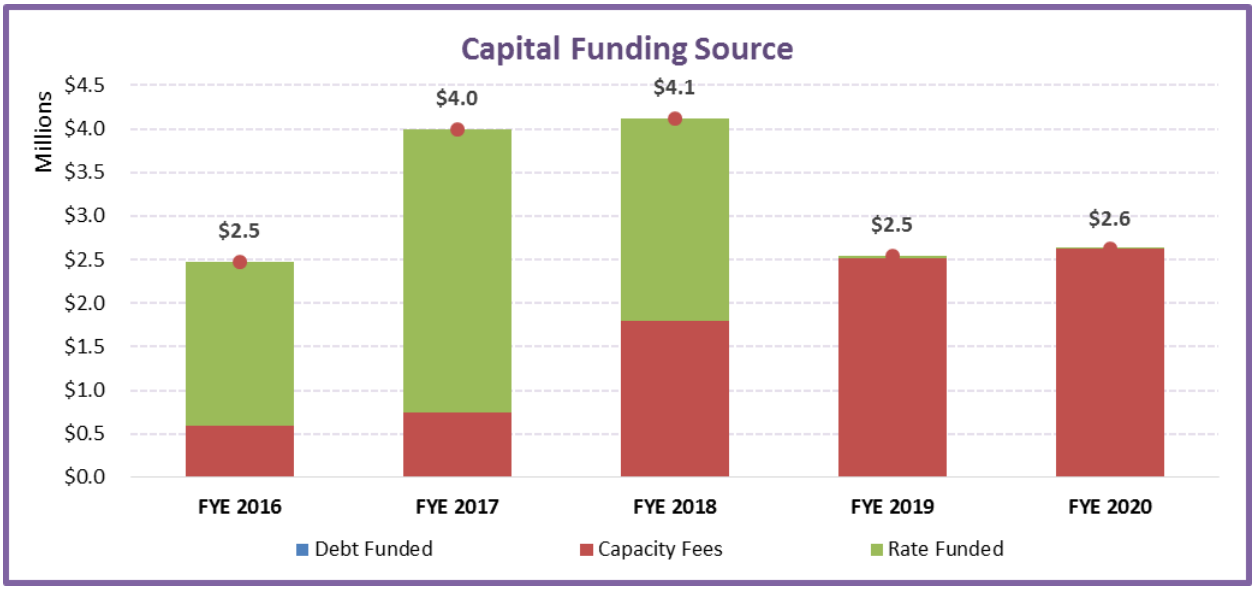


Figure 3-4 displays the operating fund yearly ending balance (green bars). The red horizontal line is the operating fund minimum target balance which is two months of O&M expenses[16] based on current Board policy. As shown, the operating fund is anticipated to meet the minimum target for each year during the Study Period. Operating reserves are used to meet annual working capital requirements and any unexpected increase to operating expenses that may occur during the year.

The remaining reserves are the Water Capital Projects Reserve (Capital Reserve), Liability Self Insurance Reserve, New Water Sources Reserve, and the Rate Stabilization Reserve. The target for the Capital Reserve is the annual average expense for the following five years. It provides funds for meeting capital expenses and any unexpected increases in the budgeted costs. The Liability Self Insurance Reserve target of $1 million covers the Districts insurance deductibles. The New Water Sources will maintain its current balance of approximately $1 million and will be utilized to help fund projects to develop new sources of water supply. The Rate Stabilization Reserve target is set a 15% of the rate revenue and allows the District to mitigate the need for rate adjustments if revenues drop off because of weather or water shortages,

[16] Excludes the cost of purchased water and depreciation.

Figure 3-4: Projected Operating Fund Ending Balances

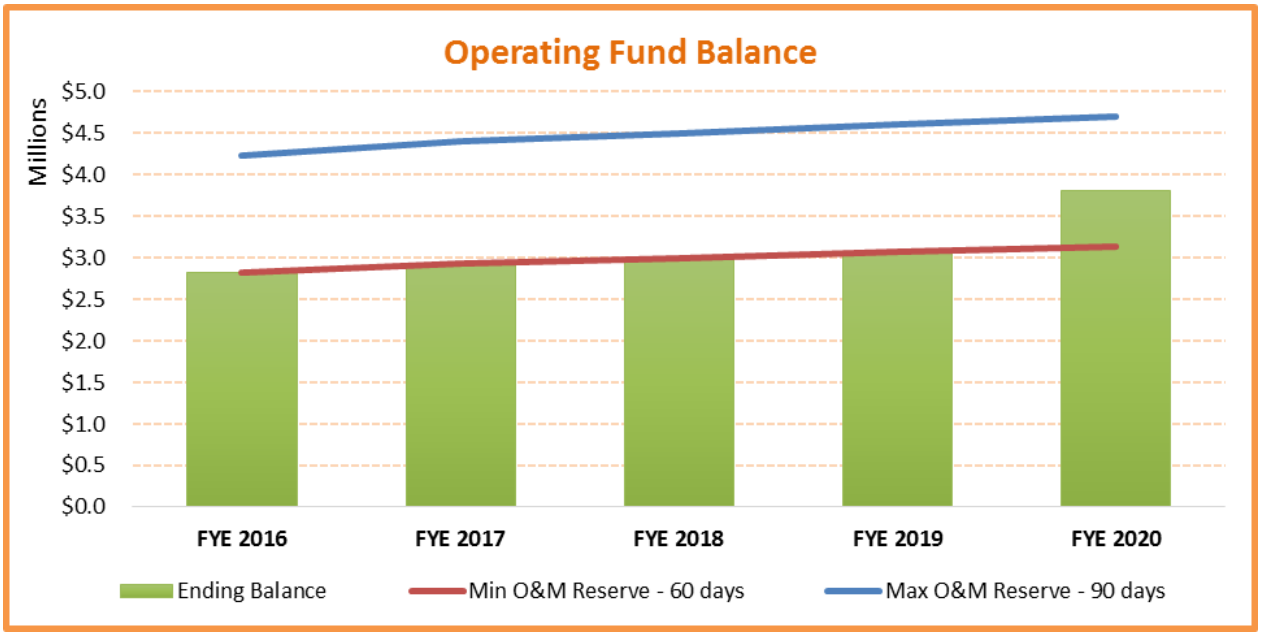
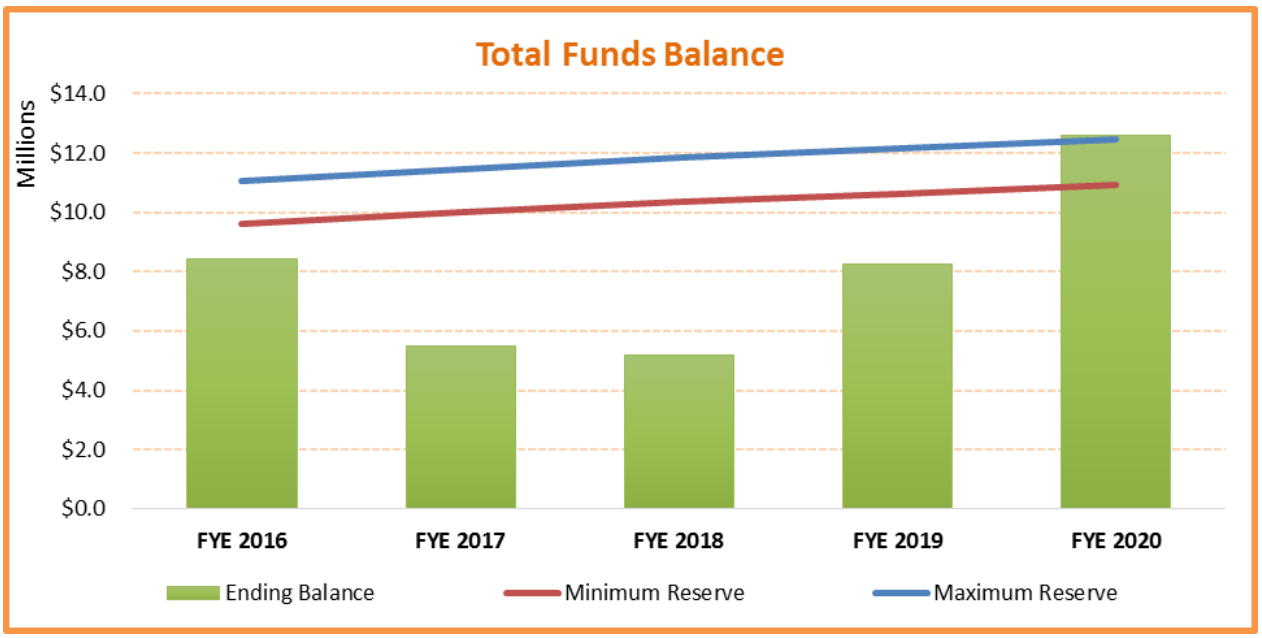


Figure 3-5 shows the ending yearly balance for the sum of all the District's reserves and the total reserve target. As shown, the sum of all reserves is below the minimum target for FYE 2016 through FYE 2019, largely due to the establishment of the Rate Stabilization Reserve and the funding needs for capital expenditures. The Rate Stabilization Reserve will be funded over the course of several years. See Appendix A – Cash Flow Detail, which shows the flow of funds for all the District's reserves[17] as well as the ending balances for each reserve in graphical format.

Figure 3-5: Total Funds Balance



[17] Reserve levels reaching above targeted levels in FYE 2020 or beyond will depend on several factors such as 1) development occurring as anticipated and the District receiving the additional meter fee revenue as well as the capacity fee revenue 2) no additional capital expenditures being scheduled in FYE 2019 or FYE 2020 based on the completion of the Master Plan.

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 the property.
5. No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library services, where the service is available to the public at large in substantially the same manner as it is to property owners.
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." Prop 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."

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

In addition, Section 106 of the Water Code declares that the highest priority use of water is for domestic purposes, with irrigation secondary. To meet the objectives of Article X, Section 2, Water Code Section 375 et seq., a water purveyor may utilize its water rate design to incentivize the efficient use of water. The District established single 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 each customer class in order 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, the following four major steps were followed.

1) Calculate Revenue Requirement

The rate-making process starts by determining the test year revenue requirement - which for this study is FYE 2016. The revenue requirement should sufficiently fund the utility's O&M, debt service, 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 components. Cost components include base/supply, maximum day, maximum hour[18], meter service, and customer servicing.
3. Distributing the cost components. Distribute cost components, using unit costs, to customer classes in proportion to their demands on the water system. This is described in the M1 Manual published by AWWA.

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

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)[19]. 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.

[19] System capacity is the system's ability to supply water to all delivery points at the time when demanded. 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. After determining a utility's revenue requirement, the next step in a cost of service analysis is to functionalize its O&M costs to the following **functions**:

1. Water supply
2. Transmission
3. Distribution
4. Storage/Reservoir
5. Meter service
6. Customer billing and collection
7. Booster Pumping

The functionalization of costs allows us to better allocate the functionalized costs to the **cost causation components**. The cost causation components include:

1. Base (average) costs (Supply and Average cost of service)
2. Peaking costs (maximum day and maximum hour)
3. Meter service
4. Billing and customer service
5. Fire protection

Base costs, as defined by the AWWA Manual M1, include the cost of supply and average costs of providing service. 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[20]. 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[21] 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 FUNCTIONALIZATION OF O&M EXPENSES

RFC reviewed the District's O&M expenditures as identified in the budget and shown in Table 3-2. The SDCWA fixed costs and pumping related costs were removed from this step of the analysis and will be discussed further in Section 6. The remaining expenditures were reviewed and functionalized, as summarized in Table 5-1.

[20] For the purposes of this study, a commonly used multiplier of 1.5 times the maximum day peaking factor was used for the maximum hour peaking factor.
[21] The terms extra capacity, peaking and capacity costs are used interchangeably.

Table 5-1: Functionalization of O&M Expenses

Line No.	O&M Expenditure / Category (1)	Allocation Basis (2)	FYE 2016 Expenditure (3)
1	Water Purchases	Supply	$19,759,584
2	Transportation Charges	Distribution	$979,603
3	Salaries and Benefits	Assets	$6,287,561
4	Services and Supplies	Assets	$3,727,282
5	Capital Outlay	Assets	$504,976
6	**Total O&M Expenditures**		**$31,259,006**

Since the purpose of the utility is to operate and manage District assets to ensure the delivery of high quality water to the District's customers, it is reasonable to use the functionalized assets as an allocation basis for certain O&M expenses, such as Salaries and Benefits, Services and Supplies, and the Capital Outlay (lines 3 through 5 of Table 5-1). Each line item in the District's asset listing was categorized according to its function and summarized in Table 5-2.

Table 5-2: Functionalization of RMWD's Assets

Line No.	Functional Category (1)	Asset Values (2)	% of total Assets (3)
1	Reservoir	$45,605,622	**38.0%**
2	Transmission	$25,380,590	**21.2%**
3	Distribution	$44,907,346	**37.5%**
4	Meter Service	$302,678	**0.3%**
5	Customer Service & Billing	$3,702,765	**3.1%**
6	**Total Assets**	**$119,899,002**	

Functionalizing O&M expenses and District assets allows RFC to follow the principles of rate setting theory in which the end goal is to allocate the District's O&M expenses to cost causation components. This is further explained in Section 5.2. Note the functionalized expenses shown in Table 5-1 match the FYE 2016 O&M expenses shown in Table 3-2[22].

5.2 ALLOCATION OF FUNCTIONALIZED EXPENSES TO COST COMPONENTS

After functionalizing expenses, the next step is to allocate the functionalized expenses to cost causation components. To do so we must identify system wide peaking factors which are shown in column 2, Table 5-3. The system-wide peaking factors are then used to derive the cost component allocation bases (i.e., percentages) shown in columns 3 through 5. Functionalized expenses are allocated to the cost components using these allocation bases.

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. The Max Day peaking factor

[22] Expenditures shown on lines 1, 2, 10, 11, and 13 only of Table 3-2. Expenditures shown on lines 3 through 8 and line 12 will be discussed later. Additionally, the AG Credit – SAWR (line 9), will be treated as a revenue offset.

(column 2, line 2) was estimated based on the maximum month information from the FYE 2015 consumption data and was determined by dividing the maximum month usage for all customer classes (1,103,226 HCF) by the average monthly usage for all customer classes (695,643 HCF)[23]. The Max Hour peaking factor (column 2, line 3) was determined by multiplying the Max Day peaking factor by 1.5[24]. As an example, the functionalized expenses that are allocated to the cost components using the maximum day bases assume 63% (1.00/1.59) of costs are due to base demands and the remaining proportion (100%-63%) of costs are allocated to the maximum day cost component. Expenses allocated using the maximum hour bases attribute 42% (1.00/2.39) of the costs to the base cost component, 25% [(1.59-1.00)/2.3] to maximum day, and 33% (100%-42%-25%) to maximum hour. Collectively the maximum day and hour cost components are known as peaking costs. These allocation bases are used to assign the functionalized costs in Table 5-1 to the cost components.

