moulton niguel water district

COST OF SERVICE STUDY REPORT 2017

MOULTON NIGUEL WATER DISTRICT
LONG RANGE FINANCIAL PLAN, POTABLE WATER, RECYCLED WATER, AND WASTEWATER COST OF SERVICE, AND RATE DESIGN REPORT

FINAL REPORT

Prepared by:

Moulton Niguel Water District
27500 La Paz Road
Laguna Niguel, CA 92677-3489

With Technical Support from:

ROBERT D. NIEHAUS, INC.
140 East Carrillo Street
Santa Barbara, CA 93101
(805) 962-0611

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EXECUTIVE SUMMARY

Moulton Niguel Water District (District) engaged Robert D. Niehaus, Inc. (RDN) to perform a peer review of the District's Long Range Financial Plan (LRFP) and Cost-of-Service (COS) analysis for the District's Potable Water, Recycled Water, and Wastewater Systems and assist the District in preparing a detailed report on the support for adjusting rates to reflect the cost of providing service to each of the District's customer classes. This Long Range Financial Plan, Potable Water, Recycled Water, and Wastewater Cost of Service, and Rate Design Report (Report) presents the aggregated findings of each of these analyses, culminating in a recommendation for a four-year rate schedule for each customer class of the District's three systems.

The District and RDN used standard water and wastewater ratemaking practices as described by the American Water Works Association (AWWA) and the Water Environment Federation (WEF) to calculate and review the proposed rates. The basis for the proposed rate schedule follows industry-accepted COS principals and complies with all State of California law requirements including Article XIII D Section 6, Article X Section 2, and the California Water Code. The proposed rates are designed to meet current and future revenue requirements of the District.

General Overview of Methodology

This project followed three major phases:

1. **Long Range Financial Plan (LRFP):** The LRFP develops detailed budget projections through FY 2026-27 for each of the District's individual systems. Based on the Revenue Requirements method for allocating costs, this analysis incorporates the latest forecasts of demand, operations and maintenance costs, capital expenditures, debt service, recycled water conversions, and conservation trends available into the District's financial planning model, in order to determine the adequacy of the existing rates to recover the cost of providing service. A key outcome of this analysis is the development of a rate revenue adjustment and capital financing plan for both the General Fund and the Water Use Efficiency (WUE) Fund. This Report relies on results and assumptions developed in detail in the District's Long Range Financial Plan report, attached as APPENDIX A.

2. **Cost of Service (COS)**: The system-specific revenue requirements identified in the LRFP are allocated among each system's customer classes in a multi-step process. For the selected test year (FY 2017-18), revenue requirements were broken down into functions such as pumping, supply, storage, transmission, fire protection, collections, customer service, billing, and general administration, among others. The District also allocates costs attributable to inefficient usage to functions within the Water Use Efficiency

(WUE) fund, which include rebate program administration and customer service, water resources and efficiency increases, and conservation. The requirements by function were classified according to their peak and base characteristics as well as their relationship to general administration of the District, customer service, and fire protection needs. Specific consideration was given to differing delivery costs, peaking factors, service characteristics, and demand patterns for service. This included a detailed review of system operations and usage data, peak demand relative to average demand, number of customers, customer service and accounting requirements, equivalent meter size, and public fire protection. The test year revenue requirements were then allocated by function and classification to each customer class commensurate with their relative system demands in order to determine the total cost of providing service for each of the specific customer classes.

3. **Rate Design:** After the revenue requirements identified in the LRFP were functionalized and proportionally allocated across each of the customer classes as part of the COS analysis, the existing rate structure is evaluated to determine its ability to continue equitably recovering revenue requirements and mitigate potential financial or operating risks. The goal of the Rate Design step is to determine the rate structure most appropriate for collecting rate revenues from each of the customer classes in a manner consistent with both the results of the COS analysis and the District's goals and objectives for pricing, and impact on customers. It is in this step that the District's property tax revenues and other unrestricted non-rate revenues are utilized to design a rate structure that provides a cost incentive to customers for the efficient use of essential water, minimizes the adverse bill impacts on customers that is customary in any COS analysis, while ensuring reasonable and prudent revenue stability for the District.

The computed numbers for the purposes of this study are rounded to the nearest decimal points, and sums of these numbers may therefore not add up to totals.

Financial Plan – General Fund

Prior to performing the COS analysis, District staff developed an updated LRFP Report, attached to this Report as APPENDIX A, which forecasts the District's operating budget and capital improvement program in order to determine the financial impact of future operating and capital needs, and develop appropriate strategies to address those needs. For the analysis required, the District has developed a long range financial planning model which internalizes financial and operational data of key aspects of the District such as rate revenue, property tax revenue, property leases, water purchases, utility costs, salaries and benefits, other miscellaneous revenues and

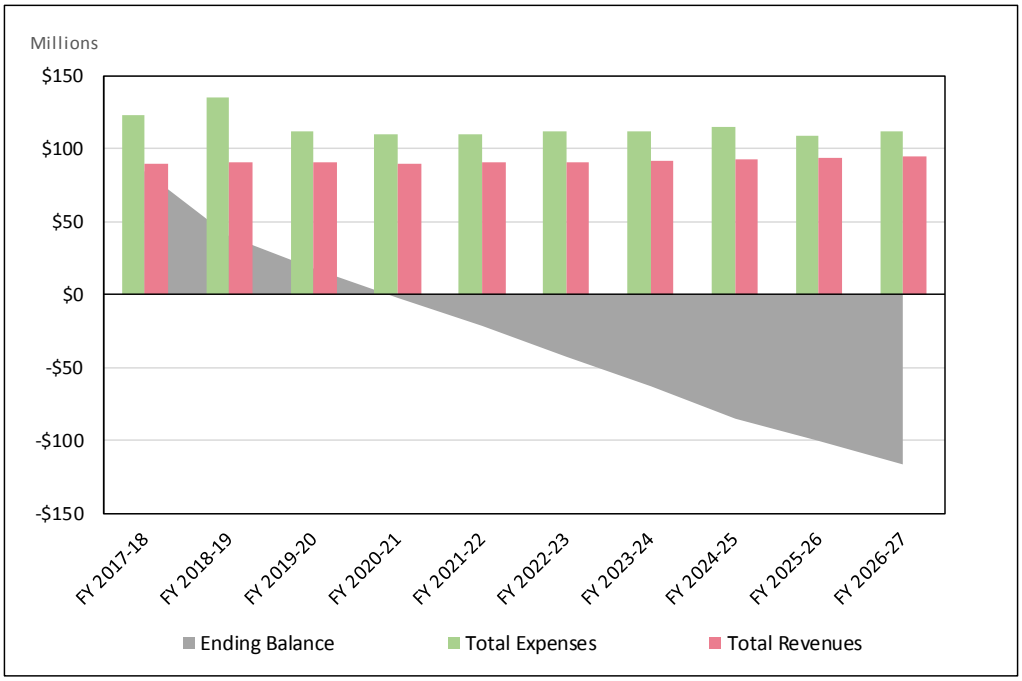
expenses, capital expense cash flows, long term investments, and debt service; and projects those factors over a 10-year planning horizon. This detailed information is linked to a summarized pro-forma income statement and balance sheet to enable the District to review the impact of ongoing and future changes to MNWD's operating cash, assets, liabilities, and fund balances. The long range financial planning model also monitors the impacts of changes in future financial plans on the key financial ratios that the District is required to maintain for debt covenants and credit-rating purposes. The District developed a long-range financial planning model to project the District's future revenues and expenditures for fiscal year (FY) 2017-18 through FY 2026-27. The model considers the costs of operations and maintenance (O&M), capital, and debt while it also accounts for non-rate revenues, rate revenues, reserve targets and financial performance metrics. The LRFP is aligned with the District's financial policies with respect to its debt service coverage ratio (DSCR: the measure of the net revenue to pay annual debt obligations) and reserve policies.

The model uses the most recent audited financial information, Board adopted budgets and Board adopted financial policies for the study period. Cost inflation assumptions were applied to specific expenditure categories, including assumptions regarding the future costs of water supply. The District's revenue requirements were organized into four components: O&M costs, capital costs (cash and debt service), reserve targets, and DSCR target. After reviewing the long term forecasts of the District's revenue requirements, three particular factors were identified as the primary drivers for future cost increases to the District: escalating costs from the District's regional wastewater treatment provider, need for continued reinvestment in infrastructure, and forecasted increases in wholesale water purchase costs.

Without the proposed rate revenue adjustments and bond issuances, General Fund ending balances will be approximately $28 million below reserve targets by FY 2018-19, and become negative by FY 2020-21. The District's DSCR is similarly affected: without the proposed rate revenue adjustments and bond issuances the DSCR falls below the adopted 1.75 target by FY 2021-22 and below bond covenant requirements of 1.25 by FY 2024-25.

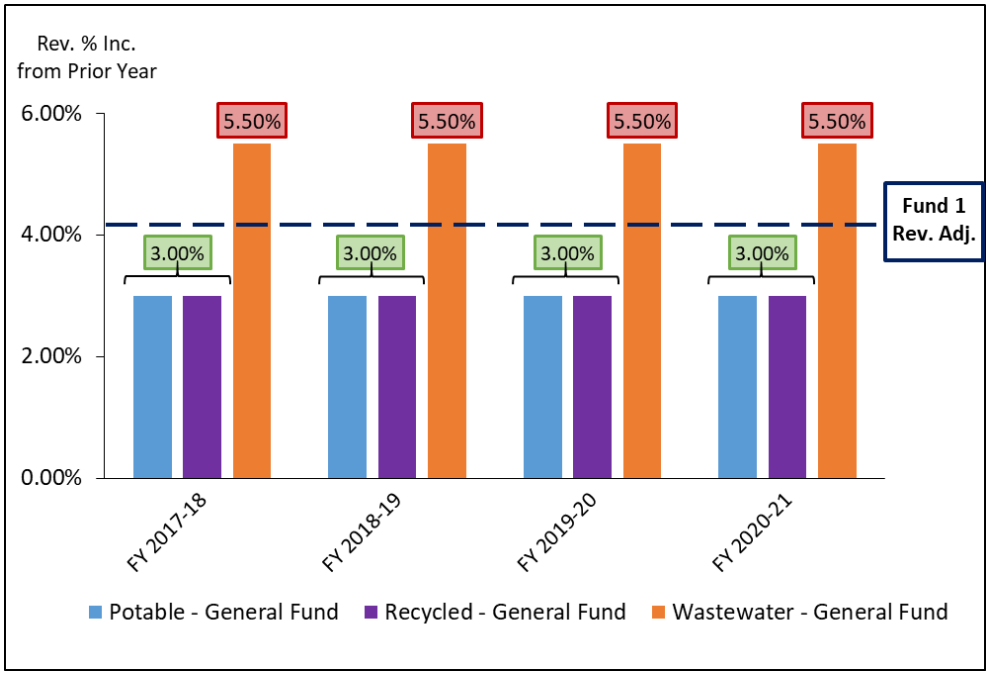
Figure ES-1 provides a 10-year forecast of the District's General Fund total expenditure and revenue projections, and respective ending cash balance without any rate revenue adjustment or supplemental financing for the next 10 years.

Figure ES-1. General Fund Total Expenditure, Revenue Projections, and Change in Ending Balance without Rate revenue adjustment or Supplemental Financing for FY 2017-18 – FY 2026-27



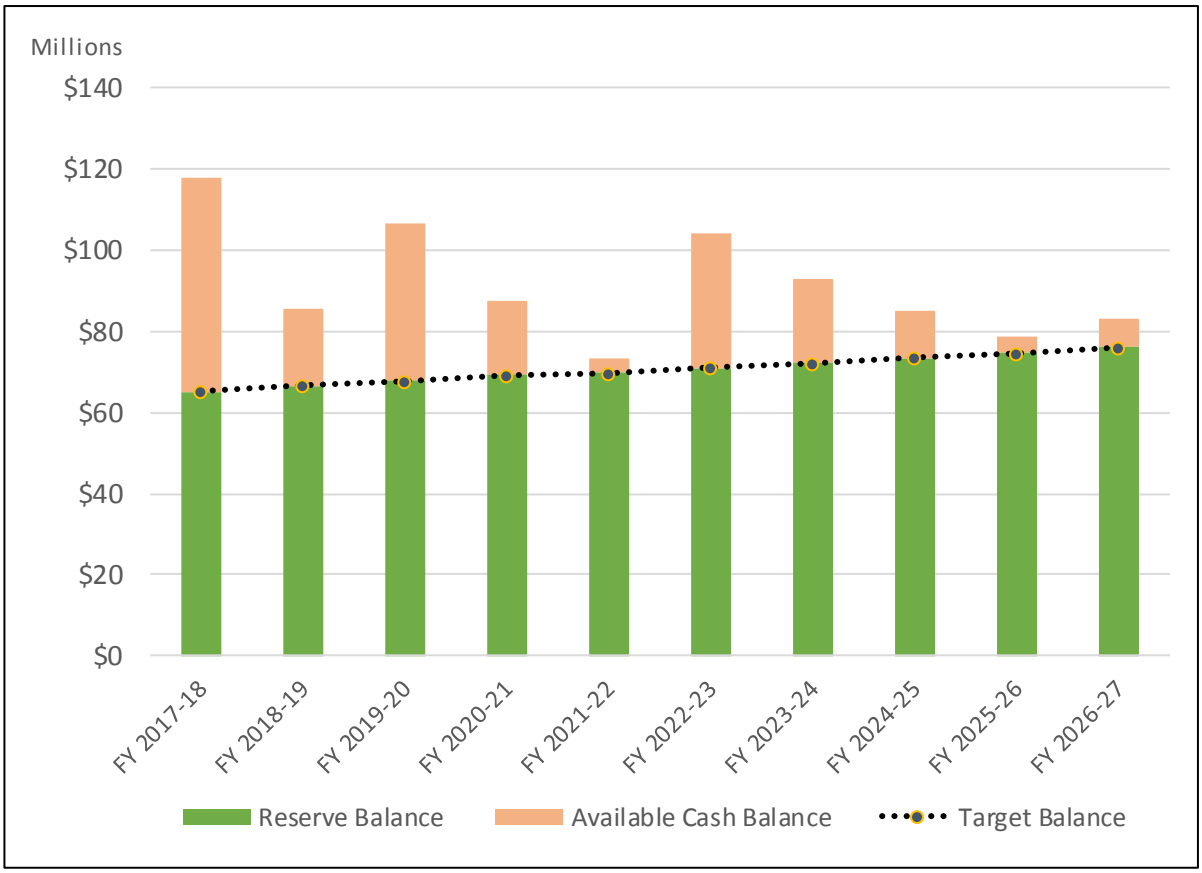
This Report confirms the recommendations identified in the LRFP Report in which the District would adopt a financial strategy that minimizes annual rate revenue adjustments by utilizing a combination of planned spenddown of available unrestricted cash balances and leveraging its strong credit ratings and available debt capacity to smooth out the costs of the immediate capital improvement projects. This Report also confirms the recommendation that the District adopts a 4-year schedule of adjustments to its General Fund rate revenues for each of its systems, as summarized in Figure ES-2. The annual rate revenue adjustments necessary for each system to meet projected revenue requirements, 3.0 percent annually for the potable and recycled water systems and 5.5 percent annually for the wastewater system, account for an overall 4.0 percent annual General Fund rate revenue adjustment. The recommended General Fund rate revenue adjustments are consistent with the rate plan that was developed as part of the 2014 LRFP Report and adopted as part of the 2015 COS Study. This result highlights the accuracy of the District's rigorous financial planning and robust rate structure design, as both the 2014 LRFP Report and 2015 COS Study were developed and adopted prior to implementation of State-mandated conservation targets.

Figure ES-2. General Fund Rate revenue adjustment



As noted above, the recommended financial strategy funds near-term capital spending by continuing the planned spenddown of available unrestricted cash balances and funds future capital projects by leveraging the District's strong credit ratings and debt capacity to facilitate capital market financings of approximately $62 million in 2018-19 and $42 million in FY 2021-22. Throughout the 10-year planning period the District's reserves will be maintained at levels consistent with targets identified in the District's adopted Reserve Policy. Figure ES-3 below provides a 10-year forecast of the District's General Fund reserve balance and available unrestricted cash balance under the recommended financial strategy.