Table 5-3: System-Wide Peaking Factors and Allocation to Cost Components

Line No.	Cost Component Allocation Basis (1)	System Wide Peaking Factor (2)	Base (3)	Max Day (4)	Max Hour (5)	Fire Protection (6)	Total (7)
1	Base	1.00	100%			0%	100%
2	Max Day	1.59	63%	37%	0%	0%	100%
3	Max Hour	2.39	42%	25%	33%	0%	100%
4	Max Day w/ Fire		58%	32%	0%	10%	100%
5	Max Hour w/ Fire		39%	21%	30%	10%	100%

Table 5-4 allocates the functionalized O&M expenses from Table 5-1 to each cost component using the bases shown in lines 1 through 7 which are based on the system wide peaking factors as shown in Table 5-3. The functions are allocated according to industry standards that are defined based on the nature of the water system functions. For example: transmission systems are designed larger to meet maximum day (Max Day) requirements as opposed to average day requirements. The costs associated with overdesign is therefore proportioned on the Max Day peaking factor. Storage (reservoirs) are designed to provide Max Day and fire flow service and distribution systems are designed to provide maximum hour (Max Hour) and fire flow service. A portion of the costs associated with these facilities is therefore allocated to fire service. Based on RFC experience 10 percent of the costs of storage and distribution are allocated to fire service.

As mentioned earlier, the District's revenue requirements identified as Salaries and Benefits, Services and Supplies, and the Capital Outlay (lines 3 through 5 of Table 5-1) are allocated using the asset allocation shown on line 7 of Table 5-4. The asset allocation was derived by functionalizing the District's assets and then allocating them to the cost causation components using the applicable percentages shown in lines 1 through 6 of Table 5-4[25].
Line 14 shows the total resulting cost component allocation for O&M expenses. This resulting allocation is used to allocate the District's operating revenue requirement (discussed in Section 5.3) to the cost components.

[23] Max Monthly Usage / Average Monthly Usage = Max Day Peaking Factor, (1,103,226 / 695,643 = 1.59), based on the consumption data provided by the District.
[24] 1.5 is a commonly used multiplier for determining Max Hour peaking factors in the absence of hourly consumption data for districts of similar size
[25] See Appendix B for Asset Functionalization

Table 5-4: Allocation of Functionalized O&M and Capital Expenses

Line No.	Functional Category	Allocation Basis (1)	Supply (2)	Base (3)	Max Day (4)	Max Hour (5)	Fire Protection (6)	Meters (7)	Customer (8)	Total (9)
1	Water Supply	Supply	100%	0%	0%	0%	0%	0%	0%	100%
2	Reservoir	Max Day w/ Fire	0%	58%	32%	0%	10%	0%	0%	100%
3	Transmission	Max Day	0%	63%	37%	0%	0%	0%	0%	100%
4	Distribution	Max Hour w/ Fire	0%	39%	21%	30%	10%	0%	0%	100%
5	Meter Service	Meters	0%	0%	0%	0%	0%	100%	0%	100%
6	Customer Service & Billing	Customers	0%	0%	0%	0%	0%	0%	100%	100%
7	Assets	Asset Functionalization	0%	50%	28%	11%	8%	0%	3%	100%

	O&M Expenditure / Category	Functional Category	Supply	Base	Max Day	Max Hour	Fire Protection	Meters	Customer	Total
8	Water Purchases	**Water Supply**	$19,759,584	$0	$0	$0	$0	$0	$0	$19,759,584
9	Transportation Charges	**Distribution**	$0	$378,082	$209,680	$293,881	$97,960	$0	$0	$979,603
10	Salaries and Benefits	**Assets**	$0	$3,130,555	$1,765,816	$706,489	$474,654	$15,873	$194,175	$6,287,561
11	Services and Supplies	**Assets**	$0	$1,855,801	$1,046,780	$418,808	$281,376	$9,409	$115,107	$3,727,282
12	Capital Outlay	**Assets**	$0	$251,426	$141,819	$56,741	$38,121	$1,275	$15,595	$504,976
13	**Total O&M Expenses**		**$19,759,584**	**$5,615,863**	**$3,164,095**	**$1,475,919**	**$892,112**	**$26,557**	**$324,877**	**$31,259,006**
14	Resulting % Allocation - O&M		63.2%	18.0%	10.1%	4.7%	2.9%	0.1%	1.0%	100.0%

Note: Supply is broken out of base so that the variable costs can be tracked separately.

5.3 REVENUE REQUIREMENT DETERMINATION

Table 5-5 shows the revenue requirement derivation with the total revenue required from rates shown on line 29, column 3. The totals shown in columns 1 and 2 are the total O&M and capital revenue requirements that are allocated to the cost components using the allocation percentages shown in lines 7 and 14 of Table 5-4.

RFC calculated the revenue requirement using FYE 2016 expenses, which include water purchases, O&M expenses, capital expenses and existing debt service. O&M expenses include costs directly related to the supply, distribution of water, as well as routine maintenance of system facilities. To arrive at the rate revenue requirement, we subtract revenue offsets from other expenses, make adjustments for annual cash balances (line 18), and adjust for the fact that the impending rate adjustment will take place six months into the fiscal year therefore we must annualize the rate increase (line 19). The revenue required from rates (line 21, column 3) represents the amount that the RMWD O&M fixed charge and commodity rates are designed to collect. The revenue required from the SDCWA fixed pass-through charges are shown on lines 22 through 24 and the revenue required from the pumping charges are shown on lines 25 through 28[26].

The total revenue offsets shown in Table 5-5 represent the FYE 2016 Other Revenue from Table 3-6 (line 13)[27] and the AG Credit –SAWR (line 23)[28]. The adjustment for cash balance (line 18) represents the reduction to revenue requirements as a result of transfers from reserves. The adjustment for mid-year increase (line 19) is to annualize the revenue adjustments modeled in the cash flow analysis (Table 3-6, line 2). The CWA Fixed Charges (line 22) was determined by adding the SDCWA fixed charges applicable to all customers (Table 3-6, lines 17 through 20). The ESC & SRC (line 23) was determined by adding the SDCWA Emergency Storage Charge and the Supply Reliability Charge (Table 3-6, lines 21 and 22). Pumping charges will be calculated separately based on labor, O&M, and power costs.

[26] The Salaries and Benefits and the Services and Supplies attributable to pumping were deducted from lines 3 and 4 to ensure the costs were not double-counted.
[27] The Other Revenue is broken into greater detail for the revenue requirement analysis.
[28] The AG Credit- SAWR is shown as an offset to the expenditures in the cash flow (negative expense). For the revenue requirements RFC treated this like a revenue offset (positive revenue).

Table 5-5: Revenue Requirement Determination

Line No.		(1) Operating	(2) Capital	(3) Total
	Revenue Requirements			
1	Water Purchases	$19,759,584		$19,759,584
2	Transportation	$979,603		$979,603
3	Salaries and Benefits	$6,190,985		$6,190,985
4	Services and Supplies	$3,686,059		$3,686,059
5	Capital Outlay	$504,976		$504,976
6	Debt Service		$377,367	$377,367
7	**Total Revenue Requirements**	**$31,121,207**	**$377,367**	**$31,498,574**
	Revenue Offsets			
8	Plan Check & Inspection	$33,000		$33,000
9	New Development Services	$10,900		$10,900
10	Misc. Other Charges	$48,600		$48,600
11	Shut off fees	$2,500		$2,500
12	Water Letter Fees	$500		$500
13	Property Taxes - Assessed Valuation		$316,383	$316,383
14	Property Taxes - Parcel Charge RTS		$486,481	$486,481
15	Other Non-Operating Income	$30,000		$30,000
16	AG Credit - SAWR	$1,768,355		$1,768,355
17	**Total Revenue Offsets**	**$1,893,855**	**$802,864**	**$2,696,719**
	less Adjustments			
18	Adjustment for Cash Balance		$466,982	$466,982
19	Adjustment for Mid-year Increase	($987,150)		($987,150)
20	**Total less Adjustments**	**($987,150)**	**$466,982**	**($520,168)**
21	**Cost of Service to be Recovered from Rates**	**$30,214,502**	**($892,478)**	**$29,322,023**
	Fixed Pass-Through Revenue Requirements			
22	CWA Fixed Charges	$2,790,510		$2,790,510
23	ESC & SRC	$2,148,366		$2,148,366
24	**Revenue Required for CWA Fixed Pass-Through**			**$4,938,876**
	Pumping Costs			
25	Utility - Pumping	$480,587		$480,587
26	Salaries and Benefits - Pumping	$96,576		$96,576
27	Services and Supplies - Pumping	$41,223		$41,223
28	**Revenue Required for Pumping Costs**			**$618,386**
29	**Revenue Required from RMWD Rates**			**$34,879,285**

5.4 UNIT COST COMPONENT DERIVATION

Our end goal is to proportionately distribute the cost components to each user class. To do so we must calculate the unit costs 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 18. The peaking factors[29] for each tier and class was used to establish the maximum day and hour requirements and are the reason for the peaking unit rate differentials discussed in Table 6-8 of Section 6.

Table 5-7 shows the cost component unit cost derivation. The operating revenue requirement (Table 5-5, column 1, line 21) plus the revenue offset (Table 5-5, column 1, line 17) is allocated to the cost components using the O&M allocation from Table 5-4 (line 14). Similarly, the capital revenue requirement from Table 5-5 (column 2, line 21) plus the revenue offsets (column 2, line 17) is allocated to the cost components using the asset allocation from Table 5-4 (line 7). Revenue offsets are allocated based upon the type of revenue. Where the allocation could not be clearly identified, the revenue offset was allocated in the same manner as the overall allocation of the asset (Table 5-4, line 7)[30]. Property tax revenue was retained as revenue offsets to be allocated to customer classes. Public fire protection costs are reallocated to the meter service component (Table 5-7, line 5, column 6 & 7). Lastly, we allocate a portion (50%) of capacity related costs to the meter capacity component (Table 5-7, line 7) to ensure the costs are appropriately shared between fixed and variable components and to recognize the demands that meters place on the system. Shifting a portion of the capacity costs onto the fixed charge reinforces the District's goal of revenue stability. The total adjusted cost of service in line 8 is divided by the units of service, derived in Table 5-6, shown in line 9, to calculate the unit cost (line 10). For example, the unit cost for both the supply component and the base component is determined by dividing the total cost of each component by total water use in 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 monthly bills. The unit costs are used to distribute the cost components to the customer classes in Section 5.5.

[29] Peaking factors were based on the FYE 2015 monthly consumption data provided by the District. Max Day peaking factors were determined by dividing the average max use per account by the average use for each customer class and tier. The Max Hour Peaking factors were determined by multiplying the Max Day peaking factors by 1.5.

[30] See Appendix C for revenue offset allocations.

Table 5-6: Derivation of Cost Component Units

Line No.	Customer Class Information	Annual Usage (hcf) (1)	TSAWR Usage (hcf) (2)	Daily Usage (hcf) (3)	Max Day Factor (4)	Max Day Demand (5)	Max Day Requirements (hcf) (6)	Max Hour Factor (7)	Max Hour Demand (8)	Max Hour Requirements (hcf) (9)	Equivalent Meters (Less TSAWR) (10)	Equivalent Meters (Total) (11)	No. of Bills (12)
1	SF Residence												
2	SFR Tier 1	425,002		1,164	1.11	1,298	134	1.67	1,947	649	6,214	6,214	52,812
3	SFR Tier 2	360,061		986	1.58	1,563	576	2.38	2,344	781			
4	SFR Tier 3	542,137		1,485	2.51	3,726	2,241	3.76	5,589	1,863			
5	MFR	129,521		355	1.36	484	129	2.05	726	242	347	347	1,080
6	Commercial	203,834		558	1.66	927	368	2.49	1,390	463	517	517	2,004
7	Agricultural	1,996,787		5,471	1.59	8,707	3,236	2.39	13,060	4,353	2,818	2,818	16,056
8	TSAWR Dom												
9	TSAWR Dom Tier 1	111,958		307	1.11	342	35	1.67	513	171		2,612	12,384
10	TSAWR Dom Tier 2	248,013		679	1.58	1,077	397	2.38	1,615	538			
11	TSAWR Dom Tier 3	2,042,956	2,042,956	5,597	1.73	9,695	4,098	2.60	14,543	4,848			
12	TSAWR Com	1,715,360	1,715,360	4,700	1.61	7,583	2,883	2.42	11,375	3,792		1,064	3,180
13	Institutional	36,984		101	1.88	190	89	2.81	285	95	66	66	228
14	Construction	25,959		71	3.57	254	183	5.36	381	127			
18	**TOTAL**	**7,838,573 hcf**	**3,758,316 hcf**	**21,476 hcf**			**14,370 hcf**			**17,923 hcf**	**9,961**	**13,638**	**87,744**

Annual Usage (column 1) was obtained from the analysis of the FYE 2015 monthly consumption data provided by the District.
Daily Usage (column 2) = Annual Usage (column 1) divided by 365.
Max Day Demand (column 5) = Daily Usage (column 3) x Max Day Factor (column 4)
Max Day Requirement (column 6) = Max Day Demand (column 5) – Daily Usage (column 3)
Max Hour Demand (column 8) = Daily Usage (column 3) x Max Hour Factor (column 7)
Max Hour Requirement (column 9) = Max Hour Demand (column 8) – Max Day Demand (column 5) – Daily Usage (column 3)
Equivalent Meters (column 11) = Number of Meters by meter size (obtained from the consumption data) x AWWA meter capacity ratio[31]

[31] See Appendix D for additional information and the calculation of the equivalent meters.