Figure ES-3. General Fund Reserve Balance and Available Cash Balance, FY 2017-18 – FY 2026-27



Financial Plan – Water Use Efficiency (WUE) Fund

As was done for the General Fund, an updated LRFP was developed for the WUE Fund in which a 10-year forecast of operating and capital costs was created in order to understand the financial implications of the policies being considered as part of this study. A detailed discussion of the WUE Fund's financial plan can be found in APPENDIX A. Though similar methods were used to develop both plans, the underlying rationale for the WUE Fund plan differs from that of the General Fund plan, in that the WUE Fund plan separately accounts for the immediate costs and potential long term supply impacts attributable specifically to inefficient water use.

The District's customers are allocated a water budget calculated based on individual needs and certain parameters to promote the efficient use of water. Customers who use water inefficiently—in excess of their calculated water budgets—place greater demands on the District's Potable Water and Recycled Water Systems and supplies. Those customers who use more than their allocated water budgets are therefore subject to higher water use rates to offset the costs they create. The District maintains a strong cost nexus between increasing marginal supply costs and increasing rates by investing the incremental rate difference in alternative water supply programs, rebates,

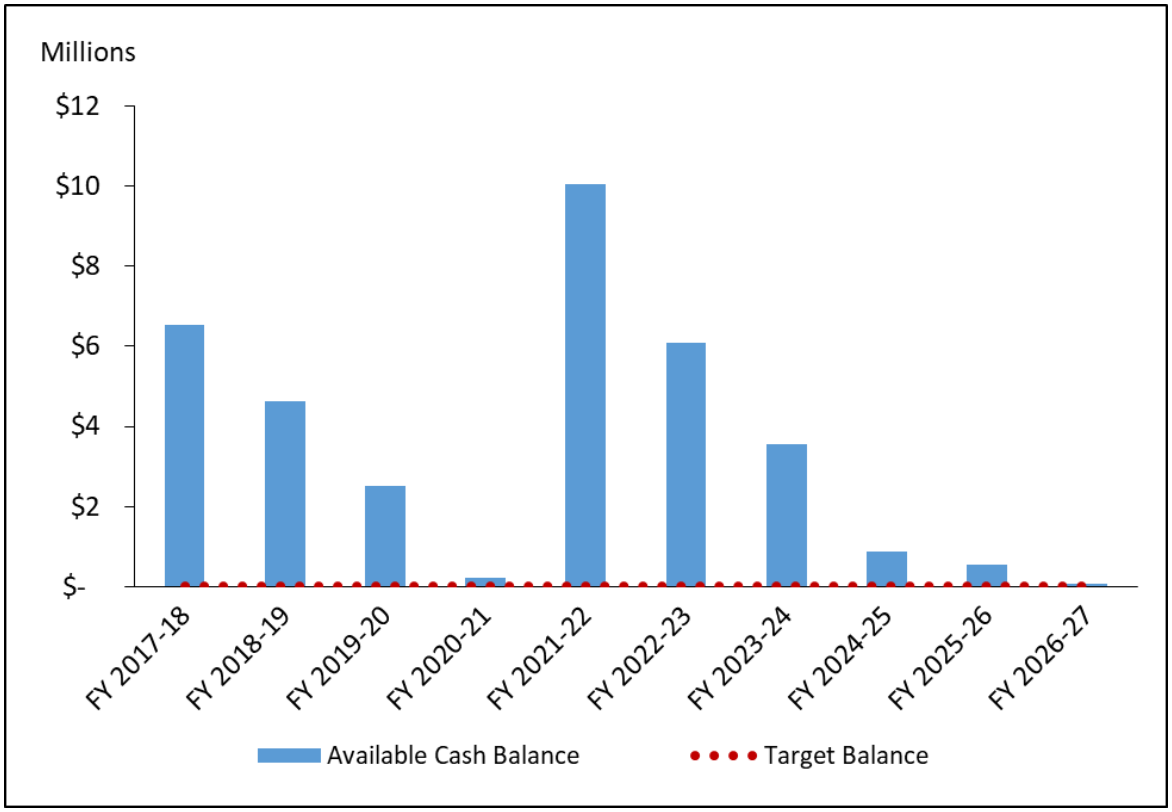
water conservation, and demand management, which measures to increase efficient uses of water and offset demand from inefficient water use.

It was important that the financial plan developed for the WUE Fund reflects the more active role the District has taken in the administration of its water use efficiency and rebate programs. The District must preserve the existing levels of efficiency, and account for potential rebounding of inefficient use of water as a result of reduced conservation messaging from the state and rescinding the District's Water Shortage Contingency Plan Stages I & II.

In addition to the costs associated with the ongoing management of the District's WUE and conservation programs, a portion of the capital costs associated with future water supply reliability enhancement projects have been allocated to the WUE Fund. There is a natural nexus between efficient water use and long-term supply reliability, as any reductions in inefficient water use decrease the size and ultimately cost of future supply reliability projects. Conversely, continued inefficient water use necessitates more costly reliability projects: the costs of which should be recovered from customers who use water inefficiently.

The District's continued investment in conservation efforts and rebate programs and its future supply reliability investments will draw down current WUE Fund balances within three years without an adjustment in rate revenue or a new bond issuance. Based on the revenue requirements and increased spenddown rate of WUE Fund balances, District staff is proposing a one-time adjustment to its WUE charges as part of the recommended four year rate revenue adjustments, specifically a total annual increase of $0.5 million in additional revenue requirements. The District has historically rate-funded all costs associated with the WUE Fund; however, staff is cognizant of the significant rate impact that continuing this approach would have on customers as well as the financial volatility in the fund historically. To mitigate the potential impacts to today's customers, District staff is also proposing that $15 million of the projected new money bond issuance in FY 2021-22 be allocated to the WUE Fund. Based on this proposed financial plan, the District will maintain sufficient WUE Fund through the remainder of the planning horizon. Staff considers the proposed funding strategy optimal as FY 2021-22 would coincide with the District's 2021 Long Range Financial Plan & Cost of Service analysis at which point WUE Fund revenue requirements would be re-evaluated. This strategy is sufficient to avoid a negative fund balance in any one year of the financial planning period and draw the fund down to the target balance of $0 over the ten year planning horizon as shown in Figure ES-4. The proposed plan addresses the significant program changes that have occurred since the development of the 2015 Long Range Financial Plan. If rebate program participation decline significantly from current levels, the proposed issuance will not be necessary and the unspent available cash will be used to fund future water supply reliability.

Figure ES-4. WUE Fund Ending Balance for FY 2017-18 – FY 2026-27



Cost-of-Service (COS) Analysis

The District's Potable Water System provides service to several customer classes, specifically: **Residential** (individually metered residential households), **Multi-family** (master-metered residential housing), **Commercial** (local businesses of varying size that may be either individually or master metered, of which a small minority receives potable water for outdoor irrigation), **Potable Irrigation** (accounts associated with one or more meters dedicated exclusively for providing potable water to meet irrigation demands), and **Fire Protection** (accounts associated with a private property for which dedicated fire suppression infrastructure has been installed and included in both prior and future fire-flow capacity design considerations). The Recycled Water System serves, almost exclusively, **Recycled Irrigation** (accounts associated with one or more meters dedicated exclusively for providing recycled water to meet irrigation demands). Though not subject to the provisions of California, Article XIII D, Section 6 (Proposition 218) because of their transitive nature, **Construction meters,** which temporarily connect to hydrants, subject to California Constitution Article XIII C, Section 1(e) (Proposition 26) and are accounted for in the COS analysis to ensure a comprehensive cost nexus. These meters provide recycled and potable water to contractors, developers, or other construction-oriented customers who require a relatively large

volume of water over a relatively short period of time and on an infrequent basis. To meet their needs, these customers acquire a temporary service connection from the District and are then charged the General Fund volumetric rate of their respective supply source based on the total volume delivered, as well as a monthly service meter fee, prorated over the period the temporary meter was in use.

The total rate revenue requirements shown in Table ES 1 below are determined by combining the O&M and capital costs, and subtracting the credits for non-rate revenues for each respective class. The values in the last column of the table are the rate revenue requirements by customer class.

Table ES 1: Potable Water and Recycled Water Rate Revenue Requirement by Customer Class

	a	b	c	d	a+b-c-d		
	Total O&M Revenue Requirements	Total Capital Revenue Requirements	Non-rate Revenue Credit	Property Tax	Total Rate Revenue Requirements	Reallocation of Public Fire Protection	Rate Revenue Requirements
Residential	$27,313,512	$8,520,548	$2,257,049	$15,518,983	$18,058,029	$411,116	**$18,469,145**
Multi-Family	$4,223,884	$1,175,973	$328,009	$2,381,785	$2,690,063	$97,034	**$2,787,097**
Commercial	$4,148,367	$1,258,147	$386,015	$2,485,236	$2,535,263	$74,740	**$2,610,003**
Potable Irrigation	$5,101,481	$2,134,051	$481,656	$3,058,153	$3,695,724	$54,453	**$3,750,177**
Construction Meter	$21,007	$10,596	$0	$0	$31,603	$1,062	**$7,775**
Recycled Irrigation	$5,290,584	$5,107,465	$807,853	$4,137,204	$5,452,991	$0	**$0**
Private Fire Protection	$864,334	$298,232	$0	$0	$1,162,565	$353,289	**$1,515,855**
Public Fire Protection	$410,888	$580,806	$0	$0	$991,694	-$991,694	**$0**
Total	**$47,374,057**	**$19,085,818**	**$4,260,582**	**$27,581,360**	**$34,617,933**	**$0**	**$29,140,052**

Table ES 2 summarizes the shift of cost responsibilities for potable and recycled water customers recommended by the COS analysis. The differences in cost allocations between the current and proposed rate structures range from a 0.3 percent decrease in the residential customers' cost allocation to a 0.2 percent increase in Fire Protection and Recycled Irrigation customers' allocation.

Table ES 2: Potable/Recycled Water System Current vs. Proposed Cost Allocations by Customer Class

	a	b	c	d	e = c - a	f = d - b
Customer Class	Revenues under Current Rate Structure	Cost Distribution (%)	Revenues under Proposed Rate Structure	Cost Distribution (%)	Cost Difference	% Difference
Residential	$20,574,284	55.2%	$21,351,642	54.9%	$777,359	-0.3%
Multi-Family	$2,833,692	7.6%	$2,958,490	7.6%	$124,797	0.0%
Commercial	$2,666,886	7.2%	$2,751,477	7.1%	$84,591	-0.1%
Irrigation	$4,078,575	11.0%	$4,270,026	11.0%	$191,451	0.0%
Fire Protection	$1,396,898	3.8%	$1,515,857	3.9%	$118,959	0.1%
Recycled Irrigation	$5,690,301	15.3%	$6,009,815	15.5%	$319,514	0.2%
Total	**$37,240,636**	**100.1%**	**$38,857,307**	**100.0%**	**$1,616,671**	

The methodology for allocating wastewater service costs is different from the COS methodology for water due to the fundamental difference in cost drivers. Customer characteristics for the Wastewater System are measured in terms of estimated wastewater flows and sewage loadings. Sewage loadings are a measure of strength or

concentration of the wastewater being discharged to the System. In addition to flow and strength, other cost drivers include bill processing, customer service, and other administrative services which are primarily driven by the number of customers connected to the collection system. The District's Wastewater System is comprised of single-family residential customers, multi-family residential customers, and commercial customers. Commercial customers are subdivided into four categories based on sewage strength that each customer class discharges

The total rate revenue requirements are determined by combining O&M and capital costs and subtracting the credits for non-rate revenues for each respective class. The values in the last column of the table below are the revenue requirements that were used when calculating the wastewater rates (Table ES 3).

Table ES 3: Wastewater Rate Revenue Requirements by Customer Class

	a	b	c	d	a + b - c - d
	Total O&M Revenue Requirements	Total Capital Revenue Requirements	Non-rate Revenue Credit	Property Tax	Total Rate Revenue Requirements
Residential	$12,971,413	$3,300,822	$758,269	$0	$15,513,966
Multi-Family	$2,955,385	$810,284	$250,875	$0	$3,514,794
Commercial 1	$917,476	$260,360	$84,670	$0	$1,093,166
Commercial 2	$838,680	$227,001	$107,876	$0	$957,805
Commercial 3	$688,925	$153,385	$37,631	$0	$804,679
Commercial 4	$345,826	$72,682	$15,052	$0	$403,456
Total	**$18,717,705**	**$4,824,534**	**$1,254,373**	**$0**	**$22,287,866**

The results of the COS analysis indicate that the differences in cost allocations between the current and proposed rate structures for the Wastewater System are minor ranging from a 0.9 percent decrease in the Residential customers' cost allocation to a 0.4 percent increase in the Commercial 2 and 3 customers' allocation reflecting the change in how customers use the System.

Table ES 4: Wastewater System Current vs. Proposed Cost Allocation by Customer Class

	a	b	c	d	e = c - a	f = d - b
Customer Class	Revenues under Current Rate Structure	Cost Distribution (%)	Revenues under New Proposed Structure	Cost Distribution (%)	Cost Difference	% Difference
Residential	$14,900,549	70.5%	$15,513,967	69.6%	$613,418	-0.9%
Multi-Family	$3,365,182	15.9%	$3,514,794	15.8%	$149,612	-0.1%
Commercial 1	$1,037,609	4.9%	$1,093,166	4.9%	$55,557	0.0%
Commercial 2	$824,171	3.9%	$957,806	4.3%	$133,635	0.4%
Commercial 3	$667,911	3.2%	$804,679	3.6%	$136,768	0.4%
Commercial 4	$330,518	1.6%	$403,455	1.8%	$72,937	0.2%
Total	**$21,125,940**	**100.0%**	**$22,287,867**	**100.0%**	**$1,161,927**	

Rate Recommendations

The District's rate schedule was designed to sufficiently recover rate revenue requirements and to comply with the results from the COS analyses. The District's recommended rate schedule should support and optimize its objectives: be compliant with all legal and regulatory standards, encourage efficiency of water use, minimize adverse impacts to customers, and assure reasonable and prudent revenue stability for the District. The recommended rate should work as an information tool in communicating these objectives to customers.

This Report recommends retaining the same basic rate structure for water rates with the following modifications:

1) Annual General Fund rate revenue increases of 3.0 percent, 3.0 percent, and 5.5 percent for the Potable Water, Recycled Water, and Wastewater Systems, respectively – adjustments necessary to ensure the amount of revenue required maintains the District's DSCR and reserve balance target

2) Reduction of the indoor allocation from 60 gallons to 55 gallons to be more aligned with the actual indoor water use within the District - the current average indoor water usage is 50 GPCD

3) Alignment of Potable Water System fixed-variable costs and revenues – The District projects Potable Water System General Fund variable (volume-related) costs to account for 33.1 percent of total FY 2017-2018 costs, but projects General Fund variable revenues to only account for 25.9 percent of the total. The District plans to realign its rate revenue structure with underlying costs by decreasing water service charges, and increasing volumetric rates. The adjustment will be phased in over four years by gradually shifting the allocation of *ad valorem* property tax revenues between volumetric rates and water services charges

4) Use of unrestricted non-rate revenues to continue providing a cost incentive for recycled water use - The District currently applies 93.0 percent of available property tax revenue to reduce potable water volumetric rates, and applies the remaining 7.0 percent to recycled water rates. This Report endorses the District's plan to increase the share of property tax applied to recycled water volumetric rates to 15.0 percent. The remaining 85.0 percent will be applied to offset potable water rates. This reallocation acknowledges the continued District-wide benefit provided by an affordable recycled water supply and the costs incurred by customers who have converted to recycled water, as well as incentivizing further adoption of recycled water.

5) A one-time 15.0 percent increase in FY 2017-18 to the rates (Tier 3, 4, and 5) funding the WUE program - This rate increase is required to enable the District to continue its rebate and water conservations programs, while preventing the WUE fund from having a negative balance during the projected years.

6) Reduction of the fixed, per-account monthly service charge for Residential and Multi-family customers and the addition of a per-person component to the wastewater rates' monthly service charges.

The water demand for FY 2017-18 is projected to be at the same level as that of FY 20016-17. The overall service charges will be decreased under the proposed rates while the volumetric charges will be increased. Thus, the District will experience no fiscal impact by making these changes to the rate structure and will remain revenue neutral.

Recommended Water & Recycled Water Rates

The proposed rate schedules for potable water and recycled water for FY 2017-18 are summarized in APPENDIX A. The recommended FY 2017-18 rate schedules for Water and Recycled Water are summarized in the table below. The recommended rate schedules were designed in order to meet the COS results by customer class and by customer within each customer class for each service. The rates were designed using a complex rate model in which anticipated revenues were calculated to meet each customer's revenue requirement based on the current water use patterns of existing customers.