Table 5-7: Unit Cost Calculation

Line No.	Cost of Service	Supply (1)	Base (2)	SAWR Supply (3)	Max Day (4)	Max Hour (5)	Fire Protection (6)	Meters (7)	Customer (8)	Revenue Offsets (10)	Total (11)
1	Operating Expenses	$20,296,479	$5,768,454	$0	$3,250,067	$1,516,021	$916,352	$27,278	$333,704	$0	$32,108,357
2	Capital Expenses	$0	($44,619)	$0	($25,168)	($10,069)	($6,765)	($226)	($2,768)	$0	($89,614)
3	Revenue Offsets	$0	($92,361)	($1,768,355)	($18,536)	($7,416)	($4,982)	($167)	($2,038)	($802,864)	($2,696,719)
4	**Total Cost of Service**	**$20,296,479**	**$5,631,474**	**($1,768,355)**	**$3,206,364**	**$1,498,536**	**$904,605**	**$26,885**	**$328,899**	**($802,864)**	**$29,322,023**
5	Allocation of Public Fire Protection						($904,605)	$904,605			$0
6	**Allocated Cost of Service**	**$20,296,479**	**$5,631,474**	**($1,768,355)**	**$3,206,364**	**$1,498,536**	**$0**	**$931,490**	**$328,899**	**($802,864)**	**$29,322,023**
7	Adjustment from Rates Sheet	$0	$0	$0	($1,603,182)	($749,268)	$0	$2,352,450	$0	$0	($0)
8	**Adjusted Cost of Service**	**$20,296,479**	**$5,631,474**	**($1,768,355)**	**$1,603,182**	**$749,268**	**$0**	**$3,283,940**	**$328,899**	**($802,864)**	**$29,322,023**
9	Unit of Service	7,838,573 hcf	7,838,573 hcf	3,758,316 hcf	14,370 hcf/day	17,923 hcf/day		13,638 Equiv meter	87,744 No. of bills	7,812,614 hcf	
10	**Unit Cost**	**$2.59**	**$0.72**	**($0.47)**	**$111.57**	**$41.81**		**$20.07**	**$3.75**	**($0.10)**	

5.5 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. 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. To derive the cost to serve each class, the unit costs from Table 5-7 (line 10) are multiplied by the units shown in Table 5-6 (columns 1, 2, 6, 9, 11, and 12) for each class. For example, the base costs for the commercial class is calculated by multiplying the base unit cost (Table 5-7, column 2, line 10) by the annual commercial use (Table 5-6, column 1, line 6). Similarly the commercial *customer* costs are derived by multiplying the *customer* unit cost (Table 5-7, column 8, line 10) by the number of commercial bills (Table 5-6, column 12, line 6). Similar calculations for each of the remaining user classes and cost components yield the total cost to serve each user class shown in Table 5-8 (column 9).

Agricultural customers account for approximately 78% of the District's water usage. Due to the nature of agricultural use, these customers' usage varies greatly in response to fluctuations in the weather. This volatility presents a risk to the District which can be mitigated by recovering a larger portion of the costs attributable to agriculture on the fixed charge. To ensure revenue stability to cover the fixed expenses we recommend that a greater percentage of the revenue requirements attributable to agricultural customers be recovered through the fixed charge.

Table 5-9 shows the adjustment of agriculture's capacity costs and the resulting unit cost. 90% of agriculture related capacity costs shown in Table 5-8 (column 4 & 5, lines 6, 9, and 10) were allocated to the meter capacity component. Note the total cost to serve each user class (as shown in Table 5-8, column 9) remains the same. For example, prior to the reallocation, the costs attributable to the agricultural user class was $7,681,380 (Table 5-8, column 9, line 6) and after the reallocation the costs attributable to the agricultural user class remain the same, $7,681,380 (Table 5-9, column 9, line 1). We have calculated the cost to serve each user class and can proceed to derive rates to collect the cost to serve each class.

Table 5-10 summarizes the cost to serve each user class after the adjustment of a portion of agriculture's capacity costs.

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

Line No.	All Classes	Supply (1)	Base (2)	TSAWR Supply (3)	Max Day (4)	Max Hour (5)	Meters (6)	Customer (7)	Revenue Offsets (8)	Total Cost by Customer Class (9)
1	SFR Tier 1	$1,100,462	$305,335	$0	$14,916	$27,134	$1,496,407	$197,960	($43,675)	$3,098,538
2	SFR Tier 2	$932,310	$258,679	$0	$64,313	$32,670	$0	$0	($37,002)	$1,250,970
3	SFR Tier 3	$1,403,759	$389,488	$0	$249,998	$77,886	$0	$0	($55,713)	$2,065,417
4	MFR	$335,369	$93,052	$0	$14,397	$10,115	$83,477	$4,048	($13,310)	$527,148
5	Commercial	$527,790	$146,441	$0	$41,066	$19,367	$124,493	$7,512	($20,947)	$845,722
6	Agricultural	$5,170,298	$1,434,554	$0	$361,053	$181,998	$678,492	$60,184	($205,200)	$7,681,380
7	TSAWR Dom Tier 1	$289,893	$80,434	$0	$3,929	$7,148	$0	$0	($11,505)	$369,899
8	TSAWR Dom Tier 2	$642,183	$178,181	$0	$44,299	$22,503	$0	$0	($25,487)	$861,679
9	TSAWR Dom Tier 3	$5,289,841	$1,467,723	($961,247)	$457,190	$202,654	$628,968	$46,420	($209,945)	$6,921,604
10	TSAWR Com	$4,441,595	$1,232,368	($807,108)	$321,696	$158,507	$256,291	$11,920	($176,279)	$5,438,990
11	Institutional	$95,764	$26,571	$0	$9,893	$3,972	$15,812	$855	($3,801)	$149,065
12	Construction	$67,216	$18,650	$0	$20,431	$5,315	$0	$0	$0	$111,611
13	**Total Costs of Service**	**$20,296,479**	**$5,631,474**	**($1,768,355)**	**$1,603,182**	**$749,268**	**$3,283,940**	**$328,899**	**($802,864)**	**$29,322,023**

Table 5-9: Agriculture Allocation and Unit Cost Calculation

Line No.	Agricultural Classes	Supply (1)	Base (2)	TSAWR Supply (3)	Max Day (4)	Max Hour (5)	Meters (6)	Customer (&)	Revenue Offsets (8)	Total Cost by Customer Class (9)
1	Agricultural	$5,170,298	$1,434,554	$0	$361,053	$181,998	$678,492	$60,184	($205,200)	$7,681,380
2	TSAWR Dom Tier 3	$5,289,841	$1,467,723	($961,247)	$457,190	$202,654	$628,968	$46,420	($209,945)	$6,921,604
3	TSAWR Com	$4,441,595	$1,232,368	($807,108)	$321,696	$158,507	$256,291	$11,920	($176,279)	$5,438,990
4	**TOTAL**	**$14,901,734**	**$4,134,645**	**($1,768,355)**	**$1,139,939**	**$543,160**	**$1,563,750**	**$118,524**	**($591,424)**	**$20,041,974**
5	Adjustment from Rates Sheet	$0	$0	$0	($1,025,945)	($488,844)	$1,514,789	$0	$0	$0
6	**Adjusted Cost of Service**	**$14,901,734**	**$4,134,645**	**($1,768,355)**	**$113,994**	**$54,316**	**$3,078,539**	**$118,524**	**($591,424)**	**$20,041,974**
7	Units of Service	5,755,103 hcf	5,755,103 hcf	3,758,316 hcf	10,217 hcf/day	12,992 hcf/day	6,494 Equiv meter	31,620 No. of bills	5,755,103 hcf	
8	**Unit Cost**	**$2.59**	**$0.72**	**($0.47)**	**$11.16**	**$4.18**	**$39.50**	**$3.75**	**($0.10)**	

Table 5-10: Final Cost to Serve Each Class

Line No.	All Classes	Supply (1)	Base (2)	TSAWR Supply (3)	Max Day (4)	Max Hour (5)	Meters (6)	Customer (7)	Revenue Offsets (8)	Total Cost by Customer Class (9)
1	SFR Tier 1	$1,100,462	$305,335	$0	$14,916	$27,134	$1,496,407	$197,960	($43,675)	$3,098,538
2	SFR Tier 2	$932,310	$258,679	$0	$64,313	$32,670	$0	$0	($37,002)	$1,250,970
3	SFR Tier 3	$1,403,759	$389,488	$0	$249,998	$77,886	$0	$0	($55,713)	$2,065,417
4	MFR	$335,369	$93,052	$0	$14,397	$10,115	$83,477	$4,048	($13,310)	$527,148
5	Commercial	$527,790	$146,441	$0	$41,066	$19,367	$124,493	$7,512	($20,947)	$845,722
6	Agricultural	$5,170,298	$1,434,554	$0	$36,105	$18,200	$1,335,740	$60,184	($205,200)	$7,849,882
7	TSAWR Dom Tier 1	$289,893	$80,434	$0	$3,929	$7,148	$0	$0	($11,505)	$369,899
8	TSAWR Dom Tier 2	$642,183	$178,181	$0	$44,299	$22,503	$0	$0	($25,487)	$861,679
9	TSAWR Dom Tier 3	$5,289,841	$1,467,723	($961,247)	$45,719	$20,265	$1,238,242	$46,420	($209,945)	$6,937,019
10	TSAWR Com	$4,441,595	$1,232,368	($807,108)	$32,170	$15,851	$504,557	$11,920	($176,279)	$5,255,073
11	Institutional	$95,764	$26,571	$0	$9,893	$3,972	$15,812	$855	($3,801)	$149,065
12	Construction	$67,216	$18,650	$0	$20,431	$5,315	$0	$0	$0	$111,611
13	**Total Costs of Service**	**$20,296,479**	**$5,631,474**	**($1,768,355)**	**$577,237**	**$260,424**	**$4,798,729**	**$328,899**	**($802,864)**	**$29,322,023**

6 RATE DESIGN

The revenue requirements and cost of service analysis described in the preceding sections of this report allocate the costs equitably amongst the different customer classes. Rate design is the process of developing rate schedules for each customer class such that the annual cost of service determined for each customer class is equitably recovered from the customers in that class. In this study, the focus of rate design is on the development of rate schedules for each of the District's customer classes. This section of the report discusses the current water rate structure and develops a schedule of water rates proportional to the cost of service for the District's customer classes that meet the District's objectives of equitable collection of costs and efficient use of resources.

6.1 EXISTING RATE STRUCTURE AND CURRENT RATES

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

The District's monthly water service fees are comprised of four components: (1) a RMWD O&M Fixed Charge, (2) a SDCWA Fixed Charge, (3) a Commodity Rate, and (4) a Pumping Charge. The RMWD O&M Fixed Charge is designed to recover a portion of the District's fixed costs, such as the costs of billing and collections, customer service, meter reading, meter maintenance, and a portion of capacity related costs. The SDCWA Fixed Charge is based on the charges imposed by SDCWA and over which the District has no control. The commodity rates are intended to recover the costs of purchasing water from SDCWA, delivering water, maintaining infrastructure, and managing the District's water resources. The pumping charges are intended to recover the costs associated with pumping water to the different elevation zones. Figure 6-1 shows each of the four components of the monthly service charges.

Figure 6-1: Projected Operating Fund Ending Balances

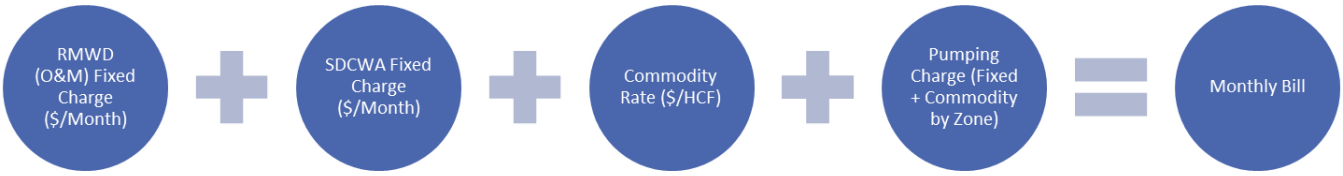


Table 6-1 shows the current monthly fixed charges (both RMWD O&M and the SDCWA Fixed Charges), Table 6-2 shows the current commodity rates by class, and Table 6-3 shows the current pumping charges.

Table 6-1: Current Monthly Fixed Charges

Meter Size	Monthly RMWD O&M Charge ($/Meter)	Monthly SDCWA Fixed Charge		
		Domestic Charge ($/Meter)	TSAWR/Domestic ($/Meter)	TSAWR/Commerical ($/Meter)
5/8"	$28.35	$30.48	$30.48	$16.17
3/4"	$35.45	$30.48	$30.48	$16.17
1"	$46.10	$48.77	$48.77	$25.87
1-1/2"	$70.90	$91.44	$91.44	$48.50
2"	$124.05	$158.49	$91.44	$84.07
3"	$212.70	$274.31	$91.44	$145.50
4"	$354.50	$487.66	$91.44	$258.66
6"	$602.60	$1,097.24	$91.44	$581.99

Table 6-2: Current Monthly Commodity Rates ($/HCF)

Customer Class	Tier Width	Current Commodity Rate ($/HCF[32])
Domestic (A, D, MF)		
Tier 1	1-6 HCF	**$3.00**
Tier 2	7 & above	**$3.15**
Commercial		**$3.15**
Construction		**$3.15**
TSAWR/Domestic		
Tier 1	1-6 HCF	**$3.00**
Tier 2	7 - 26 HCF	**$3.15**
Tier 3	27 & above	**$2.83**
TSAWR/Commercial		**$2.83**

Table 6-3: Current Monthly Pumping Charges

		Current Pumping Charge
Fixed Pumping Charge ($/Month)		$8.77
Commodity Rates ($/HCF)		
Zone 1	Rainbow Heights	$0.43
Zone 2	Improvement District U-1	$0.27
Zone 3	Vallecitos	$0.15
Zone 4	Northside	$0.05
Zone 5	Morro Tank	$0.08
Zone 6	Huntley	$0.31
Zone 7	Magee Tank	$1.42

[32] HCF = Hundred Cubic Feet

6.2 PROPOSED RMWD O&M MONTHLY FIXED CHARGE

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

Customer related costs are fixed expenditures that relate to operational support activities including accounting, billing, customer service, and administrative and technical support. The customer related costs are essentially common-to-all customers and are reasonably uniform across the different customer classes. In addition, there are capacity related costs such as meter maintenance and peaking charges that are included based on the hydraulic capacity of the meters. Since facilities are designed to meet peaking requirements, RFC has assigned a portion of the costs related to peaking to the service charge. 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 (peaking) 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 6-4 and 6-5. 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 flow through a 4-inch meter is 21 times that of a 3/4-inch and therefore the capacity component of the RMWD fixed meter charge is 21 times that of the 3/4-inch meter.

Increasing the fixed charge reduces the variable rates and incentive for conservation, but provides a mechanism for recovering a portion of the fixed costs and ensures a stable source of customer revenues for the utility. A good rate design seeks an appropriate balance between these pricing objectives. The District collected approximately 26 percent of the total rate revenues from the fixed service charges in FYE 2015. RFC's rate design increased the fixed charge revenue recovery to approximately 29 percent.

Table 6-4 shows the derivation of the RMWD O&M Charge applicable to SFR, MFR, Commercial, and Institutional customers. The cost of service analysis derived in Table 5-7 feeds into the RMWD O&M derivation. The meter component (Table 6-4, column 3, line 1) is based on the meter unit cost (Table 5-7, column 7, line 10). The customer component (Table 6-4, column 4, line 1) is based on the customer unit cost (Table 5-7, column 8, line 10). The Monthly RMWD O&M Fixed Charge is determined by adding the meter component and the customer component as shown in column 5. For meters larger than the base meter size of 3/4" the charges are scaled up based on the meter capacity ratios shown in column 2.

As previously discussed, RFC recommends establishing a separate RMWD O&M Charge for the agriculture customer classes (Agriculture, TSAWR Domestic, and TSAWR Commercial). Table 6-5 shows the derivation of the RMWD Agriculture O&M Charge. The cost of service analysis derived in Table 5-9 feeds into the RMWD AG O&M derivation.

Table 6-4: Derivation of the Monthly RMWD O&M Charge

SFR, MFR, Commercial, and Institutional

Line No.	Meter Size (1)	AWWA Capacity Ratio (2)	Meter Component (3)	Customer Component (4)	Proposed RMWD O&M Fixed Charge (5)	Current RMWD O&M Charge (6)	# of Meters (7)
1	5/8"	1.00	$20.07	$3.75	**$23.82**	$28.35	209
2	3/4"	1.00	$20.07	$3.75	**$23.82**	$35.45	2,150
3	1"	1.67	$33.44	$3.75	**$37.20**	$46.10	2,018
4	1-1/2"	3.33	$66.89	$3.75	**$70.64**	$70.90	168
5	2"	5.33	$107.02	$3.75	**$110.78**	$124.05	116
6	3"	11.67	$234.11	$3.75	**$237.86**	$212.70	10
7	4"	21.00	$421.40	$3.75	**$425.15**	$354.50	6
8	6"	43.33	$869.55	$3.75	**$873.31**	$602.60	-

Table 6-5: Derivation of the Monthly RMWD AG O&M Charge

Agriculture, TSAWR Domestic, and TSAWR Commercial

Meter Size (1)	AWWA Capacity Ratio (2)	Meter Component (3)	Customer Component (4)	Proposed RMWD O&M Fixed Charge (5)	Current RMWD O&M Charge (6)	# of Meters (7)
5/8"	1.00	$39.50	$3.75	**$43.26**	$28.35	10
3/4"	1.00	$39.50	$3.75	**$43.26**	$35.45	371
1"	1.67	$65.84	$3.75	**$69.59**	$46.10	1,466
1-1/2"	3.33	$131.68	$3.75	**$135.44**	$70.90	421
2"	5.33	$210.69	$3.75	**$214.45**	$124.05	335
3"	11.67	$460.89	$3.75	**$464.64**	$212.70	23
4"	21.00	$829.60	$3.75	**$833.36**	$354.50	8
6"	43.33	$1,711.88	$3.75	**$1,715.63**	$602.60	1

6.3 PROPOSED SDCWA MONTHLY FIXED CHARGE

RFC recommends continuing to pass-through the monthly fixed charges from SDCWA and MWD as a separate fixed charge. The District relies entirely on purchased water from SDCWA and these charges represent part of the costs of purchasing water for which the District has no control. Continuing the separate fixed charge provides clear transparency between the costs that are controlled by the District versus uncontrolled costs from outside the agency.

Table 6-6 shows the annual fixed charges from SDCWA for FYE 2016. Lines 1 through 4 are charges applicable to every customer in the District. Lines 5 and 6 are applicable to every customer except the TSAWR Domestic and TSAWR Commercial customers. TSAWR customers receive water at a discounted rate because they have agreed to reduce usage during water shortages. Since they are required to reduce usage, they do not receive the benefit of emergency storage or the guarantee of supply reliability and therefore do not pay the Emergency Storage Charge or the Supply Reliability Charge.

Table 6-6: FYE 2016 SDCWA Fixed Charge

Line No.	SDCWA Fixed Charges	FYE 2016
1	Ready to Serve Charge	$527,580
2	Infrastructure Access Charge	$435,546
3	Customer Service Charge	$1,204,944
4	Capacity Reservation Charge	$622,440
5	Emergency Storage Charge	$1,778,478
6	Supply Reliability Charge	$369,888
7	**Total SDCWA Fixed Charges**	**$4,938,876**

RFC recommends recovering the charges based on the equivalent meters subject to the charges. Table 6-7 shows the derivation of the unit cost.

Table 6-7: SDCWA Unit Cost Derivation

Line No.		Revenue Requirement (1)	Equivalent Meters (2)	Monthly Unit Cost (3)
1	Emergency Storage & Supply Reliability	$2,148,366	9,961	$17.97
2	All other SDCWA Fixed Charges	$2,790,510	13,638	$17.05
3	**Total SDCWA Fixed Charges**	**$4,938,876**		

The Revenue Requirement (column 1) from Table 6-7 matches the requirement from Table 5-4 (column 1, line 22 through 24) and represents the yearly requirement. The Equivalent Meters[33] (column 2) were fed from Table 5-6 (column 10 and 11) and represent the total equivalent meters in a year. The monthly unit cost was determined by dividing the requirement (column 1) by the equivalent meters (column 2) and then dividing by 12.

Table 6-8 shows the proposed SDCWA Fixed Pass-Through Charge applicable to all customers except TSAWR. Table 6-9 shows the proposed SDCWA Fixed Pass-Through charges applicable to TSAWR customers.

[33] Also discussed further in Appendix D

Table 6-8: SDCWA Monthly Fixed Pass-Through Charge (Except TSAWR)

SFR, MFR, Commercial, Agriculture, Institutional

Meter Size (1)	AWWA Capacity Ratio (2)	ESC & SRC Component (3)	Other SDCWA Charges Component (4)	Proposed SDCWA Pass-Through Charge (5)	Current SDCWA Fixed (Domestic) (6)	# of Meters (7)
5/8"	1.00	$17.97	$17.05	**$35.02**	$30.48	217
3/4"	1.00	$17.97	$17.05	**$35.02**	$30.48	2,415
1"	1.67	$29.95	$28.42	**$58.37**	$48.77	2,839
1-1/2"	3.33	$59.91	$56.84	**$116.75**	$91.44	303
2"	5.33	$95.85	$90.94	**$186.79**	$158.49	213
3"	11.67	$209.68	$198.93	**$408.61**	$274.31	17
4"	21.00	$377.42	$358.08	**$735.50**	$487.66	10
6"	43.33	$778.81	$738.90	**$1,517.71**	$1,097.24	1

Table 6-9: SDCWA Monthly Fixed Pass-Through Charge (TSAWR Customers)

TSAWR Customers (TSAWR Domestic and TSAWR Commecial)

Meter Size (1)	AWWA Capacity Ratio (2)	Proposed SDCWA Pass-Through Charge (3)	Current SDCWA Fixed (TSAWR Dom) (4)	Current SDCWA Fixed (TSAWR Com) (5)	# of Meters (6)
5/8"	1.00	**$17.05**	30.48	16.17	2
3/4"	1.00	**$17.05**	30.48	16.17	106
1"	1.67	**$28.42**	48.77	25.87	645
1-1/2"	3.33	**$56.84**	91.44	48.5	286
2"	5.33	**$90.94**	91.44	84.07	238
3"	11.67	**$198.93**	91.44	145.5	16
4"	21.00	**$358.08**	91.44	258.66	4
6"	43.33	**$738.90**	91.44	581.99	-

A review of the current SDCWA TSAWR Fixed Charges (Table 6-9, columns 4 and 5) indicates that TSAWR Domestic customers were charged the same charge as the domestic customers for 1-1/2" or smaller sized meters. Meters larger than 1-1/2" were held constant and charged the same charge as the 1-1/2" meter. In addition, it was noted that the TSAWR Commercial customers were charged 53% of the current SDCWA Domestic Fixed Charge. RFC recommends adjusting the charges as shown in Tables 6-8 and 6-9 to fully recover the SDCWA Fixed Pass-Through charges based on those customers receiving benefit from the charges. Under the proposed structure, both TSAWR customer classes will pay the same SDCWA Fixed Charge (Table 6-9, column 3).

6.4 PROPOSED COMMODITY RATES

The District reclassified various customers based on guidelines in regulations from the State Water Resources Control Board. Customers with over an acre of irrigation use were reclassified as agricultural. The customer classes can be sorted into groups with similar peaking characteristics and a uniform water commodity rate is calculated for each class of customers. RFC recommends that SFR, MFR, Commercial, Agricultural, TSAWR Domestic, TSAWR Commercial, Institutional, and Construction be separated into distinct customer classes. Having separate customer classes increases the equity in the District's rate structure.

Single Family Tier Definitions

RFC recommends maintaining a tiered rate structure for domestic or residential customers, but that the tiers be adjusted. RFC proposes a three-tiered rate structure for all residential customers. The first tier would be set at 10 HCF (or units) and is designed to provide essential indoor usage. The second tier is set at 26 HCF (units 11 through 26) and is designed to accommodate average single family outdoor use. Usage above 26 HCF will fall into tier 3 and is considered discretionary water use.

Non-Single Family Commodity Rates

RFC recommends creating a uniform rate for the following classes: Agricultural (without residence), Multifamily, Commercial, Institutional, and Construction. The rates reflect each user classes' peaking characteristics – i.e., the peaking/capacity demands these classes place on the water system. User classes with more responsibility for peaking costs realize a higher rate as set forth by cost of service principles described earlier in this report.

Unit Cost Definitions

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

1. Water Supply
2. Delivery/Base
3. TSAWR Supply Offset (where applicable)
4. Peaking
5. Revenue Offsets

Water Supply costs are the costs associated with purchasing water from SDCWA. The District relies entirely on purchased water from SDCWA and therefore the purchased water costs are spread over all units of water irrespective of customer class or tier.

Base 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 irrespective of customer class or tiers.

TSAWR Supply Offset, represents the AG Credit (Table 3-6, line 23) received from SDCWA. TSAWR customers are provided a discount by SDCWA in the form of an AG Credit. The credit is spread evenly over all units of water for both the TSAWR Domestic and TSAWR Commercial customers.

Peaking costs, or extra-capacity costs, represent costs incurred to meet customer peak demands in excess of a base use (or average daily demand). Total extra capacity costs are comprised of maximum day and maximum hour demands. The peaking costs are distributed to each tier and class using peaking factors derived from customer use data. We previously showed the distribution of peaking needs (demand) and costs in Tables 5-6 and 5-10 respectively.

Revenue Offsets are property tax revenue that was used as an offset to reduce the commodity rates. The offset was applied evenly across all units of water.

Unit Cost Derivation

Supply Unit Cost

The first step in the commodity rate calculation is the derivation of the supply rate for each tier and class. Since the District only has one source of water, the supply costs are spread evenly over all units of water. Table 6-10 shows the supply unit rate as well as the supply costs spread evenly over every unit of water and broken out by customer class and tier. The supply costs shown in column 3 were derived in the cost of service section in Table 5-10.

Table 6-10: Supply Rate Derivation

Line No.	Customer Class	Annual Usage (1)	Supply Unit Rate (2)	Allocated Supply Costs (3)
1	SFR Tier 1	425,002	$2.59	$1,100,462
2	SFR Tier 2	360,061	$2.59	$932,310
3	SFR Tier 3	542,137	$2.59	$1,403,759
4	MFR	129,521	$2.59	$335,369
5	Commercial	203,834	$2.59	$527,790
6	Agriculture	1,996,787	$2.59	$5,170,298
7	TSAWR Domestic Tier 1	111,958	$2.59	$289,893
8	TSAWR Domestic Tier 2	248,013	$2.59	$642,183
9	TSAWR Domestic Tier 3	2,042,956	$2.59	$5,289,841
10	TSAWR Commercial	1,715,360	$2.59	$4,441,595
11	Institutional	36,984	$2.59	$95,764
12	Construction	25,959	$2.59	$67,216
13	**Total**	**7,838,573**		**$20,296,479**

Base/Delivery Unit Cost

The base unit cost is the cost to deliver water under average daily demand conditions. This delivery cost is the same for all classes and for all tiers. Table 6-11 shows the delivery unit rate (as shown in Tables 5-7 and 5-9) as well as the costs spread evenly over every unit of water and broken out by customer class and tier (derived in the cost of service section and summarized in Table 5-10).

Table 6-11: Delivery Rate Derivation

Line No.	Customer Class	Annual Usage (1)	Base Unit Rate (2)	Allocated Base Costs (3)
1	SFR Tier 1	425,002	$0.72	$305,335
2	SFR Tier 2	360,061	$0.72	$258,679
3	SFR Tier 3	542,137	$0.72	$389,488
4	MFR	129,521	$0.72	$93,052
5	Commercial	203,834	$0.72	$146,441
6	Agriculture	1,996,787	$0.72	$1,434,554
7	TSAWR Domestic Tier 1	111,958	$0.72	$80,434
8	TSAWR Domestic Tier 2	248,013	$0.72	$178,181
9	TSAWR Domestic Tier 3	2,042,956	$0.72	$1,467,723
10	TSAWR Commercial	1,715,360	$0.72	$1,232,368
11	Institutional	36,984	$0.72	$26,571
12	Construction	25,959	$0.72	$18,650
13	**Total**	**7,838,573**		**$5,631,474**

TSAWR Supply Offset Unit Cost

The agricultural credit from SDCWA was spread evenly over all units of agricultural use. TSAWR Domestic Tier 1 and Tier 2 usage is representative of the residential use for those customers and therefore the offset was only applied to Tier 3 usage (which reflects the agricultural use). The total agricultural credit was therefore spread equally over TSAWR Domestic Tier 3 and TSAWR Commercial usage. Table 6-12 summarizes the TSAWR Supply Offset Rate (as shown in Table 5-9) as well as the costs spread evenly over every unit of agriculture water use.

Table 6-12: TSAWR Supply Offset Derivation

Line No.	SAWR Domestic	Agriculture Usage by Tier (1)	Allocated TSAWR Credit (2)	TSAWR Offset (3)
1	TSAWR Dom Tier 1	-	-	$0.00
2	TSAWR Dom Tier 2	-	-	$0.00
3	TSAWR Dom Tier 3	2,042,956	($961,247)	($0.47)
4	TSAWR Com	1,715,360	($807,108)	($0.47)
5	**Total**	**3,758,316**	**($1,768,355)**	

Peaking Unit Cost

Table 6-13 shows the derivation of the unit peaking costs for each user class and tier. The peaking costs shown in column 3 were derived in the cost of service section and are the sum of columns 4 and 5, the max day and max hour peaking costs, in Table 5-10. The peaking rate is calculated by dividing the peaking costs (column 3) by the use (column 4) for each class. Note that the peaking rate is correlated with the peaking factor – a higher peaking factor correlates to a higher peaking rate. Also note that the total peaking costs in column 3 of Table 6-13 matches the total peaking costs (max day and max hour) shown in columns 4 and 5 in Table 5-10.