Table ES 0-5 and Table ES 0-6 present a comparison of the existing and recommended water service charges by meter sizes and customer classes, and water usage rates by tiers and customer classes respectively.

Table ES 0-5: Recommended Water Service Charges for Potable and Recycled Water Customers ($/Meter Size in Inches)

Meter Size	Residential		Multi-Family		Commercial		Potable Irrigation		Recycled Irrigation	
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed
5/8"	$11.91	$11.22	$7.33	$10.78	$6.55	$5.54	$18.65	$18.06	$18.65	$18.06
3/4"	$11.91	$11.22	$7.33	$10.78	$6.55	$5.54	$18.65	$18.06	$18.65	$18.06
1"	$11.91	$11.22	$7.33	$10.78	$6.55	$5.54	$18.65	$18.06	$18.65	$18.06
1 1/2"	$39.73	$37.41	$24.45	$25.20	$21.84	$18.46	$62.15	$60.21	$62.15	$60.21
2"	$63.57	$59.85	$39.11	$37.56	$34.94	$29.54	$99.44	$96.34	$99.44	$96.34
3"	$139.06	$130.94	$85.57	$76.70	$76.42	$64.61	$217.54	$210.76	$217.54	$210.76
4"	$238.36	$224.46	$146.69	$128.19	$131.00	$110.76	$372.91	$361.29	$372.91	$361.29
6"	$497.00	$467.62	$305.85	$262.09	$273.14	$230.76	$777.51	$752.68	$777.51	$752.68
8"	$715.10	$673.37	$440.06	$375.38	$393.00	$332.29	$1,118.72	$1,083.86	$1,118.72	$1,083.86
10"	$1,152.50	$1,084.87	$709.24	$601.96	$633.39	$535.36	$1,803.00	$1,746.22	$1,803.00	$1,746.22

Table ES 0-6: Recommended Water Usage Rates for Potable and Recycled Water Customers ($/ccf)

Tiers	Residential		Multi-Family		Commercial		Potable Irrigation		Recycled Irrigation	
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed
Tier 1	$1.56	$1.69	$1.56	$1.69	$1.78	$1.94	$1.78	$1.94	$1.29	$1.39
Tier 2	$1.78	$1.94	$1.78	$1.94	$2.73	$3.32	$2.73	$3.32	$1.81	$2.51
Tier 3	$2.73	$3.32	$2.73	$3.32	$4.49	$5.12	$4.49	$5.12	$3.57	$4.31
Tier 4	$4.49	$5.12	$4.49	$5.12	$9.28	$9.59	$9.28	$9.59	$8.36	$8.78
Tier 5	$9.28	$9.59	$9.28	$9.59	-	-	-	-	-	-

Note: Potable volumetric rates above the $2.61/ccf threshold will be designated for the WUE Fund.

The threshold for Recycled Water is $1.79/ccf

The District also has a monthly service charge and volumetric usage charge for private fire protection and construction meters. These charges are reflected below in Table ES 0-7 and Table ES 0-8.

Table ES 0-7: Current vs. Proposed Monthly Charges for Private Fire Protection

Connection Size	Current Rate	Proposed Rate
5/8"	$3.95	$4.29
3/4"	$3.95	$4.29
1"	$3.95	$4.29
1 1/2"	$13.19	$14.31
2"	$21.11	$22.90
2 1/2"	$33.64	$36.50
3"	$46.17	$50.10
4"	$79.14	$85.88
6"	$164.88	$178.92
8"	$237.43	$257.65
10"	$382.52	$415.10

Table ES 0-8: Current vs. Proposed Construction Meter and Volumetric Charges

	Current	Proposed
Meter Charge ($/month)	$126.78	$60.74
Volumetric Charge ($/ccf)		
Potable Water	$2.71	$2.61
Recycled Water	$2.63	$2.15

Note: Assumed 3" meter is used

Recommended Wastewater Rates

The Wastewater System is comprised of Residential (single-family), Multi-Family, and Commercial customers. Commercial customers are assigned to one of the four classes described below based on land-use, and the rates for each of the Commercial customer classes are based on stregnth assumptions for a given land use. Using the results of the COS analysis, the District recommends the following wastewater rate schedule based on meter and household size (Table ES 0-9).

Table ES 0-9: Wastewater Variable Charges ($/Person in Household)/Meter Charges ($/Meter Size in Inches) Current vs. Proposed by Customer Class

	Residential		Multi-Family		Commercial 1		Commercial 2		Commercial 3		Commercial 4	
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed
Variable Rates (included in below rates)	-	$4.31	-	$4.31	-	-	-	-	-	-	-	-
Meter Size	**Residential**		**Multi-Family**		**Commercial 1**		**Commercial 2**		**Commercial 3**		**Commercial 4**	
	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed	Current	Proposed
5/8"	$26.22	$14.36	$28.58	$16.94	$20.66	$20.84	$44.02	$49.92	$90.56	$107.85	$97.70	$117.98
3/4"	$26.22	$14.36	$28.58	$16.94	$20.66	$20.84	$44.02	$49.92	$90.56	$107.85	$97.70	$117.98
1"	$26.22	$14.36	$28.58	$16.94	$20.66	$20.84	$44.02	$49.92	$90.56	$107.85	$97.70	$117.98
1 1/2"	$26.22	$14.36	$87.76	$51.38	$61.35	$64.39	$139.21	$161.31	$294.33	$354.40	$318.12	$388.15
2"	$26.22	$14.36	$138.50	$80.91	$96.23	$101.73	$220.81	$256.81	$469.01	$565.75	$507.08	$619.76
3"	$26.22	$14.36	$299.17	$174.42	$206.69	$219.98	$479.25	$559.23	$1,022.23	$1,235.12	$1,105.51	$1,353.26
4"	$26.22	$14.36	$510.54	$297.44	$352.02	$375.55	$819.25	$957.11	$1,750.04	$2,115.74	$1,892.81	$2,318.26
6"	$26.22	$14.36	$1,060.15	$617.32	$729.89	$780.05	$1,703.30	$1,991.64	$3,642.47	$4,405.47	$3,939.89	$4,827.39
8"	$26.22	$14.36	$1,525.19	$887.98	$1,049.61	$1,122.30	$2,451.32	$2,866.98	$5,243.70	$6,342.87	$5,671.99	$6,950.43
10"	$26.22	$14.36	$2,455.30	$1,429.31	$1,689.08	$1,806.83	$3,947.40	$4,617.72	$8,446.24	$10,217.77	$9,136.27	$11,196.63

Conclusion

This Report confirms the COS analysis and proposed rate structures were developed by the District using methodologies aligned with industry-standard practices for rate setting as promoted by the AWWA and WEF and all applicable laws, including California Water Code Section 372 et seq., Article XIII D Section 6 and Article X, Section 2 of the California Constitution.

The District's Water Budget-Based Rate Structure (WBBRS) has proven to be an effective demand-side management tool, allowing the District to equitably achieve reliability objectives while promoting efficient water

use. The tiered rate structure creates a strong price signal to customers who have exceeded their budgets, and any revenues collected beyond their allocations are immediately reinvested in programs and rebates to help those same customers stay within budget.

The District was one of two agencies in the State to receive approval of an Alternate Plan for Demand Reductions, as the District was able to successfully demonstrate that its water budget based rates were superior to watering restrictions to achieve demand reductions. This approach permits the District to achieve the stated goals of the Plan and allows customers to maintain choice in managing their household water needs. Additionally, the District's WBBRS was recognized by the State Water Resources Control Board as a best practice for California water agencies. Additionally, the California Department of Water Resources included the District's combined rate structure and Water Shortage Contingency Plan as a best practice and case study in Appendix N of the 2015 Urban Water Management Plan Guidebook.

The District's WBBRS and accompanying conservation and rebate programs have helped the District reduce its potable water purchases by over 36 percent since its peak use in 2007, during a period of economic recovery and population growth. We believe that WBBRS will continue to be an important demand-side management tool for the District as it continues to monitor water use behaviors and manage the State's limited water resources, while still complying with the mandates of the California Constitution governing property-related fees.

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1. INTRODUCTION

Moulton Niguel Water District (District or MNWD), with technical support from Robert D. Niehaus, Inc. (RDN), has prepared Long Range Financial Plan, Cost of Service, and Rate Design Report (Report) for the District's potable water, recycled water, and wastewater utility operations. MNWD planning staff and RDN developed recommendations for rates to charge MNWD customers that reflect the costs of providing service to specific classes of customers. These recommended rates would take effect on January 1, 2018.

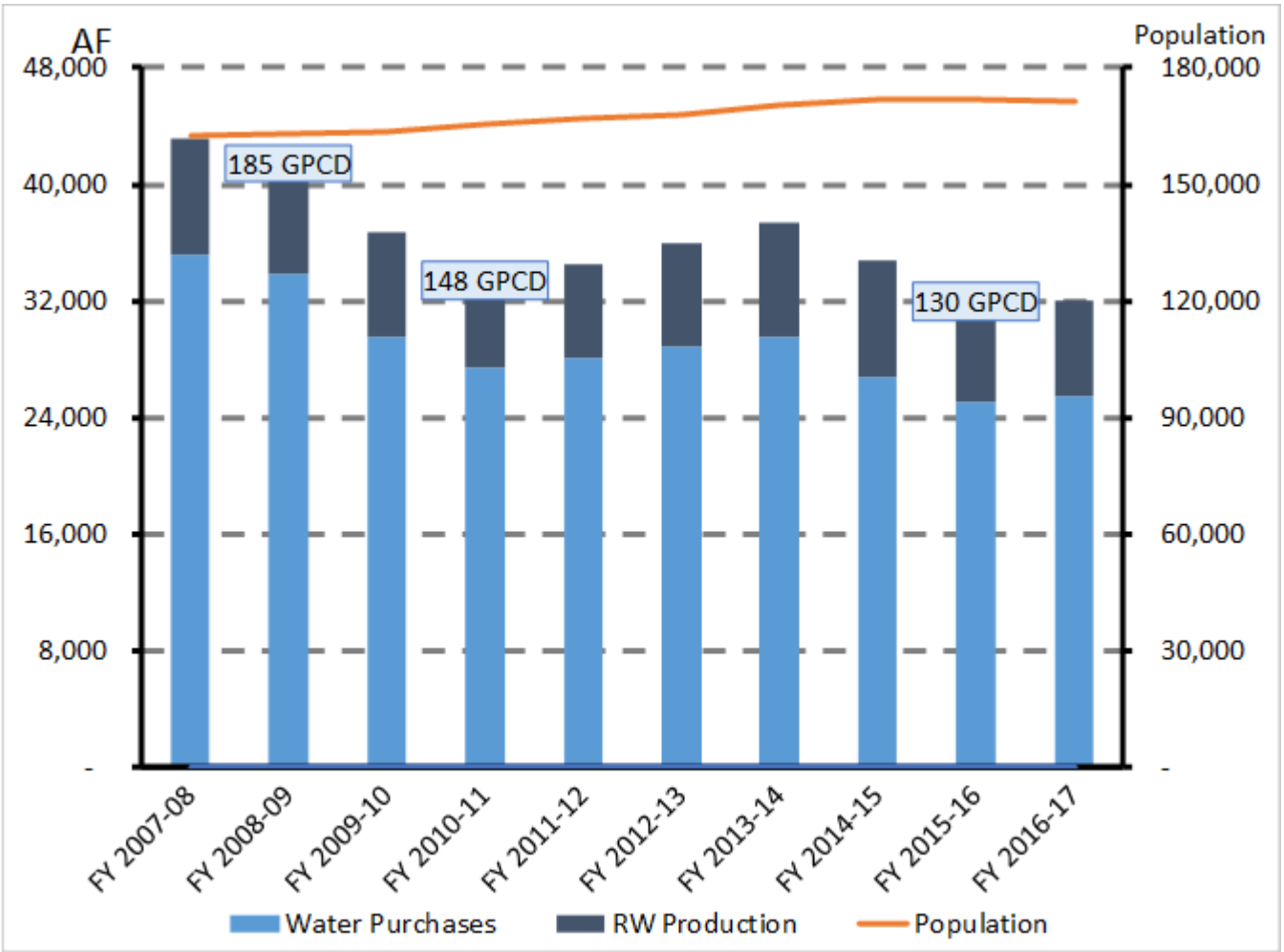
The District operates three utility services: (1) potable water distribution (Potable Water System), (2) recycled water distribution (Recycled Water System), and (3) wastewater collection and treatment (Wastewater System), collectively the "Systems." This Report presents the three components of an effective financial and service-pricing plan—the long range financial plan, the cost of service analysis, and the rate design—culminating in a recommendation for four-year rate schedules for each of the District's three systems.

1.1. System Overview

MNWD was formed in 1960 under the provisions of the California Water District Law, Division 13, of the Water Code of the State of California, commencing with Section 34000. In 1964, the District began operation and management of wastewater services previously provided by the County of Orange. MNWD expanded to provide recycled water for irrigation in 1974. Today, MNWD provides water, recycled water, and wastewater service to over 170,000 people within a 37-square-mile service area in South Orange County. Cities within the service area are Aliso Viejo, Laguna Niguel, Laguna Hills, Mission Viejo, and San Juan Capistrano as well as portions of the City of Dana Point. All of the District's potable water supply is currently imported from the Colorado River and Northern California by the Metropolitan Water District of Southern California (MWDSC) and delivered to the District by the Municipal Water District of Orange County (MWDOC). The District purchases both treated and untreated water from MWDOC, and processes the untreated water at the Baker Water Treatment Plant (WTP), which was completed in early 2017.

The District has decreased its potable water purchases in the last ten years from 36,679 acre-feet per year (AFY) in 2007 to 23,432 AFY in 2016, a reduction of over 36 percent. This has been accomplished by the District's several water-use efficiency programs, most notably the Water Budget Rate Structure (WBRS) and extensive rebate programs for its customers. This dramatic decrease occurred concurrently with a population increase of almost six percent since 2007 and a sustained economic recovery (Figure 1-1). Southern California is now out of emergency drought conditions due to the significant rainfall that occurred during the winter of 2016-2017. However, the District continues to review various alternative local water supply sources to identify additional opportunities to reduce dependence on imported water as well as implement demand management strategies and outreach programs to reduce water usage.

Figure 1-1. Moulton Niguel Water District (MNWD) Historical Potable Water Purchases, Recycled Water Production, and Service Area Population, FY 2007-08 – FY 2016-17



1.1.1. Potable Water Service

The District operates and maintains over 700 miles of potable water distribution pipelines and has 28 reservoirs on 18 sites located at the top of 7 pressure zones, for a total storage capacity of 70.0 million gallons (mg). The District also owns capacity rights in several adjoining water agencies' reservoirs and pipelines, such as El Toro Water District R-6 Reservoir, the Santa Margarita Water District Upper Chiquita Reservoir, the Joint Transmission Main (a joint powers agreement between the District and other water agencies), Eastern Transmission Main (jointly owned by the District and the City of San Juan Capistrano), and the Irvine Ranch Water District Interconnection. Elevation within the District ranges from 230 to 904 feet above sea level. The District has 30 pump stations to lift water from the lower pressure zones to the higher-pressure zones. The Potable Water System currently distributes water to 54,075 customer meters, 51,200 of which also receive wastewater service. Average daily potable water demand during calendar year 2016 was 19.7 million gallons per day (mgd). The District maintains approximately 7,300 public hydrants along with 20 pressure reducing stations and flow control facilities.

Figure 1-2 maps the service area, main takeout structures, pump stations, and reservoirs for the Potable Water System.