Table 6-13: Derivation of Peaking Unit Cost

Line No.	Tier / Class (1)	Peaking Factor (2)	Peaking Costs (3)	Use (HCF) (4)	Peaking Rate ($ / HCF) (5)
1	SFR Tier 1	1.11	$42,050	425,002	$0.10
2	SFR Tier 2	1.58	$96,982	360,061	$0.27
3	SFR Tier 3	2.51	$327,884	542,137	$0.60
4	MFR	1.36	$24,512	129,521	$0.19
5	Commercial	1.66	$60,434	203,834	$0.30
6	Agricultural	1.59	$54,305	1,996,787	$0.03
7	TSAWR Dom Tier 1	1.11	$11,077	111,958	$0.10
8	TSAWR Dom Tier 2	1.58	$66,802	248,013	$0.27
9	TSAWR Dom Tier 3	1.73	$65,984	2,042,956	$0.03
10	TSAWR Com	1.61	$48,020	1,715,360	$0.03
11	Institutional	1.88	$13,864	36,984	$0.37
12	Construction	3.57	$25,746	25,959	$0.99
13	**Total Costs of Service**		**$837,661**	**$42,050**	

Revenue Offset

Table 6-14 shows the derivation of the Revenue offset. The property tax revenue shown in the cost of service section (Table 5-10, column 8, line 13) was spread over all usage except construction.

Table 6-14: Derivation of Revenue Offset

Line No.	Customer Class	Annual Usage (1)	Unit Rate (2)	Revenue Offset (3)
1	SFR Tier 1	425,002	($0.10)	($43,675)
2	SFR Tier 2	360,061	($0.10)	($37,002)
3	SFR Tier 3	542,137	($0.10)	($55,713)
4	MFR	129,521	($0.10)	($13,310)
5	Commercial	203,834	($0.10)	($20,947)
6	Agriculture	1,996,787	($0.10)	($205,200)
7	SAWR Domestic Tier 1	111,958	($0.10)	($11,505)
8	SAWR Domestic Tier 2	248,013	($0.10)	($25,487)
9	SAWR Domestic Tier 3	2,042,956	($0.10)	($209,945)
10	SAWR Commercial	1,715,360	($0.10)	($176,279)
11	Institutional	36,984	($0.10)	($3,801)
12	Construction	0	$0.00	$0
13	**Total**	**7,812,614**		**($802,864)**

Final Rate Derivation

We have calculated the unit rates for supply, delivery, TSAWR Offset, peaking, and revenue offset for each class and tier in Tables 6-10 through 6-14. Table 6-15 shows the final Commodity rate (column 7) which was determined by summing each unit cost for each tier and class. Note that the total revenue shown in line 19, column 9, nearly matches the revenue requirement derived in Table 5-5 and shown in line 29 with a slight difference due to rounding.

Table 6-15: Derivation of Rates by Tier and Class

Line No.	Customer Class	Tier (1)	Supply (2)	Base (3)	SAWR Supply (4)	Peaking (5)	Revenue Offsets (6)	Proposed Rates ($/HCF) (7)	Usage (HCF) (8)	Commodity Revenue ($) (9)
1	**Single Family Residential**									
2	Tier 1	10	**$2.59**	**$0.72**	**$0.00**	**$0.10**	**($0.10)**	**$3.31**	425,002	$1,406,757
3	Tier 2	26	**$2.59**	**$0.72**	**$0.00**	**$0.27**	**($0.10)**	**$3.48**	360,061	$1,253,014
4	Tier 3	27+	**$2.59**	**$0.72**	**$0.00**	**$0.60**	**($0.10)**	**$3.81**	542,137	$2,065,540
5	**MFR**		**$2.59**	**$0.72**	**$0.00**	**$0.19**	**($0.10)**	**$3.40**	129,521	$440,370
6	**Commercial**		**$2.59**	**$0.72**	**$0.00**	**$0.30**	**($0.10)**	**$3.51**	203,834	$715,458
7	**Agriculture**		**$2.59**	**$0.72**	**$0.00**	**$0.03**	**($0.10)**	**$3.24**	1,996,787	$6,469,591
8	**TSAWR Domestic**									
9	Tier 1	10	**$2.59**	**$0.72**	**$0.00**	**$0.10**	**($0.10)**	**$3.31**	111,958	$370,580
10	Tier 2	26	**$2.59**	**$0.72**	**$0.00**	**$0.27**	**($0.10)**	**$3.48**	248,013	$863,086
11	Tier 3	27+	**$2.59**	**$0.72**	**($0.47)**	**$0.03**	**($0.10)**	**$2.77**	2,042,956	$5,658,987
12	**TSAWR Commercial**		**$2.59**	**$0.72**	**($0.47)**	**$0.03**	**($0.10)**	**$2.77**	1,715,360	$4,751,547
13	**Institutional**		**$2.59**	**$0.72**	**$0.00**	**$0.37**	**($0.10)**	**$3.58**	36,984	$132,404
14	**Construction**		**$2.59**	**$0.72**	**$0.00**	**$0.99**	**$0.00**	**$4.30**	25,959	$111,624
15	**Subtotal**								**7,838,573**	**24,238,960**
16	RMWD O&M Fixed Charges									$5,128,076
17	SDCWA Fixed Charges									$4,938,876
18	Pumping Revenue									$618,386
19	Total Revenue									$34,924,298
20	Revenue Requirement									$34,879,285
21	Difference (Due to Rounding)									$45,013

Based on discussions with District staff, agriculture customers with a residence on the property will be subject to the Single Family Residential Tier 1 and Tier 2 Rates similar to TSAWR Domestic customers. Table 6-16 shows the proposed agriculture commodity rates for customers with a residence on the parcel.

Table 6-16: Agriculture with Residence Commodity Rates

Customer Class	Tier Width	Proposed FYE 2016 Commodity Rate ($/HCF)
Agriculture (with Residence)		
Tier 1	1-10 HCF	**$3.31**
Tier 2	11 - 26 HCF	**$3.48**
Tier 3	27 & above	**$3.24**

6.5 PROPOSED PUMPING CHARGES

The Pumping Charges consist of a fixed component designed to recover the general maintenance and salaries costs related to the pumping facilities and a commodity component designed to recover the electricity costs associated with pumping water to the higher elevations.

Table 6-17 shows the derivation of the monthly pumping fixed charge. The District provided the breakdown of annual fixed pumping costs related to pumping water to higher elevations. The annual fixed pumping costs (line10) were then divided by the total number of meters (line 11) located in the

pumping zones to determine the annual fixed charge per meter. The annual charge was then divided by 12 to determine the monthly charge (line 12).

Table 6-17: Derivation of Monthly Pumping Fixed Charge

Line No.	Cost Description	Pumping Fixed Costs
1	**Salaries and Benefits**	
2	Wages and Salaries	$63,334
3	Benefits	$33,242
4	**Total S&B**	$96,576
5	**Other Expenses**	
6	Equipment Maintenance	$30,673
7	Buildings Maintenance	$63
8	Supplies and Services	$10,487
9	**Total Other Expenses**	$41,223
10	**Total Pumping Fixed Costs**	**$137,799**
11	# of Pumping Zone Meters (year)	14,484
12	**Fixed Pumping Charge ($/Meter)**	**$9.51**

Next, the variable pumping costs (electricity costs) identified in the budget (Table 3-2, line 12) were allocated to each of the pumping zones in proportion to the existing rates[34]. Table 6-18 shows the proposed pumping rates by zone as well as the costs allocated to each zone.

Table 6-18: Derivation of Pumping Commodity Rates

Line No.		Pump Zone (1)	Total Annual Consumption (hcf) (2)	Current Charge (3)	Calc Reveue (Current Charge * Annual Consumption) (4)		Revenue Requirement (5)	Proposed Rate ($/hcf) (6)
1	01	Rainbow Heights	222,402	$0.43	$95,633	35.4%	$170,290	**$0.77**
2	02	Improvement District U-1	57,353	$0.27	$15,485	5.7%	$27,574	**$0.48**
3	03	Vallecitos	110,437	$0.15	$16,566	6.1%	$29,498	**$0.27**
4	04	Northside	471,649	$0.05	$23,582	8.7%	$41,992	**$0.09**
5	05	Morro Tank	178,983	$0.08	$14,319	5.3%	$25,497	**$0.14**
6	06	Huntley	269,828	$0.31	$83,647	31.0%	$148,947	**$0.55**
7	07	Magee Tank	14,549	$1.42	$20,660	7.7%	$36,789	**$2.53**
8	Total				$269,892		$480,587	

The total annual consumption (column 2) times the current charge (column 3) equals the calculated revenue (column 4). Column 4 also shows what percentage of the total calculated revenue is attributable to each zone. The total revenue requirement (or electricity costs shown in column 5, line 8) are then allocated to each zone based on the percentage shown in column 4. The proposed pumping commodity rate (column 6) was determined by dividing the total requirement (column 5) by the annual consumption (column 2).

[34] Electricity costs by pumping zone was not available at the time of this study. The District intends to segregate this data moving forward. District staff verified the resulting pumping charges seemed reasonable based on their knowledge of the zones.

7 BILL IMPACTS

Section 7 demonstrates the customer bill impacts for several of the District's customer classes assuming the revenue adjustments under the selected Financial Plan. The graphs shown include SDCWA pass through charges for FYE 2016. Future increases from SDCWA will be passed-through at the time of the increase and will be in addition to the increases under the selected Financial Plan.

The meter size for each graph is shown in the title and the bills corresponding to various points of use (for example 5, 15, 25 and 35 HCF) are shown on the horizontal axis. Note 1 HCF = 748 gallons = or 1 unit of water.

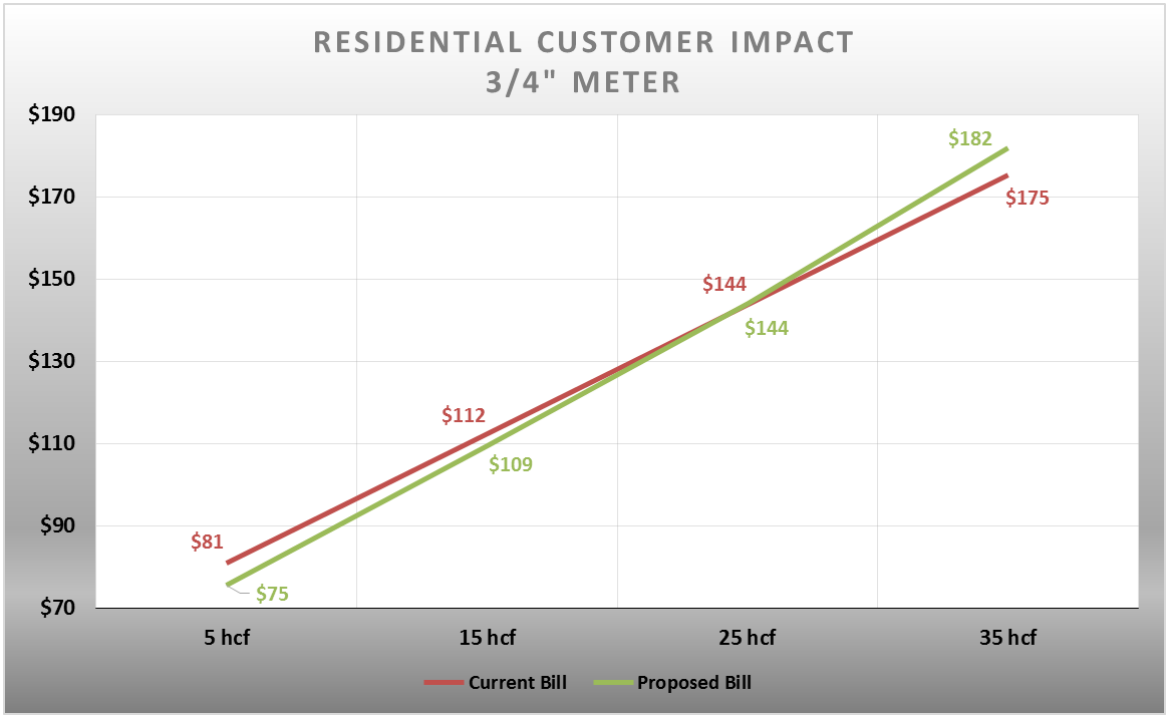
7.1 CUSTOMER BILL IMPACTS

Single Family Bill Impacts

Figure 7-1 shows the single family bill impacts for various use points inclusive of SDCWA charges. The graph shows two lines. The red line represents the bill assuming the existing rate structure and rates are unchanged. The green line represents the bill under the proposed rates. This color scheme remains unchanged for all graphs in this section.

As shown in Figure 7-1, SFR customers with a ¾" meter will see a reduction in their bill at lower levels of usage (approximately 3% reduction at 15 units) and an increase in their bill at higher levels of usage (approximately 4% increase at 35 units).

Figure 7-1: Single Family Residential Customer Bill Impact



Agriculture Bill Impacts

Figure 7-2 shows the bill impacts for agriculture properties with a residence on the parcel. Figure 7-3 shows the agriculture bill impacts for agriculture properties without a residence on the parcel.