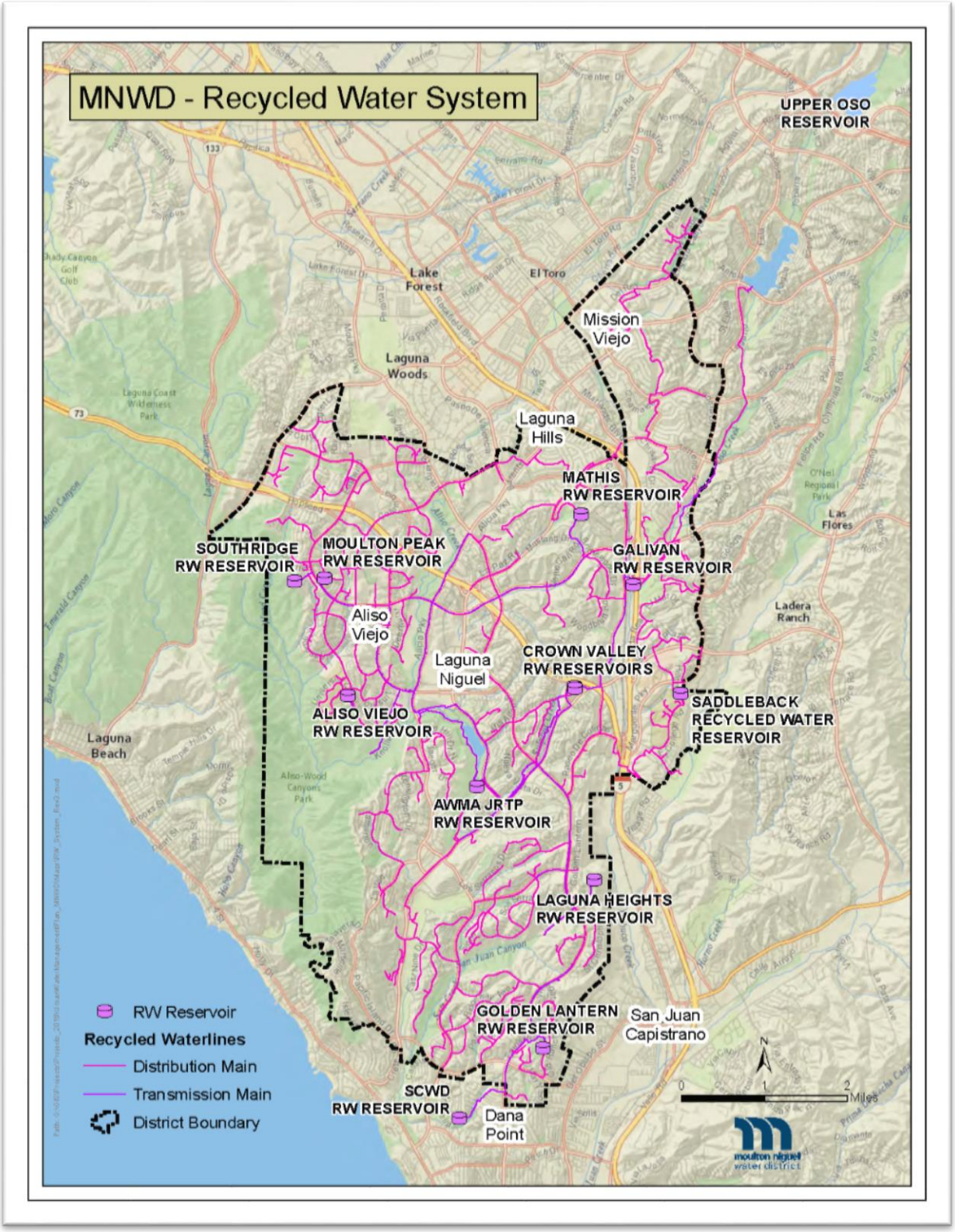
Figure 1-2. MNWD Potable Water System

1.1.2. Recycled Water System

It is the policy of the District to promote the use of recycled water to provide for the conservation and reuse of all water resources, and to utilize this resource for any approved purpose to the maximum extent possible under the laws of the State of California. This practice reduces the demand for potable water and thereby enables MNWD to minimize the need to import water from other regions. In 1974, the District became one of the first water purveyors in Orange County to deliver recycled water for irrigation use.

In 2016, MNWD supplied an average of 18.9 AF per day (AFD) of recycled water to 1,321 meters, and currently has a recycled water capacity of 42.4 AFD. The District has two Advanced Wastewater Treatment (AWT) facilities providing expansive recycled water service for landscaping. The District has constructed approximately 150 miles of recycled water distribution pipelines with five pre-stressed concrete and six steel storage reservoirs to service the recycled water system. In addition, the District owns 1,000 AF of capacity rights in the Upper Oso recycled water reservoir, which is primarily owned by Santa Margarita Water District. The District operates 13 recycled-water pump stations. MNWD has initiated a Recycled Water Master Plan to evaluate additional recycled water supply sources and available opportunities to expand its system. Figure 1-3 maps the Recycled Water System's service area, recycled water reservoirs, and recycled waterlines including distribution and transmission mains.

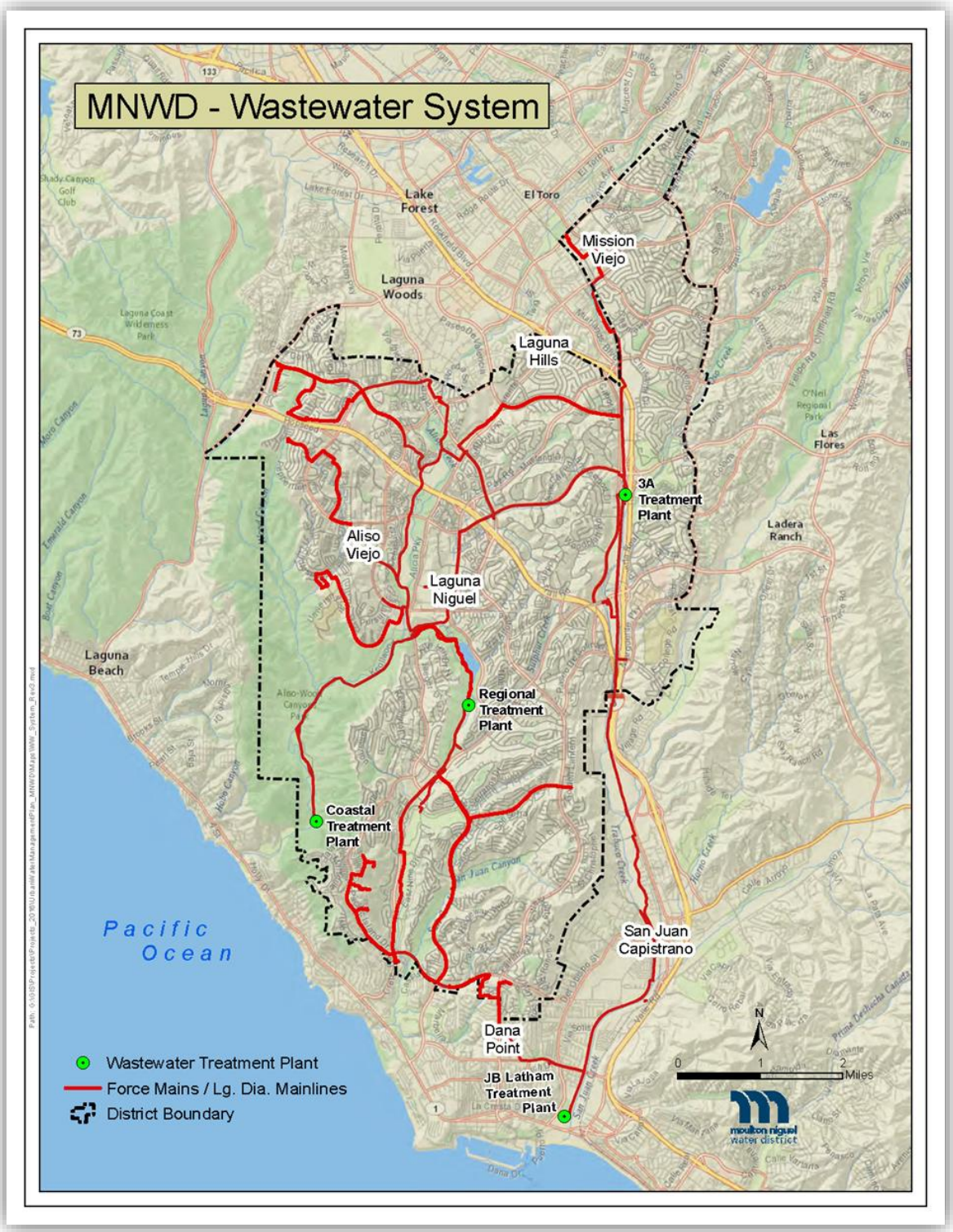
Figure 1-3. MNWD Recycled Water System



1.1.3. Wastewater System

MNWD maintains approximately 540 miles of wastewater pipelines. The District's Wastewater System includes 19 lift stations that pump wastewater over the ridge lines to the various treatment plants for disposal or recycling. The District is a member agency of the South Orange County Wastewater Authority (SOCWA), a joint powers authority (JPA) composed of ten governmental agencies, which owns and operates three regional treatment plants and two ocean outfalls. Based on its FY 2017-18 Total Operating Budget Document, SOCWA projects MNWD's share of cost for wastewater disposal and treatment to be approximately $8.9 million, representing 43.7 percent of the total operations and maintenance (O&M) costs. In addition, District staff has included SOCWA related capital cost projections of approximately $4.5 million based on cost projections provided by SOCWA for capital expenses for the same projected fiscal year. The District also owns a fourth wastewater treatment plant, Plant 3A, which is operated by the Santa Margarita Water District (SMWD) through an agreement to provide contract operation services for the treatment plant. The wastewater system currently serves 52,470 accounts within a 29-square-mile service area (Figure 1-4). The map also shows the wastewater trunk lines, lift stations, and treatment plants.

Figure 1-4. MNWD Wastewater System



1.2. Project Methodology

The purpose of this analysis is to assess the District's changing rate revenue requirements. As graphed in Figure 1-1 in the previous section, the District's potable water imports and sales have fallen significantly in recent years. Historically (over the past decade), the District has seen an average annual potable water sales of approximately 29,369 AFY and recycled water sales of approximately 7,565 AFY. The current five-year average potable sales are 26,789 AFY and recycled water sales are 7,413 AFY, with each of the last five years below the ten-year average. This tremendous change is reflective of changing water use characteristics throughout the District as a whole as well as between each of the District's customer classes. Though its existing rate structure insulates the District's financial health from reductions in volumetric sales, these changes in water consumption patterns impact the distribution of revenue requirements among the District's customer classes.

The costs of service of each system were allocated to each of the customer classes utilizing a cost causative approach endorsed by the American Water Works Association (AWWA)'s M1 Principles of Water Rates, Fees, and Charges, Seventh Edition and Water Environment Federation's (WEF)'s Financing and Charges for Wastewater Systems, WEF MOP 27: Manual of Practice No. 27.The recommended rate schedules comply with all requirements of California Constitution Article XIII D, Section 6 commonly referred to as Proposition 218. The recommended rates are designed to meet current and future revenue needs. The analysis includes three major components:

The purpose of this analysis is to assess MNWD's changing rate revenue requirements. As graphed in Figure 1-1 in the previous section, the District's potable water imports and sales have fallen significantly in recent years. Historically (over the past decade), MNWD had average annual potable water sales of approximately 29,369 AFY and recycled water sales of approximately 7,565 AFY. The current five-year average potable sales are 26,789 AFY and recycled water sales are 7,413 AFY with each of the last five years below the ten-year average. Such changes in water consumption patterns impact the District's water sales revenues. In addition, the potential impacts of limited future growth and increasing water use efficiency must be considered.

The costs of service of each system were allocated to each of the customer classes utilizing a cost causative approach endorsed by the AWWA M1 rate setting manual and WEF rate setting manual MOP 27. The recommended rate schedules comply with all requirements of California law, including Proposition 218. The recommended rates are designed to meet current and future revenue needs. The analysis includes three major components:

- The **Long Range Financial Plan (LRFP)** develops detailed budgets through FY 2026-27 for each of the District's individual systems. This analysis incorporates the latest forecasts of demand, operations and maintenance costs, capital expenditures, debt service, recycled water conversions, and conservation trends available in the District's financial planning model. The rate revenues are computed based on a cumulative overall 4.0 percent rate

increase. Non-rate revenues, which include property tax, investment income, and capacity fees, are also forecasted for the study period.

- The **Cost of Service (COS) analysis** allocates the revenue requirements for a specific system, as projected in the LRFP, among that system's customer classes in a multi-step process. For the selected test year (FY 2017-18), the revenue requirements were broken down into major operating functions. For example, the water service functions include pumping, supply, storage, transmission, distribution, meters, fire protection, collections, customer service, billing, and general administration. The District also allocates costs to functions within the Water Use Efficiency (WUE) program, which include program administration and customer service, water resources and efficiency increases, and conservation. The requirements by function were classified according to their peak and base characteristics as well as their relationship to general administration of the District, customer service, and fire protection needs. System capacity[1] is designed to serve peak needs—for example, the need of the Potable Water System or Recycled Water System to supply potable and recycled water throughout the service area at the time of greatest demand, or the Wastewater System's ability to collect wastewater at all collection points when demanded. The time of greatest demand is known as "peak demand." A COS analysis will analyze both the average quantity of water consumed and the peak rate at which it is consumed, and the average quantity of wastewater discharged and the peak rate at which it is discharged. The District must construct infrastructure to deliver potable and recycled water, and collect wastewater at peak times. The incremental costs associated with creating this excess, peak capacity (peaking costs) include designing (i.e., sizing), constructing, and operating and maintaining potable, recycled water, and wastewater facilities. Because these peaking characteristics vary by customer class—both for capital assets and operating capacity costs—the cost of service also varies from one customer class to another. The classification in this Report was accomplished by analyzing the characteristics of customer classes and their respective contribution to incurred costs. Specific consideration was given to differing delivery costs, peaking factors, service characteristics, and demand patterns for service. This included a review of such factors as system operations and usage data, peak demand relative to average demand, number of customers, customer service and accounting requirements, equivalent meter size, and public fire protection. The test year revenue requirement was then allocated by function and classification to each customer class to determine the cost of providing service associated with specific customer classes.
- Finally, the **Rate Design** addresses how rate revenues will be collected from each customer class in accord with its long term projected COS. It is the District's goal that the recommended rates adhere to all legal and

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

regulatory standards (particularly California Constitution article XIII D, section 6) while encouraging efficiency of water use, minimizing adverse impacts to customers, and assuring reasonable and prudent revenue stability for the District.

The computed numbers for the purposes of this study are rounded to the nearest decimal points, and sums of these numbers may therefore not add up to totals.

1.3. Sources of Information Used in this Rate Study Report

District staff and RDN reviewed a number of planning documents and draft reports during the course of this study. Where applicable, these are cited within the body of this report. A summary of key sources includes, but is not limited to:

- District detailed line-item budget for FY 2017-18;
- LRFP Report, attached as APPENDIX A;
- District Ten-Year Daily Demands dated July 2017;
- Rate Study Report dated February 2015 (2015 Rate Study Report);
- District Comprehensive Annual Financial Report (CAFR) for FY 2015-16;
- District 2015 Urban Water Management Plan (UWMP);
- Comprehensive list of District assets as of April 2017;
- District Debt repayment schedules as of May 2017;
- District Reserve Policies (adopted June 2017);
- FOG (Fats, Oils & Grease abatement) program costs and list of registered accounts;
- SOCWA audited financial statement FY 2016;
- SOCWA Budget FY 2017-18;
- AWWA M1 Manual; and
- MOP 27.

1.4. Acronyms and Abbreviations

AF	acre-foot
AFY	acre-feet per year
AWWA	American Water Works Association
BOD	biochemical oxygen demand
ccf	hundreds of cubic feet
CIP	Capital Improvement Plan
COP	Certificates of Participation (debt instrument)
CPI	Consumer Price Index
FEMA	Federal Emergency Management Agency
FOG	fats, oils & grease
FY	fiscal year ending June 30
GO	General Obligation (bond type)
GPM	gallons per minute
GPCD	gallons per capita per day
JRWSS	Joint Regional Water Supply System
lbs	pounds
MG	million gallons
mg/L	milligrams per liter
MGD	millions of gallons per day
MOU	memorandum of understanding
MNWD	Moulton Niguel Water District
MWDSC	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
O&M	operation and maintenance
R&R	replacement and refurbishment
SOCWA	South Orange County Water Authority
TSS	total suspended solids
WBBRS	water budget based rate structure
WEF	Water Environment Federation
WUE	water use efficiency

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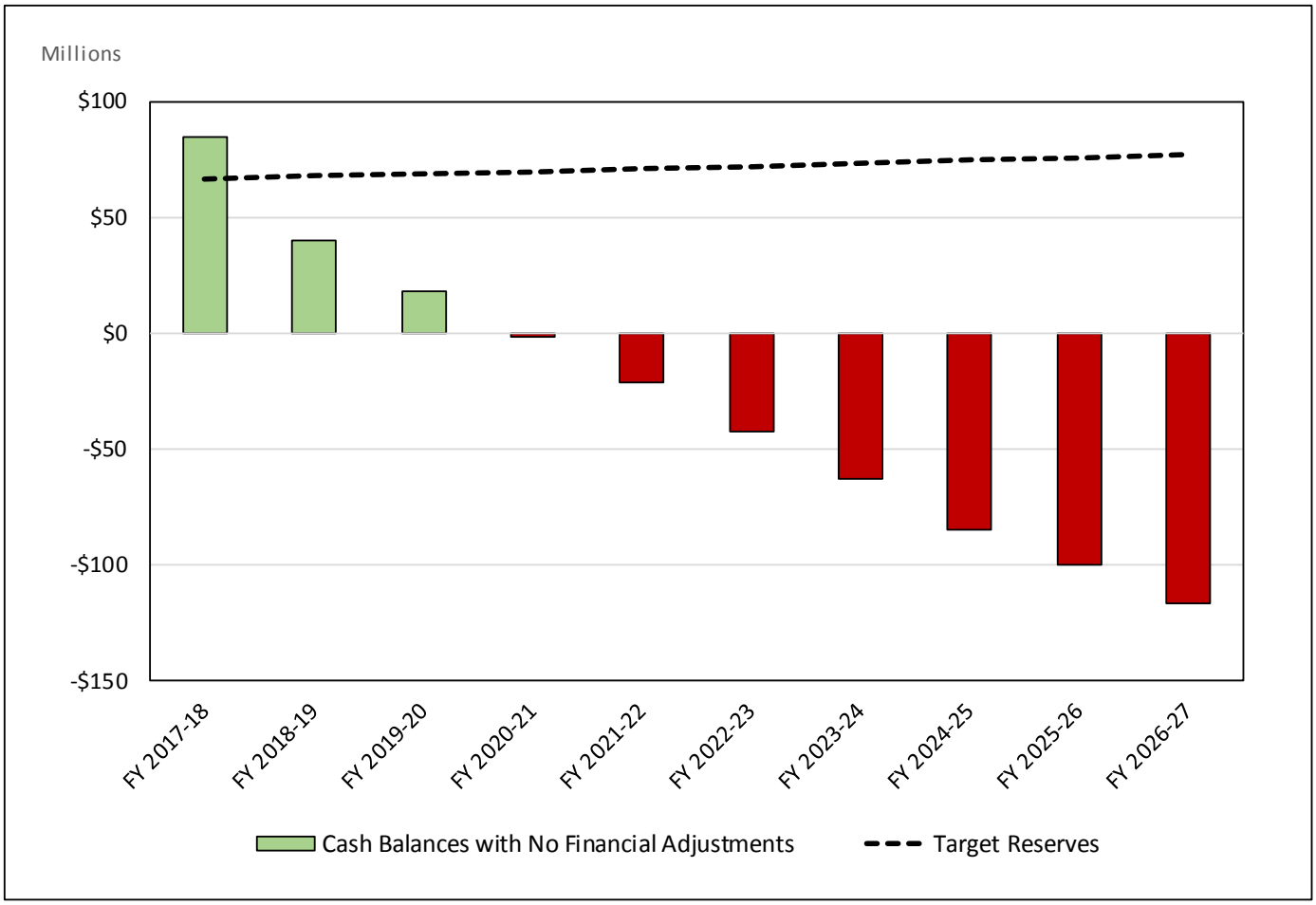
2. FINANCIAL PLAN

The District has maintained a strong financial position by planning and budgeting conservatively, maintaining adequate unrestricted cash balances, and sustaining a solid debt service coverage ratio (DSCR - the ratio of revenues net of expenses relative to the annual debt service payments). A major objective of the LRFP is to ensure that this strong performance continues into the future through timely and thoughtful financial analysis and planning. The LRFP projects the District's future operating and capital expenditures and identifies the rate revenue requirements necessary for the District to continue providing water, recycled water, and wastewater services over the 10-year forecast period from FY 2017-18 through FY 2026-27. Through continued implementation of fiscally prudent policies and proactive but conservative financial management, the District's financial health remains consistent with the LRFP forecasts developed as part of the 2015 Rate Study Report. Refinements made to the District's water budget based rate structure as part of the 2015 Rate Study Report have proven successful as the District has maintained its financial position during an historic drought in which water agencies across the state unexpectedly lost an estimated $600 million in revenue. It is important to note that while many agencies were forced to raise rates or defer needed capital projects due to lost revenue, the District was able to meet its state-mandated conservation targets without having to deviate from the financial plan that was presented to customers in 2015. However, the District's ability to continue providing essential services to its customers is wholly dependent on its ability to meet ongoing operating costs as well as repair and maintenance of its capital infrastructure. The assumptions, conclusions, and recommendations identified in the LRFP have been incorporated into this Report. To demonstrate what is needed to achieve this goal, Figure 2-1 displays MNWD's annual cash balances when the rates for the services provided by the Potable Water System, Recycled Water System, and Wastewater System remain the same and no supplemental financings (such as bond issuances) are made for the next ten years.

Figure 2-1. District-wide General Fund Cash Balance Projections without Rate revenue adjustments and Supplemental Financings, Compared to the District's Target Cash Balance, FY 2017-18 – FY 2026-27



After careful review and analysis of each component of the District's financial plan, overall 4.0 percent rate increase (3.0 percent for Potable and Recycled Water, and 5.5 percent for Wastewater) was estimated to be the necessary rate revenue adjustment, combining with capital market financings of approximately $62 million in 2018-19 and $42 million in FY 2021-22, in order to meet the rate revenue requirements for the projected years. Figure 2-2 presents a 10-year forecast of the District's General Fund cash balances with the rate revenue adjustment as compared to the District's cash balance target. An overall 4.0 percent annual rate increase with supplemental financing will maintain the District's General Fund cash balance level above the target throughout the projected period.

Figure 2-2. District-wide General Fund Cash Balance Projections with Rate Revenue Adjustments (4.0 Percent) and Supplemental Financings, Compared to the District's Target Cash Balances, FY 2017-18 – FY 2026-27

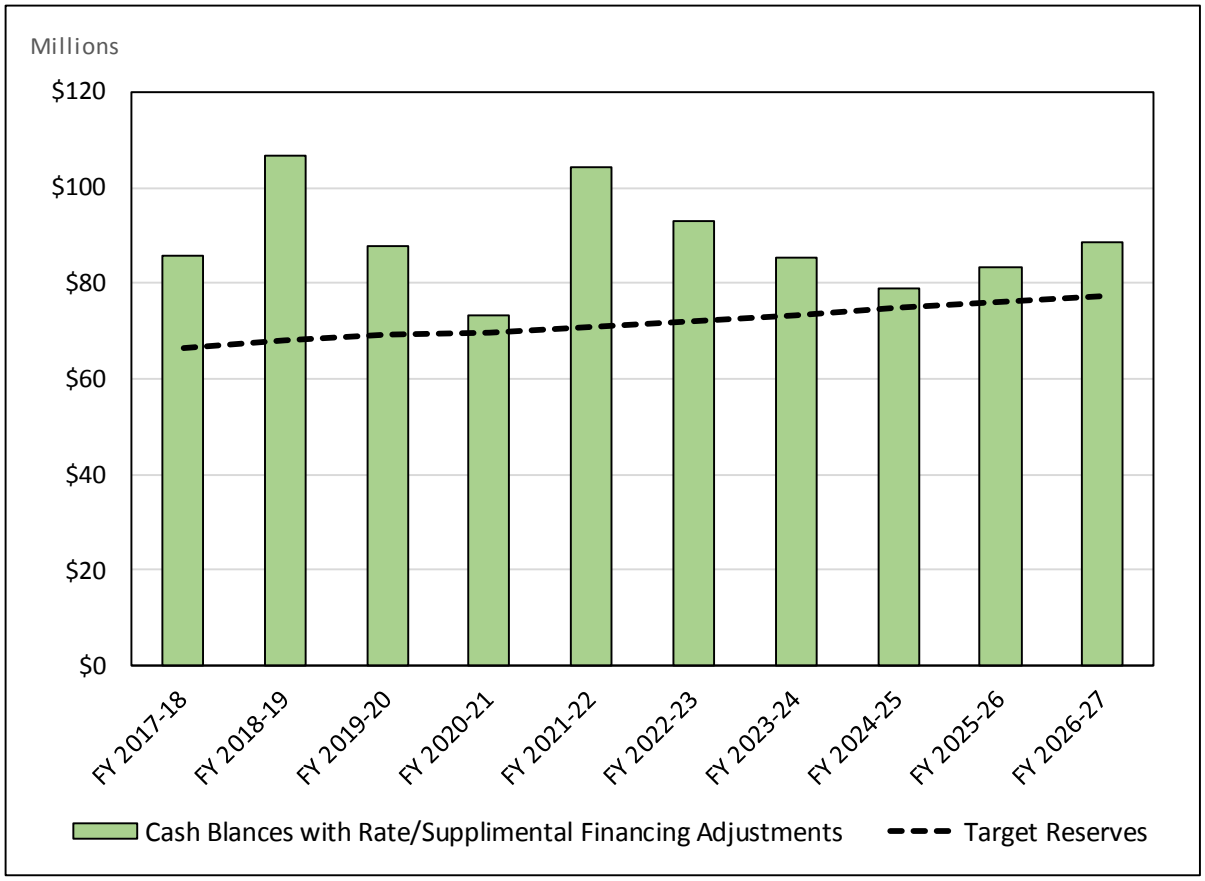


Figure 2-3 presents the District-wide General Fund rate revenues and DSCRs when the rate revenues for all the Systems remain unchanged and no supplemental financings are made for FY 2017-18 through FY 2026-27. The District's policy minimum DSCR will fall below the District's target of 1.75 by FY 2020-21 and continue to decline below the bond covenant requirement of 1.25 by FY 2022-23 without any rate revenue adjustment.

Figure 2-3. District-wide General Fund Rate Revenues and Debt Service Coverage Ratio (DSCR) without Rate/ Supplemental Financing Adjustments, FY 2017-18 – FY 2026-27

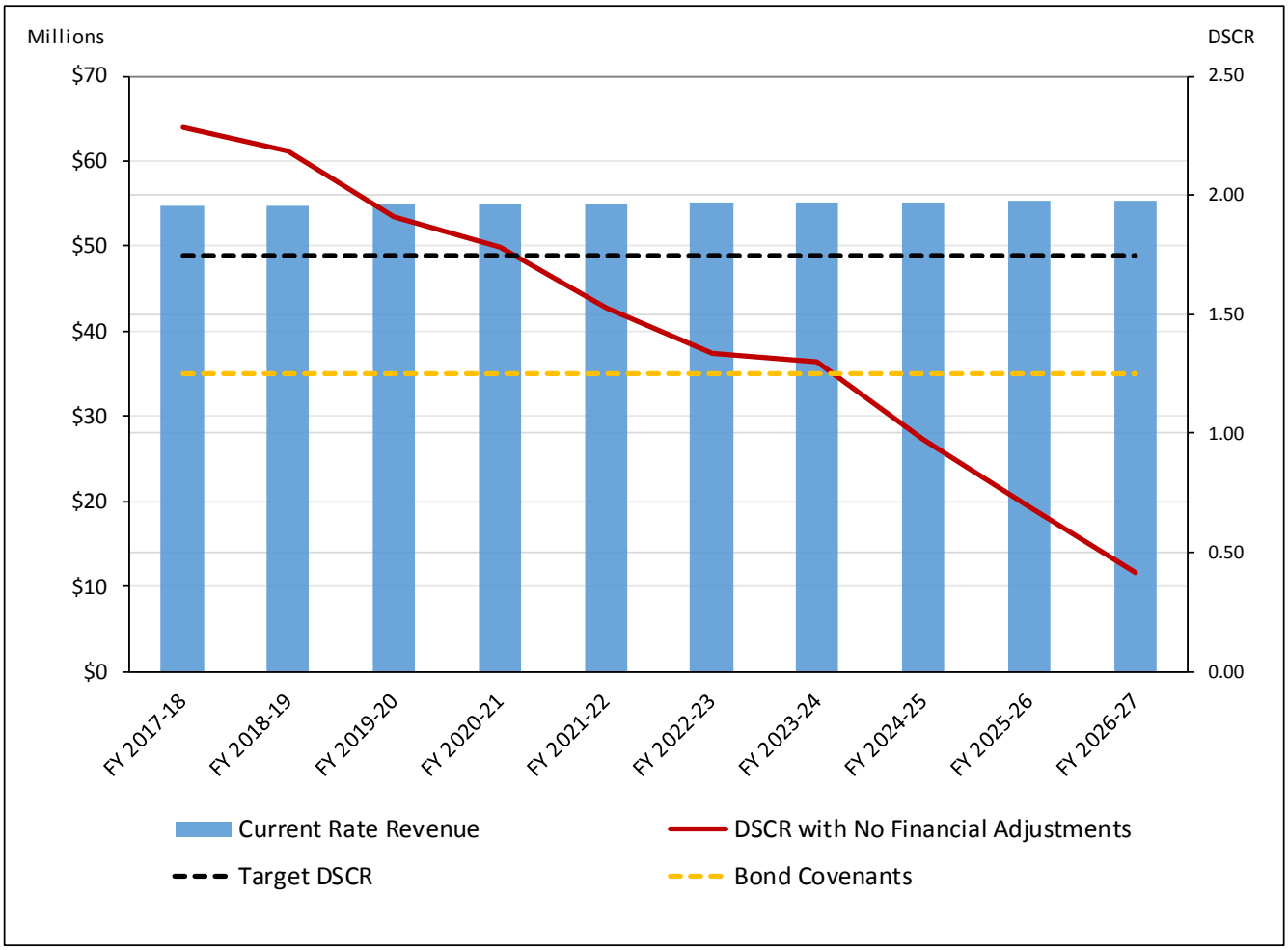
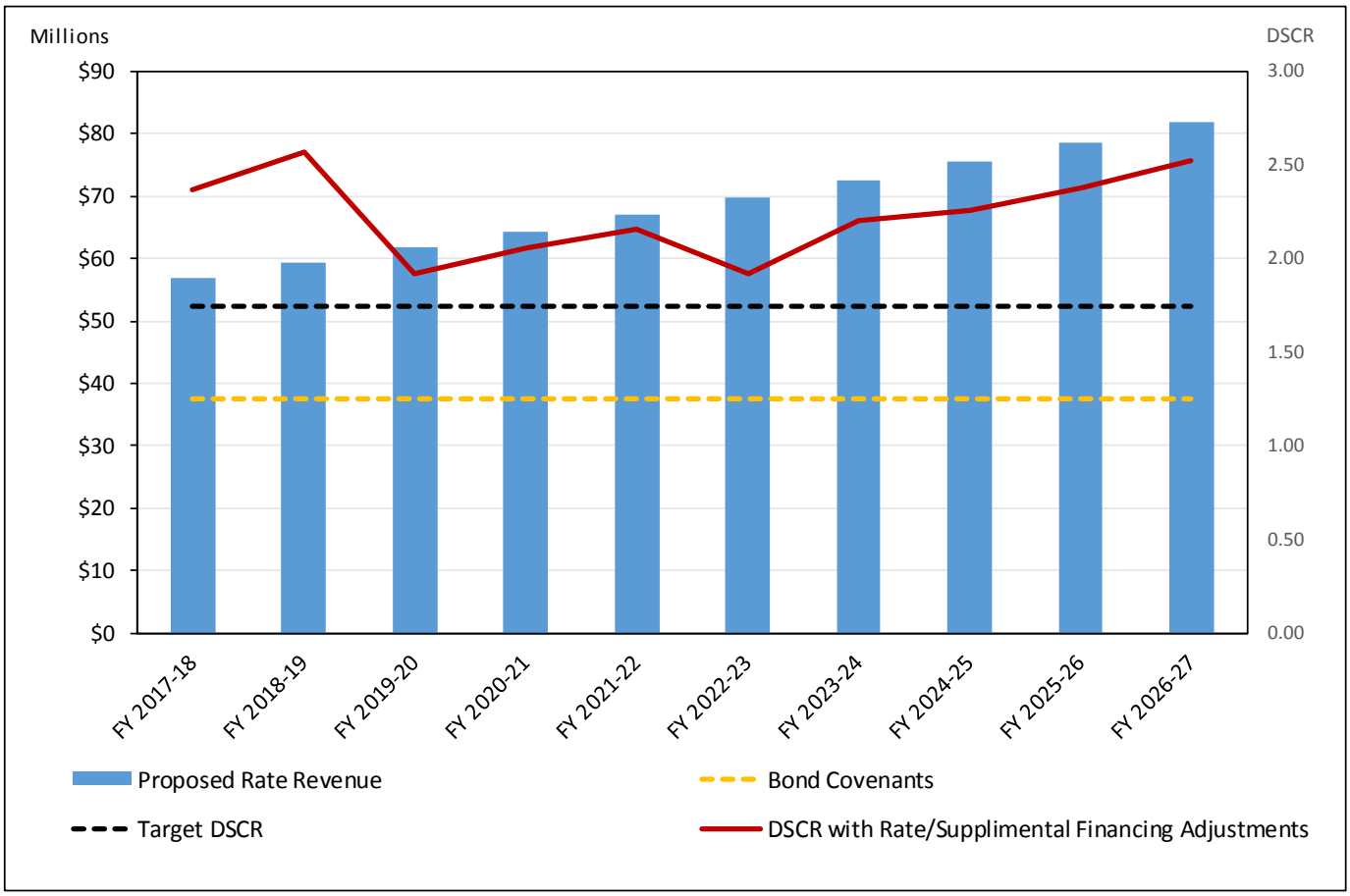


Figure 2-4 presents the District-wide General Fund rate revenues and DSCRs with an overall cumulative 4.0 percent rate revenue adjustment, combining with capital market financings of approximately $62 million in 2018-19 and $42 million in FY 2021-22. With these adjustments, the District's DSCR will remain above the bond covenants' requirement of 1.25 and the District's target rate of 1.75 throughout the projected years.