Figure 7-2: Agriculture with Residence Customer Bill Impact

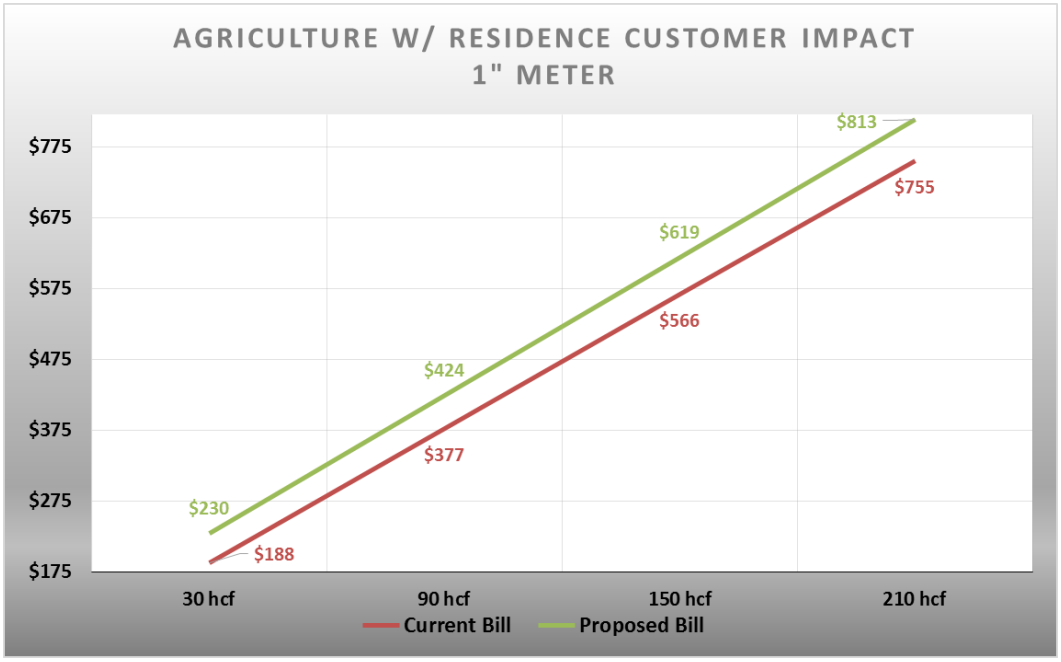
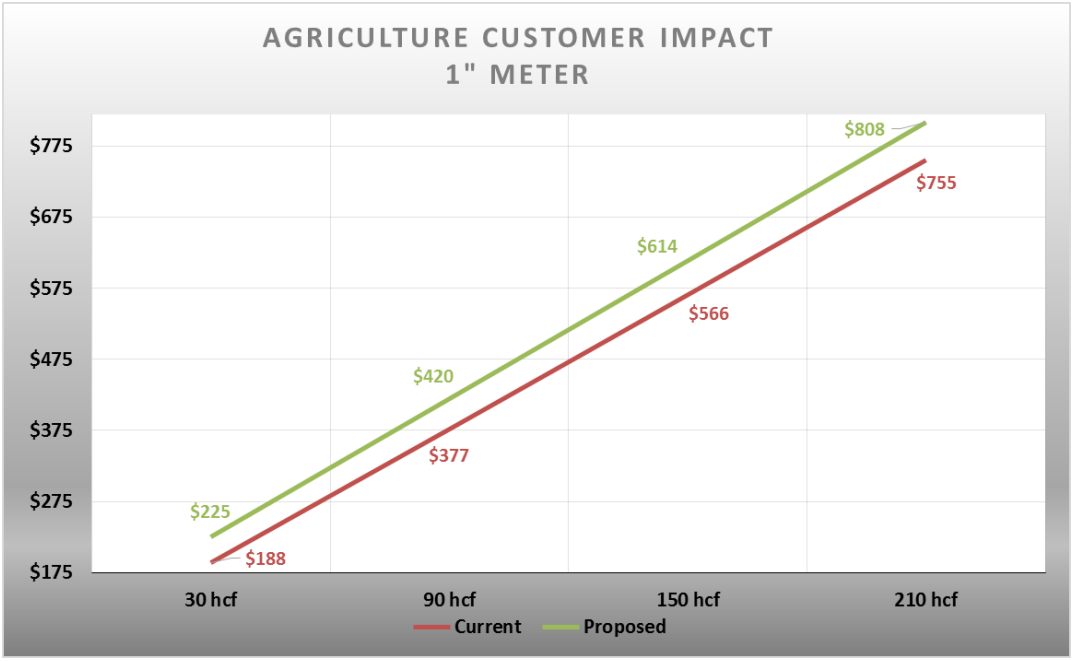


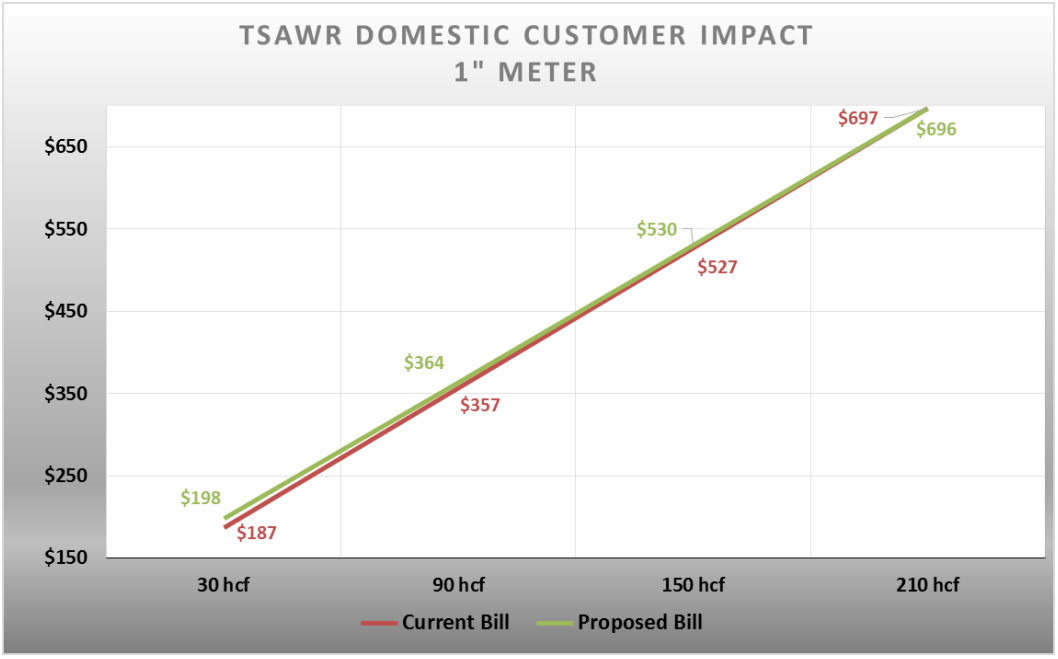
Figure 7-3: Agriculture without Residence Customer Bill Impact



TSAWR Domestic Bill Impacts

Figure 7-4 shows the TSAWR Domestic bill impacts for customers with a 1" meter. As shown, TSAWR Domestic customers at usage levels below 210 units will see a slight increase whereas customer with greater than or equal to 210 units will see a slight decrease in their bill.

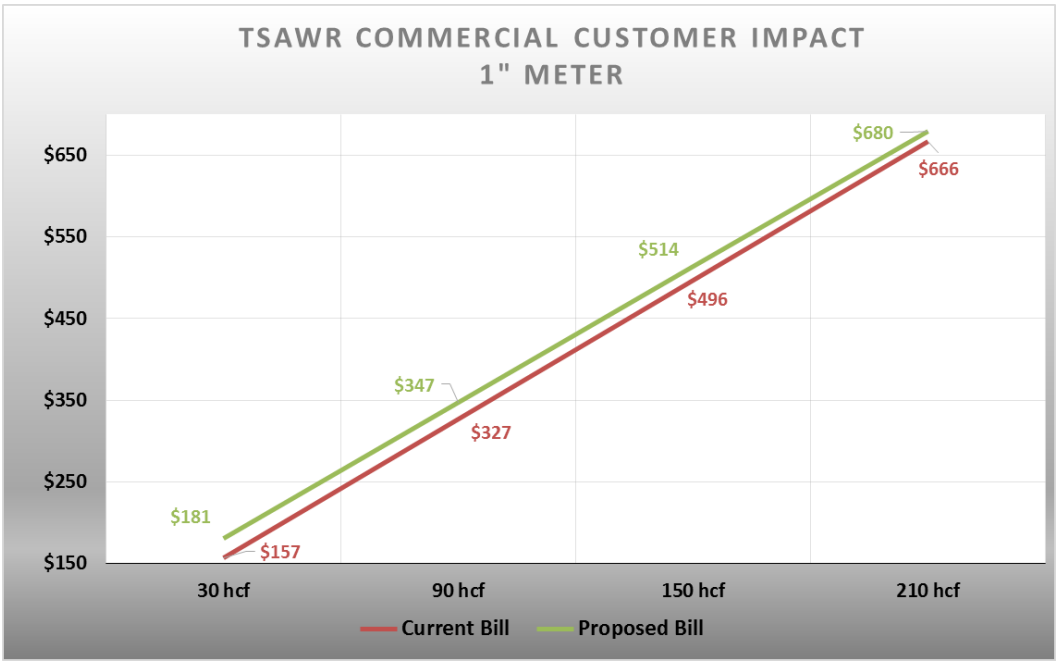
Figure 7-4: TSAWR Domestic Customer Bill Impact



TSAWR Commercial Bill Impacts

Figure 7-5 shows the TSAWR Commercial bill impacts for customers with a 1" meter. As shown, TSAWR Domestic customers will see a larger increase in bills at lower levels of usage. As the usage increases, the difference between the current and proposed bills will shrink resulting in a lower proposed bill at higher levels of usage.

Figure 7-5: TSAWR Commercial Customer Bill Impact



8 DEMAND REDUCTION RATES

8.1 DEMAND REDUCTION BACKGROUND

Given prevailing conditions in the state and long term conservation through efficiency gains and decreased water consumption, the District faces significant water demand reduction. Permanent conservation leads to less water sales and in turn less revenue. Depending upon agency specific characteristics (e.g., water supply) and the degree of fixed cost recovered from variable revenues, a reduction in water sales can impact the financial stability, staffing, capital planning, and overall health of the agency.

Demand Reduction Revenue Collection

With demand reduction, the District's revenue requirement (costs to be covered through rates) decreases along with total revenue. That is, as water sales decline, costs - predominantly from purchased water - decline. However the District's revenues decrease at a rate faster than its costs because a significant portion of fixed costs are recovered from variable rates. These fixed costs include debt service, salaries, and services, among other costs.

To maintain financial stability, provide water at the same level of service, and to achieve minimum reserve levels, it is necessary for the District to implement rates that recover lost revenue from demand reduction and recover the District's fixed costs.

Demand Reduction Levels

Table 8-1 shows demand reduction at four levels. These level were selected after several discussions with District staff. The percentages shown represent the reduction in SFR use relative to FYE 2015 usage. Section 8.2 further explains the demand reduction assumptions for each customer class and tier.

Table 8-1: Reduction Assumptions

Up to 15%	Up to 25%	Up to 30%	Up to 35%

8.2 DEMAND REDUCTION CALCULATION

The first step in calculating demand reduction rates is to estimate the cutback in use from each user class. Agricultural use is not subject to demand reductions, however, TSAWR use is subject to a 15% reduction mandated by MWD and SDCWA. RFC modelled the cutback in use by using District customer use data for FYE 2015 and establishing a minimum use level to provide for basic health and sanitation needs. This minimum use level represents essential indoor water use (10 HCF). This minimum allocation applies to the single family residential, agricultural, and TSAWR Domestic classes. 10 HCF is approximately equal to an indoor use of 60 gallons per day per person for a four-person household.

All remaining use is considered discretionary and is the target of the cutback assumptions in Table 8-1.

After applying the minimum allocation and the percentage reductions in Table 8-1, RFC determined the estimated cutbacks by class and by tier in Table 8-2. Note that TSAWR Domestic Tier 2 reductions are estimated at the same level as SFR Tier 2, while Tier 3 is estimated to be the same as TSAWR Commercial Tier 3. TSAWR Domestic exhibits characteristics in those tiers similar to the respective classes. The uniform rate classes (all other than SFR and TSAWR Domestic) are estimated as percentages of each level of reduction. For instance MFR is estimated to achieve 85% of the 15% reduction, or 13% in total. Similarly Commercial users are estimated to achieve 66% of the 15% reduction or 10% total. These differences acknowledge varying degrees of discretionary use for non-residential customers, as well as the fact that non-residential and MFR users are more likely to have dedicated irrigation meters. TSAWR Domestic Tier 3 and TSAWR Commercial will meet the SDCWA mandatory cutback at the Up to 30% reduction scenario. At the 30% and 35% reduction scenarios, agriculture customers will reduce usage by 10%.

Table 8-2: Reduction Assumptions, by Class

Customer Class	Up to 15%	Up to 25%	Up to 30%	Up to 35%
Single Family Residential				
Tier 1	0%	0%	0%	0%
Tier 2	23%	49%	45%	66%
Tier 3	68%	92%	91%	98%
MFR	13%	21%	26%	30%
Commercial	10%	17%	20%	23%
Agriculture	0%	0%	10%	10%
TSAWR Dom				
Tier 1	0%	0%	0%	0%
Tier 2	23%	49%	45%	66%
Tier 3	8%	13%	15%	18%
TSAWR Com	8%	13%	15%	18%
Institutional	10%	17%	20%	23%
Construction	0%	0%	0%	0%

After identifying class reductions, the percentages were applied to actual FYE 2015 water demand to determine the volumetric reductions in water sales. Using the estimated volumetric reduction in water use we calculated the estimated lost revenue. After calculating the reduction in water sales revenues we must account for savings due to lower water purchases and related expenses. Table 8-3 shows the estimated savings for each demand reduction level. The savings for water purchases is calculated by multiplying the estimated volumetric reduction (in acre feet) by the unit cost of purchased water. Pumping costs are assumed to have a linear relationship to water sold. As demand is reduced, pumping costs are reduced proportionally[35].

[35] Demand reductions are in relation to FYE 2015, however, the cost of service study already assumed a 6% reduction. Therefore, the proportional reduction in pumping costs was based on the reduction from the FYE 2016 estimated usage and represents the additional reduction beyond what was already assumed.

Table 8-3: Reduced Expenditures (Demand Reduction Savings)

Line No.		Demand Reduction Savings			
		Reduced Demand 15% (1)	Reduced Demand 25% (2)	Reduced Demand 30% (3)	Reduced Demand 35% (4)
1	Water Reduction, AF	882.62	2,111.81	2,786.16	3,446.52
2	Pumping % Cutback	11%	18%	22%	26%
3	Water Reduction Savings	$889,239	$2,127,647	$2,807,057	$3,472,364
4	Pumping - Electricity Cost Savings	$54,400	$87,228	$105,238	$122,874
5	Total Reduced Usage Savings	$943,639	$2,214,875	$2,912,294	$3,595,238
6	Net Revenue Lost after Savings (For One Year)	$2,060,321	$2,557,391	$2,756,554	$3,017,576
7	Estimated Net Revenue Lost for 6 Months (% of water sold July-Dec)	$1,183,619	$1,469,177	$1,583,593	$1,733,545
8	Optional Use of Rate Stabilization Funds	$0	$0	$0	$0
9	**Net Revenue Lost After Savings and After Rate Stabilization Fund Use**	**$2,060,321**	**$2,557,391**	**$2,756,554**	**$3,017,576**
10	**Reduced Usage Volumetric Revenue Requirement - All Classes**	**$23,295,320**	**$22,024,085**	**$21,326,665**	**$20,643,722**

Once savings are determined we can calculate the net revenue loss from demand reduction at each level. The net revenue loss is determined as the total revenue loss from reduced demand, less total savings. Table 8-4 shows the net revenue loss calculated for the four levels in the analysis.