Figure 2-4. District-wide General Fund Rate Revenues and Debt Service Coverage Ratio (DSCR) with Rate revenue adjustment (4.0 Percent) and Supplemental Financings, FY 2017-18 – FY 2026-27



This Report includes revenue requirements for two primary funds: the General Fund and the Water Efficiency Fund. The General Fund accounts for operation and maintenance of the Potable and Recycled Water Systems, management of the Wastewater System, and planning and executing capital improvement projects for the three Systems. The Water Efficiency Fund is used for purposes related to water efficiency, conservation goals and policies, and water reliability projects. In this chapter, financial plan and revenue requirements are individually discussed for each system under the funding types: the Potable Water, Recycled Water, and Wastewater System under the General Fund (Sections 2.4–2.6), and the Potable Water and Recycled Water Systems under the Water Efficiency Fund (Section 2.7). The District's DSCR and reserve levels are managed at the District-wide level and discussed in Sections 2.2 and 2.3, respectively.

The District's comprehensive LRFP model considers the costs of operations and maintenance (O&M), capital, and debt, while also accounting for non-rate revenues, reserve targets, and financial performance metrics.

2.1. Modeling Assumptions

The 10-Year LRFP employs assumptions to calculate future year revenues and expenses where budget projections are not yet available. The following assumptions were reviewed by District staff and RDN as part of the development of this Report. The cost-of-service analysis in subsequent chapters of this Report is based on the financial information for FY 2017-18 (the test year). This Report repeats information also provided in the District's Long Range Financial Plan report.

2.1.1. District-wide General Fund Financial Projections

The District operates as a self-sufficient enterprise that oversees operations, maintenance, and capital infrastructure needed to provide potable, recycled, and wastewater services to its customers. This autonomy allows the District to structure its costs to accurately reflect both its approach to management and planning, and its commitment to maintaining exemplary service while maintaining the lowest average bill in South Orange County.

The District's General Fund separately accounts for the programs and activities related to providing service for the Potable and Recycled Water Systems, and the management of its Wastewater System.

The District's General Fund revenue requirements can be organized into four components: O&M costs, capital costs (cash and debt service), reserve requirements, and debt service coverage ratio requirements. The former two components are described below, while the latter two components are described in Sections 2.3.1and 2.3.2.

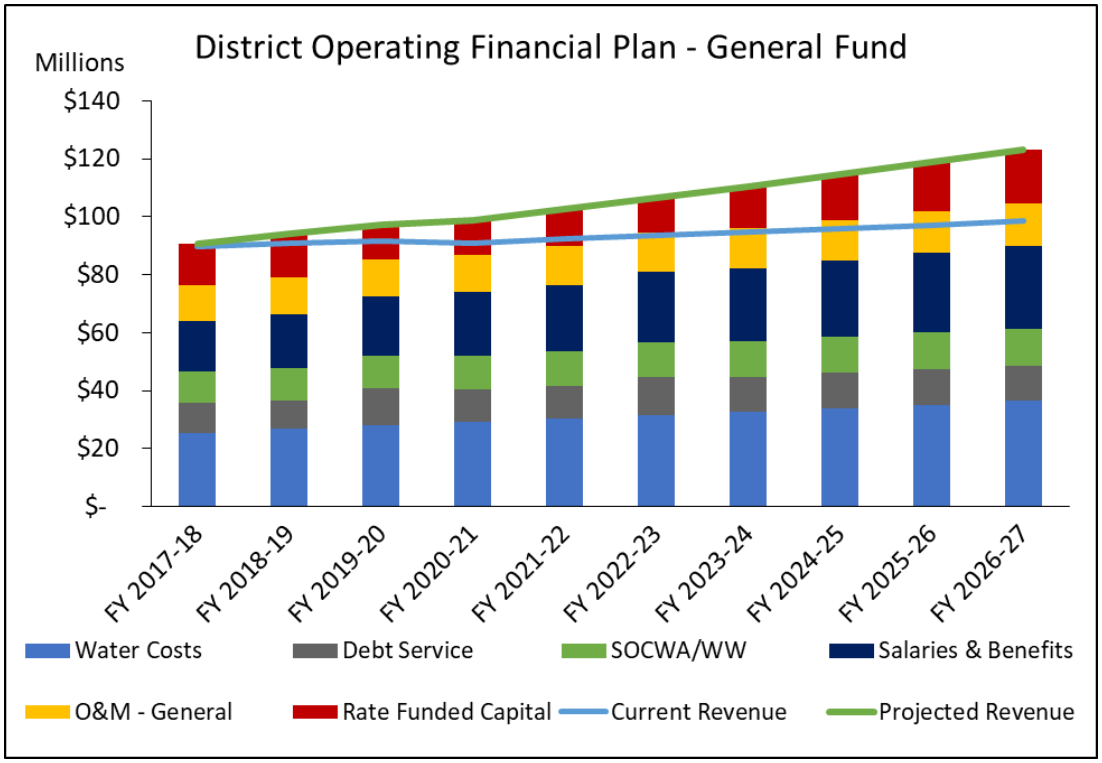
O&M Costs - This Report uses the District's O&M budget for FY 2017-18. Operating costs beyond FY 2017-18 were calculated based on cost inflation assumptions (see Section 2.1.2) unless specified otherwise in this Report.

Capital Costs - The District maintains a long-range fiscal perspective through the use of a CIP to maintain the reliability of the District's potable water, recycled water, and wastewater infrastructure. Capital spending has been projected through FY 2026-27, although it should be noted that spending projections beyond a five-year horizon are intended to reflect expectations of long term revenue requirements and will be updated regularly to reflect changing operations and service needs. The District is at the design stage of improvements to the Operations Center at Plant 2A and expects to spend approximately $32 million on this project by the end of FY 2018-19.

Figure 2-5 presents the District's total revenue requirements and total projected and current revenues for FY 2017-18 through FY 2026-27. As previously discussed, the projected rate revenue was computed based on an overall 4.0 percent annual rate revenue adjustment to meet the rate revenue requirements. Water purchases are the District's largest operating cost, representing 38.5% of the General Fund's total operating expenses for FY 2017-18. Wastewater

treatment costs from SOCWA, representing 16.5% of the District's total operating costs, are another major revenue requirement as annual operating costs have increased approximately $1.0 million between FY 2016-17 to FY 2017-18 representing about a 10% year over year increase.

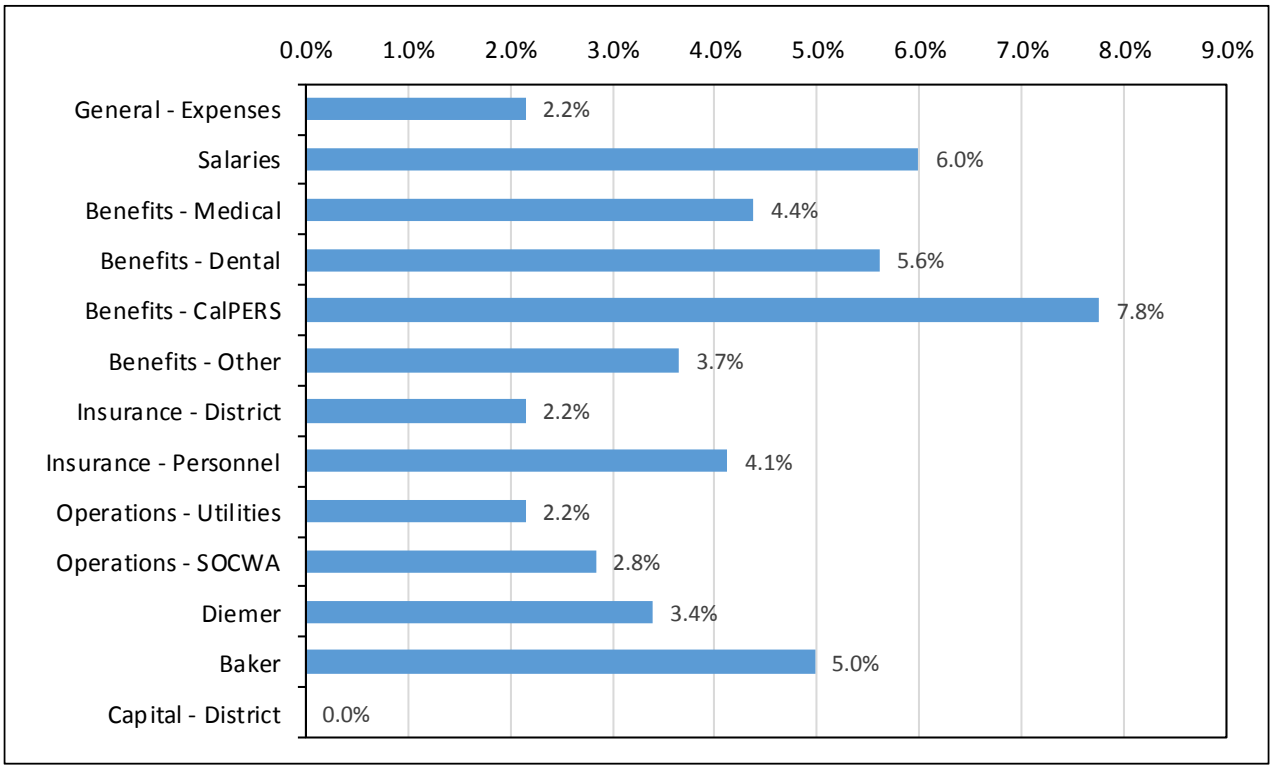
Figure 2-5. General Fund Total Revenue Requirements and Total Current and Proposed Revenues, FY 2017-18 –FY 2026-27



2.1.2. Inflation Assumptions

The following describes the cost inflation factors that were applied to specific expenditure categories during the study period. All inflation factors are displayed in Figure 2-6.

Figure 2-6. Ten-Year Average of Inflation Assumptions for FY 2017-18 – FY 2026-27



- **General**: The general inflation assumption is based on CPI data for the Los Angeles area provided by the California Department of Finance.
- **Salaries and Benefits:** The inflation assumptions for salaries and benefits are estimated based on the terms of the District's Memorandum of Understanding (MOU) with the District's Employee Association for the next four years. The salaries inflation assumption for the remaining six years reflects the average annual increases for performance-based salary increases. The inflation assumption for benefits for the remaining forecast period is based on a CalPERS actuarial report estimating the District's cost responsibilities.
- **Insurance**: Insurance for the district is escalated using the general inflation assumption. Personnel-based insurance is escalated with the same approach as benefits—using projections based on the District Employee Association MOU for the first four years and CalPERS actuarial reports and trends for the latter six years.
- **Operating Costs:** Electricity dominates the District's utility expenditures and utilities use the same factor as general inflation (based on Los Angeles-area CPI data). Over the past few years, recent electricity prices statewide and in southern California have remained stable or grown slower than overall inflation. Escalating utilities at the rate of general inflation is therefore a conservative estimate for electricity. SOCWA costs are escalated based on data provided by SOCWA and analysis of trends prepared by District staff. Chemicals are escalated based on recent historical price changes.

- **Water Purchase Costs:** The inflation assumptions for treated and untreated water purchase costs are based on rate projections from MWDSC's 2015 10-year financial plan as part of its 2-year FY2015-16 and FY 2016-17 Budget. Over the 10-year study period (FY 2017-18 through FY 2026-27) costs for treated water are expected to increase 34.0 percent cumulatively, and costs for untreated water are expected to increase 49.7 percent cumulatively. Table 2-1 presents the year-over-year changes in effective wholesale rates for water delivered via the Diemer Treatment Plant (TP) and Baker WTP from FY 2017-18 through FY 2026-27 (rates shown include variable rates and fixed charges as well as debt service payments for Baker). The average annual increases from MWDSC are 4.5 percent per year across both Tier 1 treated and untreated water.

Table 2-1. Diemer and Baker Water Inflation Assumptions for FY 217-18 – FY 2026-2027

	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Deimer Water	3.2%	3.2%	3.0%	3.1%	3.5%	3.5%	3.4%	3.6%	3.4%	3.9%
Baker Water	3.9%	4.5%	4.7%	4.3%	3.7%	3.7%	16.0%	3.2%	2.9%	2.9%

- **Capital Costs:** The Capital Improvement Plan inflation rate is assumed to be 0% in order to reflect both the uncertainty in future capital expenses and potential project cost savings.

2.1.3. Water Supply Assumptions

Though all of the District's potable water deliveries are supplied by MWDSC through purchases furnished by the MWDOC, they are segregated into two categories, based on the plant where the water is treated and its associated costs. Baker WTP (a new facility the District owns jointly with Santa Margarita Water District, El Toro Water District, Trabuco Canyon Water District, and Irvine Ranch Water District) treats raw MWDSC water and provides approximately one-third of the District's treated potable water (projected to be approximately 9,400 AFY). The remaining 16,200 AFY of potable water deliveries are treated at Diemer WTP and supplied to the District's customers. Although the District's demand for recycled water is expected to increase as new services are connected to the Recycled Water System, existing recycled water customers responded to the 2011 to 2016 drought by dramatically increasing their level of efficiency, and therefore decreasing use. Based on the results of a technical analysis performed as part of the District's Recycled Water Master Plan, the projections assume conservative estimates of 500 AFY of current potable-dedicated irrigation meters converting to recycled water over the next ten years, representing over 700 meters, as shown in Figure 2-7. The current recycled water use represents approximately 25 percent of MNWD's total treated/untreated water supply (Figure 1-1).

Figure 2-7. MNWD Water Supply and Customer Meter Counts FY 2017-18 – FY 2026-27

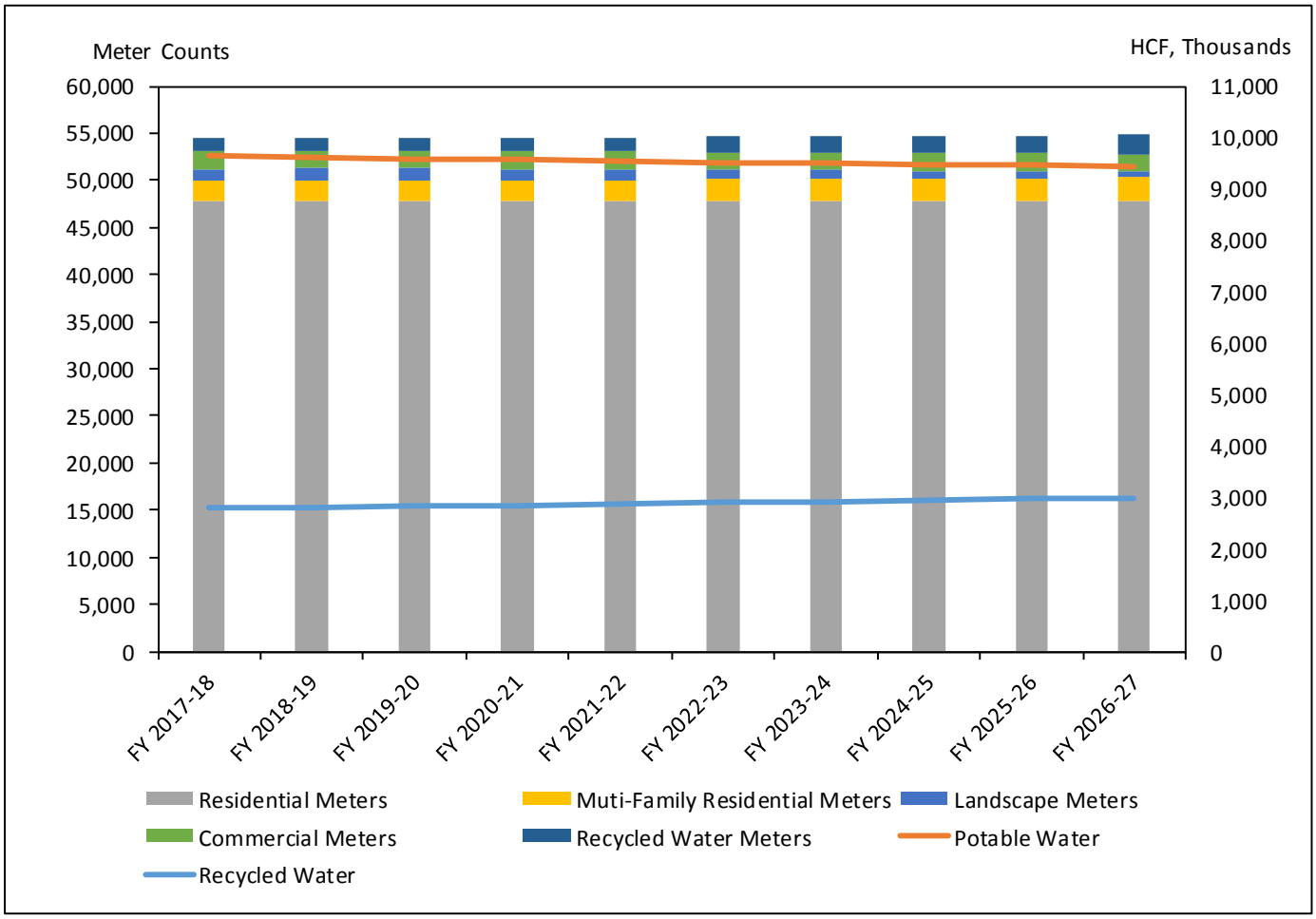


Table 2-2 presents a detailed breakdown of the component rates and charges of the two treated water supplies. The projected variable rates for deliveries from the Diemer WTP are represented by the "MWD Treated Variable Rate" and are based on projections of Treated Tier 1 water rates from MWDSC. The effective variable rates for deliveries from the Baker WTP are calculated as the sum of the "MWD Untreated Variable Rate" and "Baker Variable Costs", which captures both the purchase cost of raw water at MWDSC Tier 1 rates and the variable costs of treating the purchased raw water at the Baker WTP. The "Baker Fixed Costs" include both O&M and debt expenses from the portion of the 2009 Build America Bonds associated with the Baker WTP operation. The wholesale supply rates charged to the District are presented in detail in Section 3.3 of the LRFP, attached in APPENDIX A.

Table 2-2: Projected Water Supply Rates and Charges, FY 2017-18 - FY 2026-27

Projected Rates and Charges	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
MWD Treated Variable Rate ($/AF)	$995.24	$1,033.13	$1,071.60	$1,106.79	$1,142.56
MWD Untreated Variable Rate ($/AF)	$679.83	$715.51	$759.47	$807.81	$854.56
Baker Variable Costs ($/AF)	$91.21	$93.49	$95.83	$97.75	$99.70
Baker Fixed Costs	$754,353.00	$773,211.83	$792,542.12	$808,392.96	$824,560.82
MWD Readiness-to-Serve Charge	$1,342,027.00	$1,370,784.72	$1,418,714.26	$1,495,401.51	$1,610,432.40
MWD Capacity Charge	$493,384.50	$510,397.76	$527,411.02	$550,095.36	$567,108.62
MWDOC Annual Connection Charge	$626,999.10	$642,966.88	$659,097.54	$675,383.14	$691,815.11

Projected Rates and Charges	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
MWD Treated Variable Rate ($/AF)	$1,183.56	$1,225.99	$1,271.42	$1,318.90	$1,370.08
MWD Untreated Variable Rate ($/AF)	$895.56	$937.99	$983.42	$1,030.90	$1,076.15
Baker Variable Costs ($/AF)	$101.70	$103.73	$105.80	$107.92	$110.08
Baker Fixed Costs	$841,052.04	$857,873.08	$875,030.54	$892,531.15	$910,381.77
MWD Readiness-to-Serve Charge	$1,744,635.10	$1,878,837.80	$2,022,626.41	$2,185,586.83	$2,273,010.30
MWD Capacity Charge	$595,464.05	$629,490.57	$629,490.57	$640,832.74	$666,466.05
MWDOC Annual Connection Charge	$708,384.19	$725,349.33	$742,720.00	$760,505.86	$778,716.80

The District actively pursues opportunities to reduce water loss and in recent years has addressed several issues identified as part of a review of meter testing procedures. Despite these efforts the District has seen water losses increase annually, with non-revenue water[2] accounting for 7.1 percent, 8.8 percent, and 10.4 percent in FY 2014-15, FY 2015-16, and FY 2016-17, respectively. This increasing trend is partially attributed to reduced water demand in the District as the same volume of water lost during a line break now represents a larger proportion of total imported water supply. The large increase in non-revenue water in FY 2016-17 can be attributed to the numerous and often large scale line breaks that occurred as a result of the heavy rainfall experienced during that year. As these anomalous results are not representative of long-term water loss trends, the District's Financial Plan assumes a water loss factor of 7.5 percent based on a normal weather year and continued expansion of the District's meter testing program and other water loss reduction efforts.

The District has been proactive in its planning efforts to ensure water reliability. The District developed the 2014 Long Range Water Reliability Plan to provide an adaptive management approach to reliability planning. This is a "working document" that the District intends to update to reflect the changed water demand assumptions resulting from exiting the drought emergency and changes to the status of some of the local supply projects. District staff are also evaluating opportunities to expand recycled water and groundwater banking, as well as considering direct potable reuse as regulations allow. Other local efforts such as ocean desalination and transfers are also being closely monitored to determine the District's and South Orange County interest in alternative water supply projects.

[2] Non-revenue water as a percent of volume of Water Supplied is reported annually to the State Water Resources Control Board as calculated using AWWA Free Water Audit Software.

2.1.4. Debt Financing Assumptions

In evaluating future financing needs, this analysis made assumptions regarding initial and ongoing costs associated with issuing debt. Table 2-3 summarizes the projected terms for debt issuance mechanisms the District has historically utilized, and which were considered as part of the LRFP analysis. These were provided by District finance staff, in conjunction with the District's Financial Advisors, based on conservative estimates of long-term trends and expected issuance costs for highly rated municipal debt.

Table 2-3. Summary of Debt Financing Assumptions

Debt Mechanism	Interest Rate	Term (Years)	Issuance Cost
Certificates of Participation (COP)	3.5%	30	$250,000
General Obligation Bonds	3.5%	30	$250,000
State Revolving Fund Loans	1.7%	30	Staff Time

2.1.5. Existing Debt Service

As the District has developed over the past 57 years, issuing bonds has been a key strategy to expanding infrastructure across the service area while also keeping rates and charges affordable. Currently, the District has a portfolio of debt service with many bonds approaching their maturity. The District refunded its outstanding general obligation bonds (GOBs) in 2014, which were used to fund the last of specific improvement district (ID) developments in ID 6 and 7, paid by benefiting parcels in these areas via special property tax assessments. The ID 6 portion of the GOBs is paid off in full moving into FY 2017-18. It should be noted that for the purposes of this Report any remaining GOB obligations and revenues have been excluded from the development of revenue requirements for any of the Systems: annual debt service payments are presented less any GOB-related payments, and property tax revenues are presented less GOB-related assessments. The District currently has three loans from the State Water Resources Control Board, which were used to expand the Recycled Water System, as well as two loans from the California Infrastructure and Economic Development Bank to replace and develop water and wastewater infrastructure. In 2009, the District issued Certificates of Participation to fund reliability improvements including Upper Chiquita Reservoir, an interconnection to Irvine Ranch Water District, and to fund the District's portion of the Baker WTP. These projects in total increased the District's system reliability, or ability to maintain service in the event of an outage at the Diemer TP, from two days to almost 24 days on average, when coupled with the District's demand management programs. Additionally, the District actively works with its Financial Advisor to identify potential refunding opportunities to make sure that the debt portfolio is at optimal interest rates. Both the 2010 Certificates of Participation (COPs) and 2015 Revenue Bonds initially funded water and wastewater infrastructure. The 2010 COPs, 2014 GOBs, and 2015 Revenue Bonds were all refunded in the last six years to save ratepayers on debt service payments. The District currently holds a reaffirmed

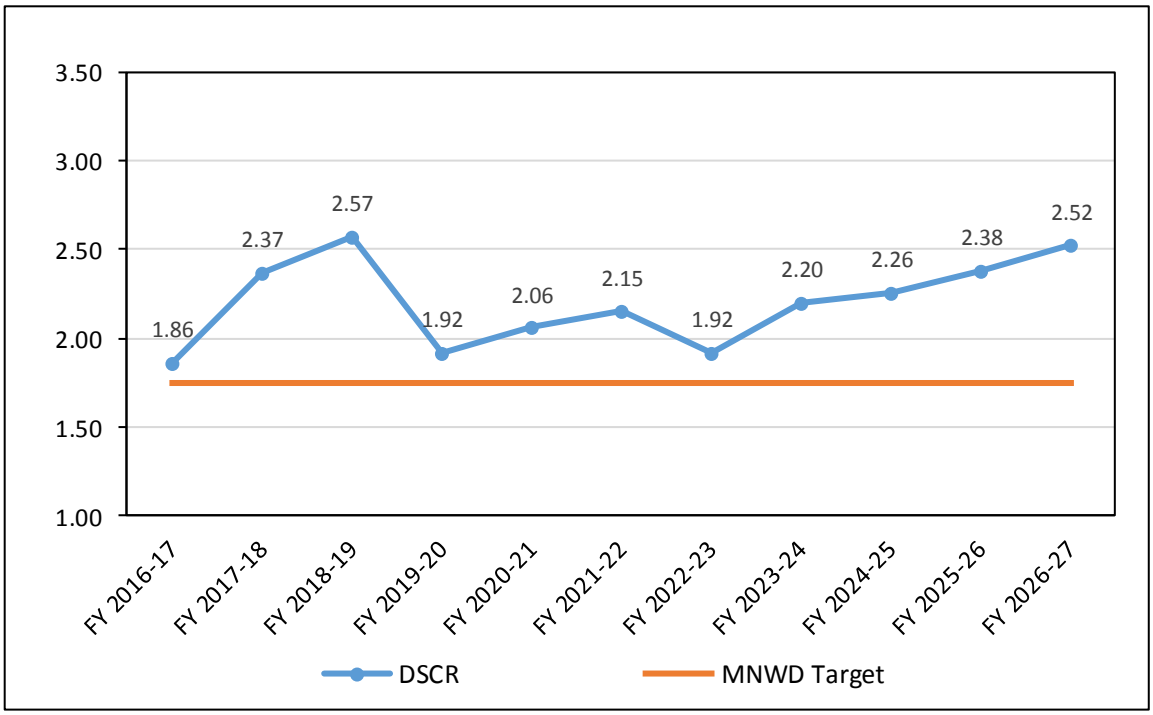
AAA rating from Fitch effective April 2017 and a AA+ rating from Standard and Poor's, which enables the District to go to the public finance markets competitively when needing to borrow to fund future infrastructure projects.

2.2. Capital Financing Policies – Debt Service Coverage Ratio (DSCR)

The District's policy is to manage revenues and debt levels so that the District's overall DSCR can be maintained above the Board adopted minimum target of 1.75, with a minimum of 1.25 required by bond covenants. DSCR is calculated as the ratio of net operating income to annual debt service payments, where net operating income is the District's total annual income less operating expenses and annual debt service is the total amount of all interest and principal to be paid in the respective year. It should be noted that, for added conservatism, the DSCR amounts shown in this report do not include potentially volatile revenues associated with the District's WUE Fund. Maintaining a coverage ratio at the target level allows the District to keep a strong credit rating, which in turn gives the District the ability to borrow at low interest rates when needed. Historically, the District has maintained DSCRs in excess of 2.00 and is rated AA+ by Standard and Poor's and AAA by Fitch Ratings. While the District requires each system to meet its financial obligations, reserve levels and DSCR are managed at the District level, as finance markets in general would evaluate the District's financial health as a whole. Therefore the DSCR is not discussed at the individual System level in this Report.

The District's DSCR will continue to be above target through the projected 10-year period with an overall 4.0 percent annual rate revenue adjustment. Figure 2-8 displays the District's DSCR for FY 2016-17 through FY 2026-27.

Figure 2-8. Debt Service Coverage Ratio (DSCR) for FY 2016-17 – FY 2026-27



2.3. Reserve Policies

The District has adopted reserves in order to mitigate potential revenue and expense volatility and reduce the risk of requiring unplanned, large rate revenue adjustments. The reserve policies help to maintain the District's credit-worthiness by adequately providing for:

- Funding infrastructure replacement and refurbishment;
- Economic uncertainties, extraordinary costs, and other financial impacts;
- Loss of significant revenue sources such as property tax receipts;
- Local disasters or catastrophic events;
- Losses not covered by insurance;
- Future debt or capital obligations; and
- Cash flow requirements.

2.3.1. Reserves

The District currently maintains four types of reserves: a General Operating Reserve, a Self-Insurance Reserve, a Rate Stabilization Reserve, and an Emergency Reserve. Each of these reserves is described below.

General Operating Reserve - The District maintains a General Operating Reserve in order to provide sufficient liquidity for funding day-to-day operating expenses and supporting the District's cash flow needs during normal operations. There is often a delay between the receipt of revenues and the payment of expenses and the establishment of a reserve to mitigate or eliminate the risk of monthly negative cash positions represents prudent financial planning. The target balance of the General Operating Reserve will equal **three months of operating expenses,** consistent with best practices in the industry for agencies with monthly rate revenue. Sufficient funding for the General Operating Reserve shall be identified at the beginning of each fiscal year and maintained within the General Fund (Fund 1).

Self-Insurance Reserve – The District maintains a Self-Insurance Reserve in order to fund property and liability insurance deductibles, losses exceeding insurance limits, and unemployment benefit payments in the event that a claim is made. The target amount of the Self-Insurance Reserve will equal **five times the current JPIA property insurance deductible** (current deductible is up to $50,000). Sufficient funding for the Self-Insurance Reserve shall be provided at the beginning of each fiscal year via budget transfers and maintained in the Self-Insurance Fund (Fund 4).

Rate Stabilization Reserve - The District maintains a Rate Stabilization Reserve to provide for losses of revenue, significant increases in water purchase costs, and other extraordinary financial impacts to revenues and expenses. This helps to mitigate the risk and impact on rates in case of the loss of property tax revenues, and helps avoid large

fluctuations in customer water and wastewater rates caused by the timing of property tax receipts. The target balance of the Rate Stabilization Reserve is set to be equal to **fifty percent of the District's budgeted 1% ad valorem property tax revenue**. The Rate Stabilization Reserve will be maintained in the Rate Stabilization Fund (Fund 52).

Emergency Reserve - The Emergency Reserve will provide funds to enable the District to quickly repair critical assets in the event of a natural disaster or facility failure. The target balance of the Emergency Reserve will equal **2% of the replacement costs of the District's assets**, as outlined in current guidelines from the Federal Emergency Management Agency (FEMA). The Emergency Reserve is maintained within the General Fund (Fund1).

Table 2-4 presents FY 2017-18 MNWD reserve targets.

Table 2-4. FY 2017-18 Reserve Targets

Type	Target
General Operating	$16,546,411
Self-Insurance	$250,000
Rate Stabilization	$14,500,430
Emergency	$35,300,000
Total Reserves	$66,596,842

Note: Reserve Targets are based on the District's FY 2017-18 budget.