Table 8-4: Net Revenue Loss

Line No.		Net Revenue Loss			
		Reduced Demand 15% (1)	Reduced Demand 25% (2)	Reduced Demand 30% (3)	Reduced Demand 35% (4)
1	Revenue Loss	$1,447,460	$3,215,765	$4,112,348	$5,056,313
2	Savings	($943,639)	($2,214,875)	($2,912,294)	($3,595,238)
3	Net Revenue Lost after Savings (For One Year)	$503,821	$1,000,890	$1,200,053	$1,461,075
4	Expected Volumetric Reduced Usage Revenue	$22,791,500	$21,023,195	$20,126,612	$19,182,647
5	Reduced Usage Volumetric Revenue Requirement	$23,295,320	$22,024,085	$21,326,665	$20,643,722
6	**% Increase**	**2.2%**	**4.8%**	**6.0%**	**7.6%**

We have now determined the net revenue loss to the District. Table 8-4 also adds the net revenue loss (line 3) to the expected revenue (line 4) at each level (proposed rate times expected usage) to determine the total revenue requirement (line 5) at each demand reduction level. We must compare the expected revenue requirement to the reduced revenue requirement to determine the difference in percentage terms (line 6). This percentage is the amount that proposed rates must be increased to recover the non-reduction revenue requirement.

Table 8-5 applies the percentage increases calculated in Table 8-4 to the proposed FYE 2016 volumetric rates to determine the demand reduction rates for all four levels.

Table 8-5: Water Demand Reduction Rates

Customer Class	Proposed Rates (FYE 2016)	Reduced Demand 15%	Reduced Demand 25%	Reduced Demand 30%	Reduced Demand 35%
% Increase Rates	N/A	**2.2%**	**4.8%**	**6.0%**	**7.6%**
Single Family Residential					
Tier 1	$3.31	$3.39	$3.47	$3.51	$3.57
Tier 2	$3.48	$3.56	$3.65	$3.69	$3.75
Tier 3	$3.81	$3.90	$4.00	$4.04	$4.11
MFR	$3.40	$3.48	$3.57	$3.61	$3.66
Commercial	$3.51	$3.59	$3.68	$3.72	$3.78
Agriculture	$3.24	$3.32	$3.40	$3.44	$3.49
TSAWR Dom					
Tier 1	$3.31	$3.39	$3.47	$3.51	$3.57
Tier 2	$3.48	$3.56	$3.65	$3.69	$3.75
Tier 3	$2.77	$2.84	$2.91	$2.94	$2.99
TSAWR Com	$2.77	$2.84	$2.91	$2.94	$2.99
Institutional	$3.58	$3.66	$3.76	$3.80	$3.86
Construction	$4.30	$4.40	$4.51	$4.56	$4.63

Where Table 8-5 shows the new demand reduction rates in total, Table 8-6 shows the increases to proposed rates in dollar terms for FYE 2016.

Table 8-6: Water Demand Reduction Rate Increases

Customer Class	Proposed Rates (FYE 2016)	Reduced Demand 15%	Reduced Demand 25%	Reduced Demand 30%	Reduced Demand 35%
% Increase Rates	N/A	**2.2%**	**4.8%**	**6.0%**	**7.6%**
Single Family Residential					
Tier 1	$3.31	$0.08	$0.16	$0.20	$0.26
Tier 2	$3.48	$0.08	$0.17	$0.21	$0.27
Tier 3	$3.81	$0.09	$0.19	$0.23	$0.30
MFR	$3.40	$0.08	$0.17	$0.21	$0.26
Commercial	$3.51	$0.08	$0.17	$0.22	$0.27
Agriculture	$3.24	$0.08	$0.16	$0.20	$0.25
TSAWR Dom					
Tier 1	$3.31	$0.08	$0.16	$0.20	$0.26
Tier 2	$3.48	$0.08	$0.17	$0.21	$0.27
Tier 3	$2.77	$0.07	$0.14	$0.17	$0.22
TSAWR Com	$2.77	$0.07	$0.14	$0.17	$0.22
Institutional	$3.58	$0.08	$0.18	$0.22	$0.28
Construction	$4.30	$0.10	$0.21	$0.26	$0.33

APPENDIX A:
CASH FLOW DETAIL

Cash Flow

Line No.	Rainbow Municipal Water District Cash Flow			Calculated FYE 2016	Projected FYE 2017	Projected FYE 2018	Projected FYE 2019	Projected FYE 2020
1	Rate Revenue Under Existing Rates			$32,904,986	$33,345,797	$34,470,712	$35,651,476	$36,891,641
	Additional Revenue Required:							
	Fiscal Year	Revenue Adjustment	Months Effective					
2	2016	6.00%	January	$987,150	$2,000,748	$2,068,243	$2,139,089	$2,213,498
3	2017	6.00%	January		$1,060,396	$2,192,337	$2,267,434	$2,346,308
4	2018	2.00%	January			$387,313	$801,160	$829,029
5	2019	2.00%	January				$408,592	$845,610
6	2020	2.00%	January					$431,261
7	Total Additional Revenue			$987,150	$3,061,144	$4,647,893	$5,616,274	$6,665,706
8	Total Service Charge Revenue			$33,892,136	$36,406,941	$39,118,604	$41,267,749	$43,557,347
	Other Revenue							
9	Other Operating Revenue			$95,500	$97,410	$99,358	$101,345	$103,372
10	Interest Income			$0	$96,099	$138,989	$106,408	$134,307
11	Property Taxes - Parcel Charge RTS			$486,481	$486,481	$486,481	$486,481	$486,481
12	Non-Operating Revenue			$346,383	$346,383	$346,383	$346,383	$346,383
13	**Subtotal Other Revenue**			$928,364	$1,026,373	$1,071,211	$1,040,617	$1,070,543
14	**TOTAL REVENUE**			**$34,820,500**	**$37,433,314**	**$40,189,816**	**$42,308,367**	**$44,627,890**
	EXPENSES							
	O&M Expenses							
15	Water Purchases			$19,759,584	$20,222,558	$20,906,757	$21,625,166	$22,379,495
16	Transportation			$979,603	$1,014,988	$1,049,329	$1,085,387	$1,123,247
17	Ready to Serve Charge			$527,580	$527,580	$527,580	$527,580	$527,580
18	Infrastructure Access Charge			$435,546	$436,656	$436,656	$436,656	$436,656
19	Customer Service Charge			$1,204,944	$1,205,412	$1,205,412	$1,205,412	$1,205,412
20	Capacity Reservation Charge			$622,440	$657,756	$657,756	$657,756	$657,756
21	Emergency Storage Charge			$1,778,478	$1,714,356	$1,714,356	$1,714,356	$1,714,356
22	Supply Reliability Charge			$369,888	$739,776	$739,776	$739,776	$739,776
23	AG Credit-SAWR			($1,768,355)	($1,813,987)	($1,875,360)	($1,939,802)	($2,007,466)
24	Salaries and Benefits			$6,287,561	$6,476,188	$6,670,474	$6,870,588	$7,076,706
25	Services and Supplies			$3,727,282	$3,840,066	$3,956,283	$4,076,037	$4,199,436
26	Pumping			$480,587	$504,616	$529,847	$556,340	$584,157
27	Capital Outlay			$504,976	$515,076	$525,377	$535,885	$546,602
28	**Total O&M Expenses**			**$34,910,114**	**$36,041,042**	**$37,044,243**	**$38,091,135**	**$39,183,712**
	Debt Service							
29	Existing Debt Service			$377,367	$1,104,794	$1,104,794	$1,104,794	$1,104,794
30	Proposed Debt Service			$0	$0	$0	$0	$0
31	**Total Debt Service Expenses**			**$377,367**	**$1,104,794**	**$1,104,794**	**$1,104,794**	**$1,104,794**
32	**TOTAL EXPENSES**			**$35,287,481**	**$37,145,837**	**$38,149,037**	**$39,195,929**	**$40,288,507**
33	**Transfers to (from) Reserves**[1]			**($466,982)**	**$287,477**	**$2,040,779**	**$3,112,437**	**$4,339,383**

[1] before capital expenses

Reserve Balances

Rainbow Municipal Water District Reserve Balances		Budgeted FYE 2016	Projected FYE 2017	Projected FYE 2018	Projected FYE 2019	Projected FYE 2020
Reserve Interest Rate		1.0%	2.0%	2.0%	2.0%	2.0%
Operating Reserve						
Beginning Balance		$9,720,447	$2,819,814	$2,938,745	$3,002,141	$3,067,629
Transfers to (from) Reserves1		($466,982)	$287,477	$2,040,779	$3,112,437	$4,339,383
Intermediate Balance		$9,253,465	$3,107,291	$4,979,524	$6,114,578	$7,407,011
Transfers In/ (Out) - Liability Self Insurance Reserve		($59,895)				
Transfers In/ (Out) - Water Capital Projects Reserve		($5,203,422)	($168,546)	($1,977,383)	($3,046,950)	($316,301)
Transfers In/(Out) - Rate Stabilization Reserve		($1,170,334)	$0	$0	$0	($3,303,673)
Transfers In/ (Out) - New Water Resources Reserve		$0	$0	$0	$0	$0
Ending Balance		**$2,819,814**	**$2,938,745**	**$3,002,141**	**$3,067,629**	**$3,787,037**
	Interest Income	$62,701	$57,586	$59,409	$60,698	$68,547
Min Balance - % of O&M	60 days	$2,819,814	$2,938,745	$3,002,141	$3,067,629	$3,135,281
Max Balance - % of O&M	90 days	$4,229,721	$4,408,118	$4,503,211	$4,601,443	$4,702,921
Water Capital Projects Reserve						
Beginning Balance		$0	$3,322,176	$230,664	$0	$3,009,923
Plus:						
Transfers from Operation Reserve		$5,203,422	$168,546	$1,977,383	$3,046,950	$316,301
Connection Fee / Capacity Revenue		**$597,434**	**$739,942**	**$1,793,680**	**$2,509,133**	**$2,618,497**
New Debt Issue		$0	$0	$0	$0	$0
Transfer from Rate Stabilization Reserve		$0	$0	$118,272	$0	$0
Less:						
Capital Projects		$2,478,680	$4,000,000	$4,120,000	$2,546,160	$2,622,545
Ending Balance		**$3,322,176**	**$230,664**	**$0**	**$3,009,923**	**$3,322,176**
	Interest Income	$16,611	$35,528	$2,307	$30,099	$63,321
		$3,322,176	$230,664	($118,272)	$3,009,923	$3,322,176
Target Balance - Average CIP	1 year(s)	$3,322,176	$3,322,176	$3,322,176	$3,322,176	$3,322,176
Liability Self Insurance Reserve						
Beginning Balance		$40,105	$100,000	$100,000	$100,000	$100,000
Plus:						
Transfers from Operation Reserve		$59,895	$0	$0	$0	$0
Less:						
Transfers Out - Expenditure						
Ending Balance		**$100,000**	**$100,000**	**$100,000**	**$100,000**	**$100,000**
	Interest Income	$701	$2,000	$2,000	$2,000	$2,000
Target Balance	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
New Water Sources Reserve						
Beginning Balance		$1,023,429	$1,023,429	$1,023,429	$1,023,429	$1,023,429
Plus:						
Transfers from Operation Reserve		$0	$0	$0	$0	$0
Less:						
Transfers Out - Expenditure						
Ending Balance		**$1,023,429**	**$1,023,429**	**$1,023,429**	**$1,023,429**	**$1,023,429**
	Interest Income	$10,234	$20,469	$20,469	$20,469	$20,469
Rate Stabilization Reserve						
Beginning Balance		$0	$1,170,334	$1,170,334	$1,052,061	$1,052,061
Plus:						
Transfers from Operation Reserve		$1,170,334	$0	$0	$0	$3,303,673
Less:						
Transfers Out - Expenditure		$0	$0	($118,272)	$0	$0
Ending Balance		**$1,170,334**	**$1,170,334**	**$1,052,061**	**$1,052,061**	**$4,355,735**
	Interest Income	$5,852	$23,407	$22,224	$21,041	$54,078
Target Balance - 10% of Sales	10%	$3,389,214	$3,640,694	$3,911,860	$4,126,775	$4,355,735

Figure A-1 shows the Water Capital Projects Reserve ending balances for each fiscal year in the Study Period. As shown in the figure, the reserves will be fully depleted in FYE 2018 and will not be sufficient to cover the capital projects scheduled during the year. It is anticipated that $118,272 will be transferred from the Rate Stabilization Reserve to cover the deficiency (this can be seen in the Reserve Balance table shown on the previous page). However, the reserve will begin to recover in FYE 2019 and will reach the target by FYE 2020.

Figure A-1: Water Capital Reserve

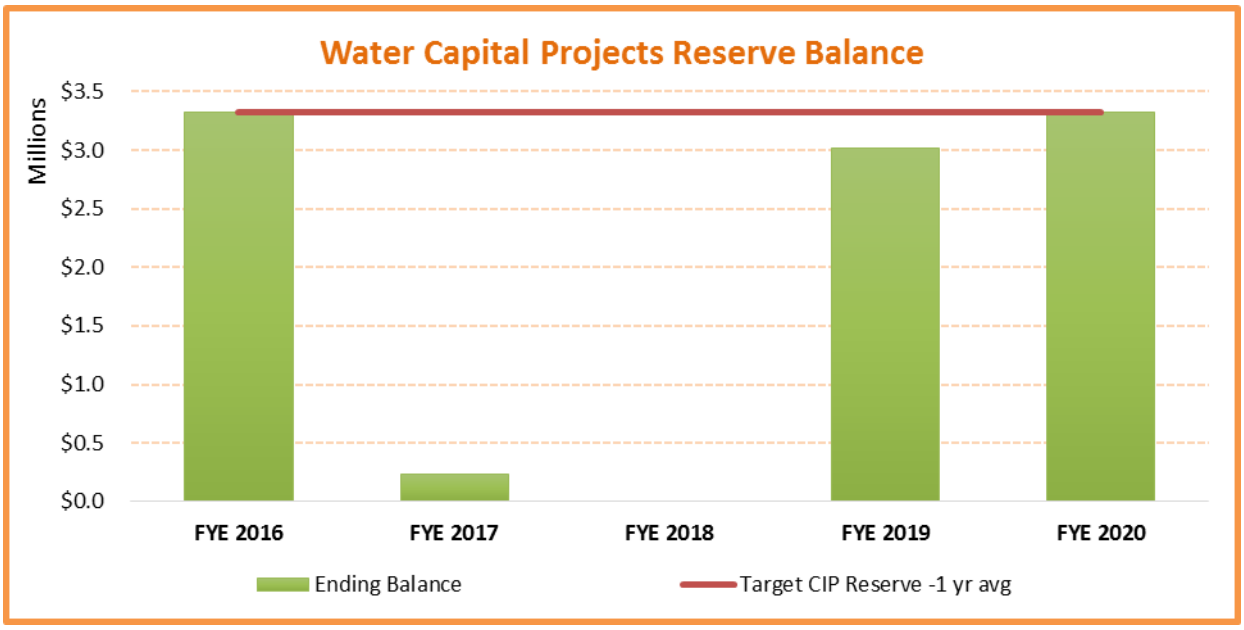


Figure A-2 shows the Liability Self Insurance Reserve. Based on the Financial Plan selected by the Board, this reserve will be funded at the targeted level of $100,000 for each year during the Study Period.

Figure A-2: Liability Self Insurance Reserve

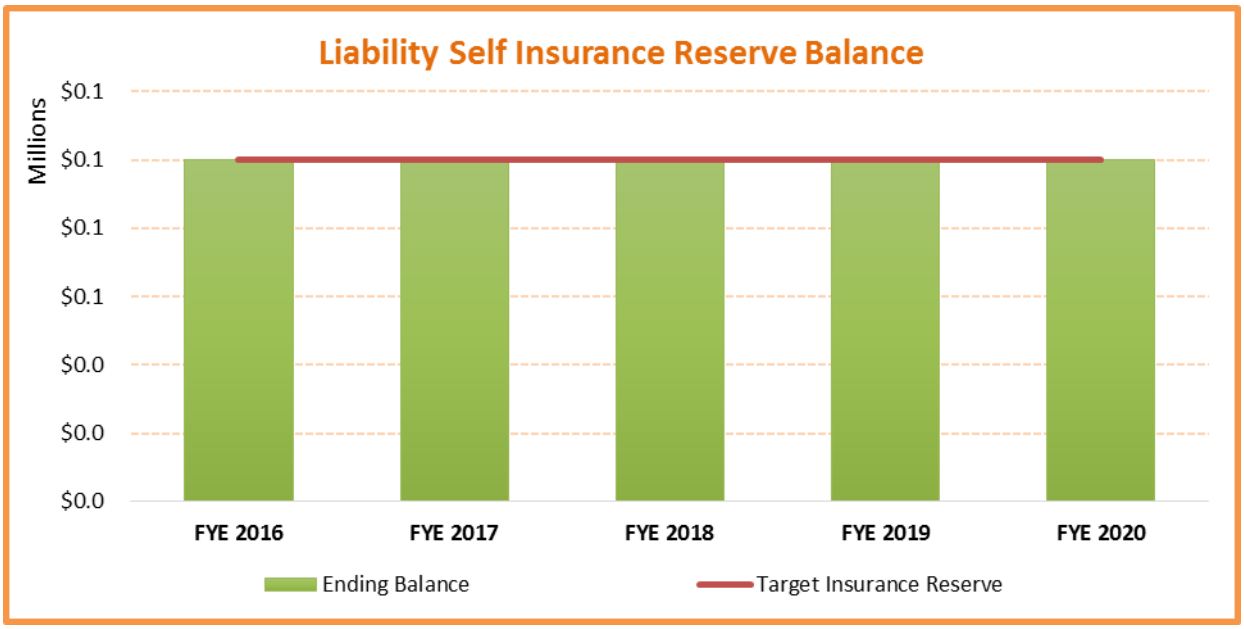


Figure A-3 shows the New Water Resource Reserve. This reserve is intended to fund new projects for developing new sources of water supply. During the Study Period, no additional funds were transferred in or out of the reserve.

Figure A-3: New Water Resource Reserve

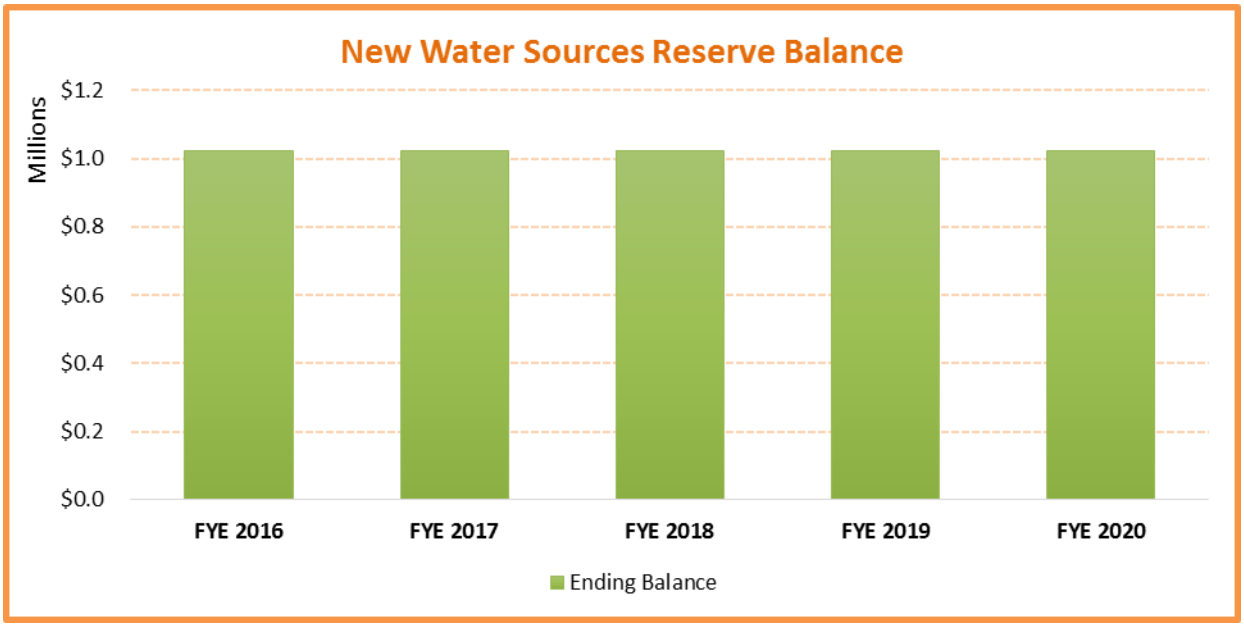
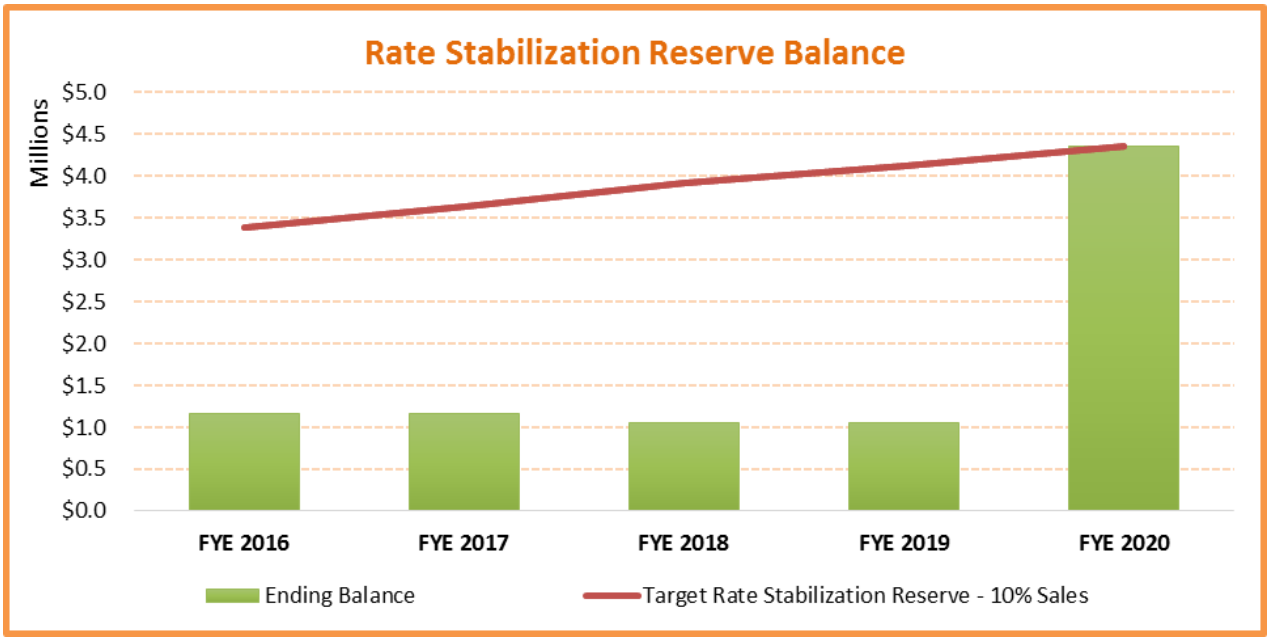


Figure A-4 shows the Rate Stabilization Reserve. RFC recommends establishing a rate stabilization reserve with a target reserve level of 10% of water sales. A Rate Stabilization Reserve is used in the event of any unforeseen circumstances or critical asset failures to help mitigate the impact to the District and ultimately the District's customers. RFC recommends building the reserves over the course of the Study Period. In addition, as mentioned earlier, approximately $100,000 will be used in FYE 2018 to offset rate increases and help fund capital expenditures.

Figure A-4: Rate Stabilization Reserve



APPENDIX B:
RMWD ASSET FUNCTIONALIZATION

RMWD Asset Functionalization

Line No.		Allocation Basis (1)	Supply (2)	Base (3)	Max Day (4)	Max Hour (5)	Fire Protection (6)	Meters (7)	Customer (8)	Total (9)
1	Assets									
2	Reservoir	**Reservoir**	0%	58%	32%	0%	10%	0%	0%	100%
3	Transmission	**Transmission**	0%	63%	37%	0%	0%	0%	0%	100%
4	Distribution	**Distribution**	0%	39%	21%	30%	10%	0%	0%	100%
5	Pumping	**Distribution**	0%	39%	21%	30%	10%	0%	0%	100%
6	Meters	**Meters**	0%	0%	0%	0%	0%	100%	0%	100%
7	Customer	**Customer**	0%	0%	0%	0%	0%	0%	100%	100%

		Supply (2)	Base (3)	Max Day (4)	Max Hour (5)	Fire Protection (6)	Meters (7)	Customer (8)	Total (9)
8	Assets								
9	Reservoir	$0	$26,402,500	$14,642,560	$0	$4,560,562	$0	$0	$45,605,622
10	Transmission	$0	$15,962,635	$9,417,955	$0	$0	$0	$0	$25,380,590
11	Distribution	$0	$14,693,606	$8,148,925	$11,421,266	$3,807,089	$0	$0	$38,070,886
12	Pumping	$0	$2,638,559	$1,463,318	$2,050,938	$683,646	$0	$0	$6,836,461
13	Meters	$0	$0	$0	$0	$0	$302,678	$0	$302,678
14	Customer	$0	$0	$0	$0	$0	$0	$3,702,765	$3,702,765
16	**TOTAL ASSETS**	**$0**	**$59,697,300**	**$33,672,758**	**$13,472,204**	**$9,051,297**	**$302,678**	**$3,702,765**	**$119,899,002**
17	% Allocation	0.0%	49.8%	28.1%	11.2%	7.5%	0.3%	3.1%	

APPENDIX C:
REVENUE OFFSET ALLOCATIONS

Revenue Offset Allocation

Line No.	Revenue Offset Allocation	Supply (1)	Base (2)	SAWR Supply (3)	Max Day (4)	Max Hour (5)	Fire Protection (6)	Meters (7)	Customer (8)	Revenue Offset (9)	Total (10)
1	Plan Check & Inspection	0%	50%	0%	28%	11%	8%	0%	3%		100%
2	New Development Services	0%	100%								100%
3	Misc. Other Charges	0%	100%								100%
4	Shut off fees	0%	50%	0%	28%	11%	8%	0%	3%		100%
5	Water Letter Fees	0%	50%	0%	28%	11%	8%	0%	3%		100%
6	Rent & Lease Revenue	0%	50%	0%	28%	11%	8%	0%	3%		100%
7	Property Taxes - Assessed Valuation	0%								100%	100%
8	Property Taxes - Parcel Charge RTS	0%								100%	100%
9	Interest Income - Unrestricted	0%	50%	0%	28%	11%	8%	0%	3%		100%
10	Other Non-Operating Income	0%	50%	0%	28%	11%	8%	0%	3%		100%
11	SAWR Credits	0%		100%							100%
12	Debt Funding	0%	50%	0%	28%	11%	8%	0%	3%		100%
13	**Total Revenue Offset Allocation**	**$0**	**$92,361**	**$1,768,355**	**$18,536**	**$7,416**	**$4,982**	**$167**	**$2,038**	**$802,864**	**$2,696,719**

APPENDIX D:
EQUIVALENT METERS

Equivalent Meters

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

Table D-1 shows the District's customers by class and by meter size. Equivalent meters are used in calculating meter service costs. The equivalent meter ratios used for this study are shown in Table D-2 and were based on AWWA Safe Maximum Operating Capacity (gallons per minute) by meter type. The ¾" meter is the base capacity against which all other meter ratios are scaled. For the purposes of both the RMWD O&M monthly charge and the SDCWA monthly charge, the ⅝" and ¾" meters are assumed to be equivalent.

Table D-1: Meter Counts by Class

Meter Size	SFR	MFR	Commercial	Agriculture	TSAWR Dom	TSAWR Com	Institutional	Total
⅝"	208	-	1	8	1	1	-	219
¾"	2,116	4	26	265	97	9	4	2,521
1"	1,896	39	79	821	573	72	4	3,484
1 ½"	127	10	26	135	210	76	5	589
2"	51	34	26	97	144	94	5	451
3"	3	-	6	7	6	10	1	33
4"	-	3	3	4	1	3	-	14
6"	-	-	-	1	-	-	-	1
	4,401	90	167	1,338	1,032	265	19	**7,312**

Table D-2: AWWA Meter Capacity Ratios

Meter Size	AWWA Capacity (gpm)	AWWA Capacity Ratio
⅝"	20	1.00
¾"	30	1.00
1"	50	1.67
1 ½"	100	3.33
2"	160	5.33
3"	350	11.67
4"	630	21.00
6"	1300	43.33

Table D-3 shows the equivalent meters by customer class. The equivalent meters were determined by multiplying the number of meters from Table D-1 by the corresponding capacity ratio from Table D-2.

Table D-3: Equivalent Meters

Meter Size	Meter Ratios	SFR	MFR	Commercial	Agriculture	TSAWR DOM	TSAWR COM	Institutional	Total
⅝"	1.00	208	-	1	8	1	1	-	219
¾"	1.00	2,116	4	26	265	97	9	4	2,521
1"	1.67	3,160	65	132	1,368	955	120	7	5,807
1 ½"	3.33	423	33	87	450	700	253	17	1,963
2"	5.33	272	181	139	517	768	501	27	2,405
3"	11.67	35	-	70	82	70	117	12	385
4"	21.00	-	63	63	84	21	63	-	294
6"	43.33	-	-	-	43	-	-	-	43
		6,214	347	517	2,818	2,612	1,064	66	13,638