2.3.2. Debt Service Reserve

The District maintains Debt Service Reserves for three of its prior debt issuances: the 2009 Certificates of Participation, the 2010 Certificates of Participation, and the 2015 Revenue Refunding Bond. As provided in the bond covenants for each of the financings, the three Debt Service Reserves are held in trust with a third party trustee. Increases and decreases to these reserves will be consistent with the respective bond covenants. The District's accounting records show these amounts in various debt funds.

2.4. Potable Water System General Fund Financial Plan

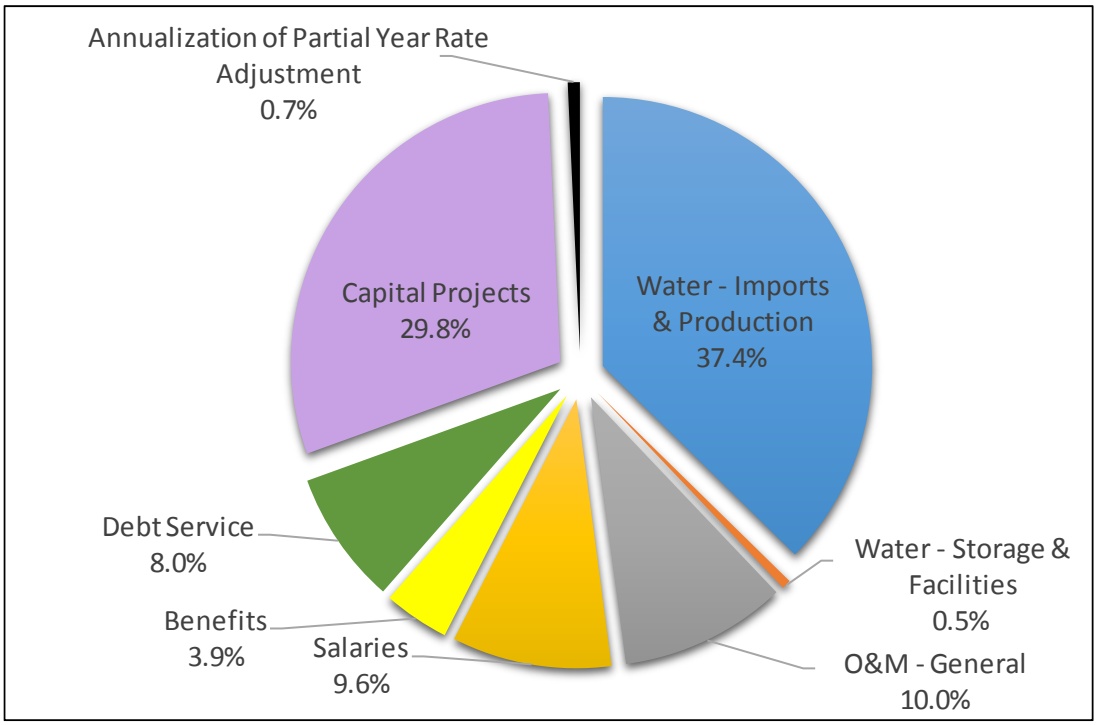
The following describes the revenue requirements over the next ten years for the Potable Water System. All cost projections are based on the District staff's best available data on wholesale water costs, future operational needs, water demand forecast projections, and cost escalation.

2.4.1. Potable Water Total System Cost

Figure 2-9 displays the cost distribution of the potable water total system cost, which amounts to approximately $68.5 million for FY 2017-18. The largest costs are water imports and production, which amount to $25.6 million and represent 37.4 percent of the total Potable Water System cost, followed by capital project expenses (estimated to be $20.0 million representing 29.8 percent of the total System cost). Other expenses include approximately $6.9 million for O&M and general expenses (10.0 percent), $6.6 million for salaries (9.6 percent), $5.5 million for debt service (8.0

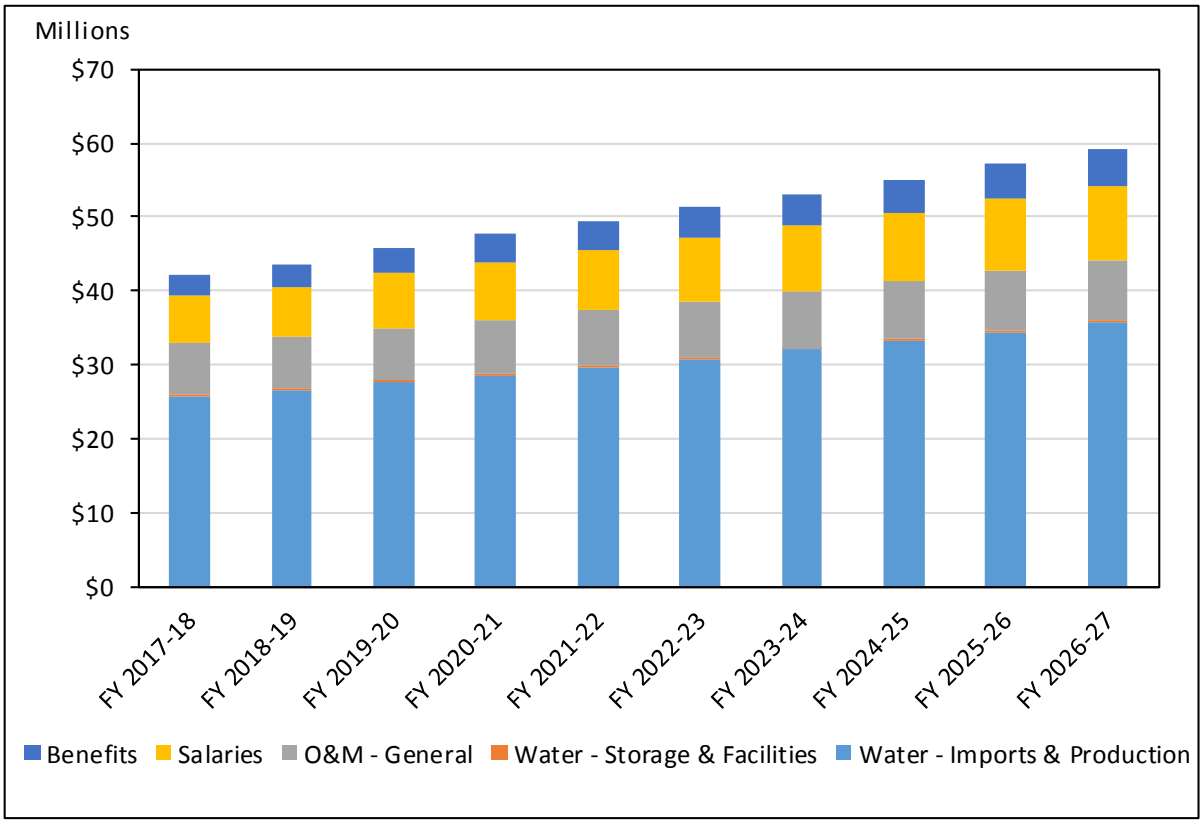
percent), and $2.7 million for benefits (3.9 percent). The remaining expenses include $0.5 million for annualized partial year rate revenue adjustment (0.7 percent) and $0.4 million for costs associated with water storage facilities (0.5 percent).

Figure 2-9. Potable Water Total System Cost for FY 2017-18



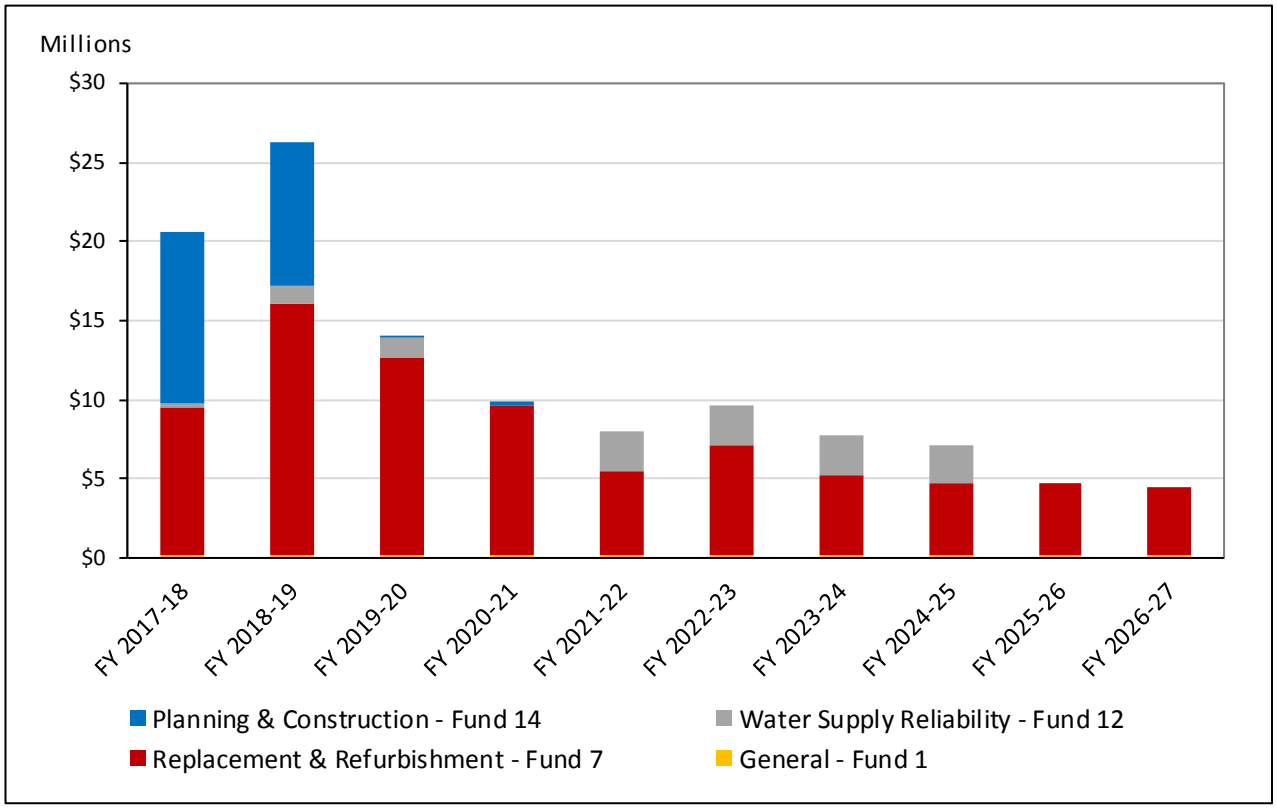
The MNWD Potable Water System's O&M expense projections for FY 2017-18 through FY 2026-27 are summarized in **Figure** 2-10. The costs are increased by the inflation factors discussed in Section 2.1.2. The largest increase in all cost categories is benefits, representing a 6.9 percent increase, followed by salaries, a 5.1 percent increase per year on average during the projected years. The cost of employee benefits has increased over the past few years and is expected to continue growing, in accordance with terms of the District's MOU with the Employee Association. While the District's policy of sharing health insurance premium increases with its employees has helped in mitigating some growth, the sharp rise of premiums is a major driver of this cost increase, which is a general trend in medical expenses.

Figure 2-10. Potable Water System O&M Expense Summary, FY 2017-18 – FY 2026-27



The District's LRFP projects capital spending from FY 2017-18 through FY 2026-27 based on the District's 10-Year CIP. The Potable Water System has an expected CIP of approximately $112.5 million over the next 10 years. Anticipated projects include a valve replacement program, a reservoir management system replacement program, and a reservoir recoating program, among others. Figure 2-11 displays the projected CIP projects for the 10-year period summarized by the funding type.

Figure 2-11. Potable Water System General Fund Capital Improvement Project (CIP) Budget, FY 2017-18 – FY 2026-27

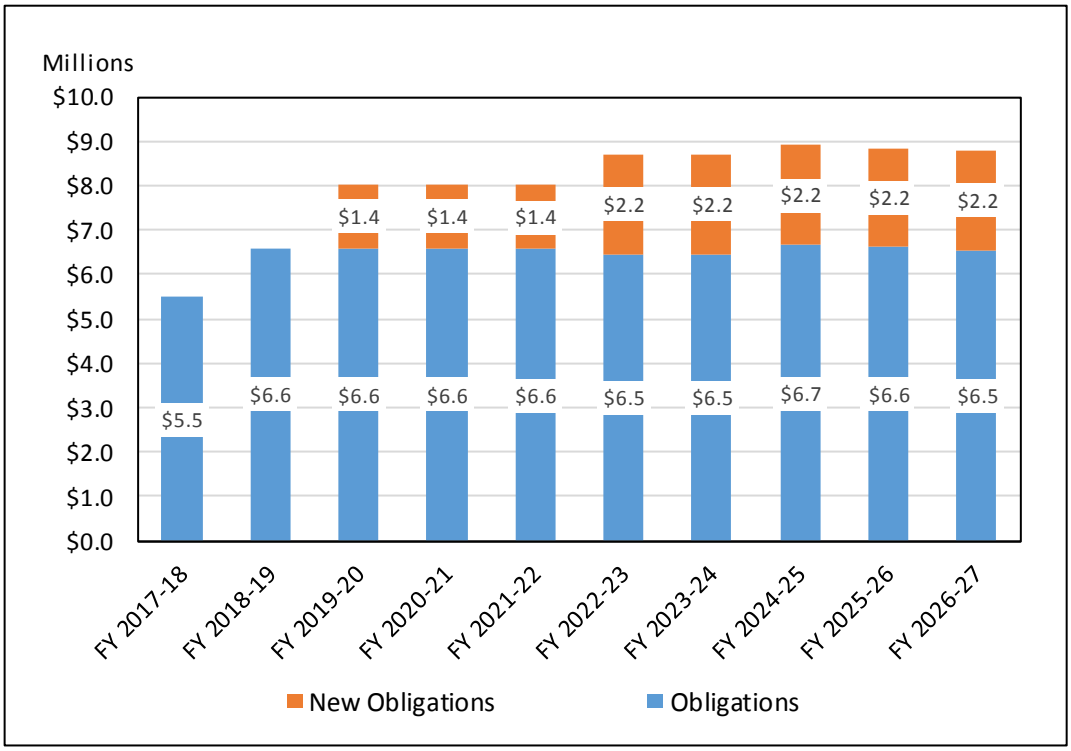


2.4.2. Potable Water System Debt Service

In 2009, the District issued Certificates of Participation to fund reliability improvements including Upper Chiquita Reservoir, an interconnection to Irvine Ranch Water District, and to fund the District's portion of the Baker Water Treatment Plant. These projects in total increased the District's system reliability, or ability to maintain service in the event of an outage at the Diemer TP, from two days to almost 24 days on average, when coupled with the District's demand management programs. Both the 2010 Certificates of Participation (COPs) and 2015 Revenue Bonds initially funded water and wastewater infrastructure. Annual debt service expenses have been allocated to the different systems in proportion to the projects that they funded. One of the District's two loans from the California Infrastructure and Economic Development Bank was used to fund on-site hypochlorite generation reservoir management system. The annual debt service payments to be recovered from Potable Water System rates and charges are shown in Figure 2-12. As noted previously, any remaining GOB obligations and associated revenues have been excluded from the development of revenue requirements for any of the System: annual debt service payments are presented less any GOB-related payments, and property tax revenues are presented less GOB-related assessments.

To reflect the Internal Revenue Service (IRS) expectation that proceeds from tax-exempt bonds be used within three years of issuance date, the potential bond issuances identified in FY 2018-19 and FY 2021-22 have been allocated to the different systems in proportion to their share of rolling 4-year capital project costs assuming a mid-year issuance. The FY 2018-19 and FY 2021-22 issuances add $1.4 million and $0.8 million in new debt service payments, respectively.

Figure 2-12. Potable Water System Existing and Proposed New Debt Service Obligations, FY 2017-18 – FY 2026-27



2.4.3. Potable Water System Revenues

The Potable Water System receives a mix of both rate and non-rate revenue. Figure 2-13 displays the relative amount of revenue that the Potable Water System is projected to receive in FY 2017-18 by revenue type. Capacity fees are the District's charges for new development or expanded development requiring additional capacity to buy into existing assets and pay for growth related to the future capital. The "Other Operating Revenue" consists of miscellaneous fees and charges, including customer service fees, tag fees, and meter sales. The Potable Water System is projected to receive $57.1 million with a 3.0 percent potable water rate increase. Property taxes represent 43.5 percent of total revenues, while volumetric water charges account for 30.0 percent, and fixed charges represent 20.2 percent. Other revenue components account for 2.2 percent or less.

Figure 2-13. Potable Water System General Fund Revenue by Type, FY 2017-18

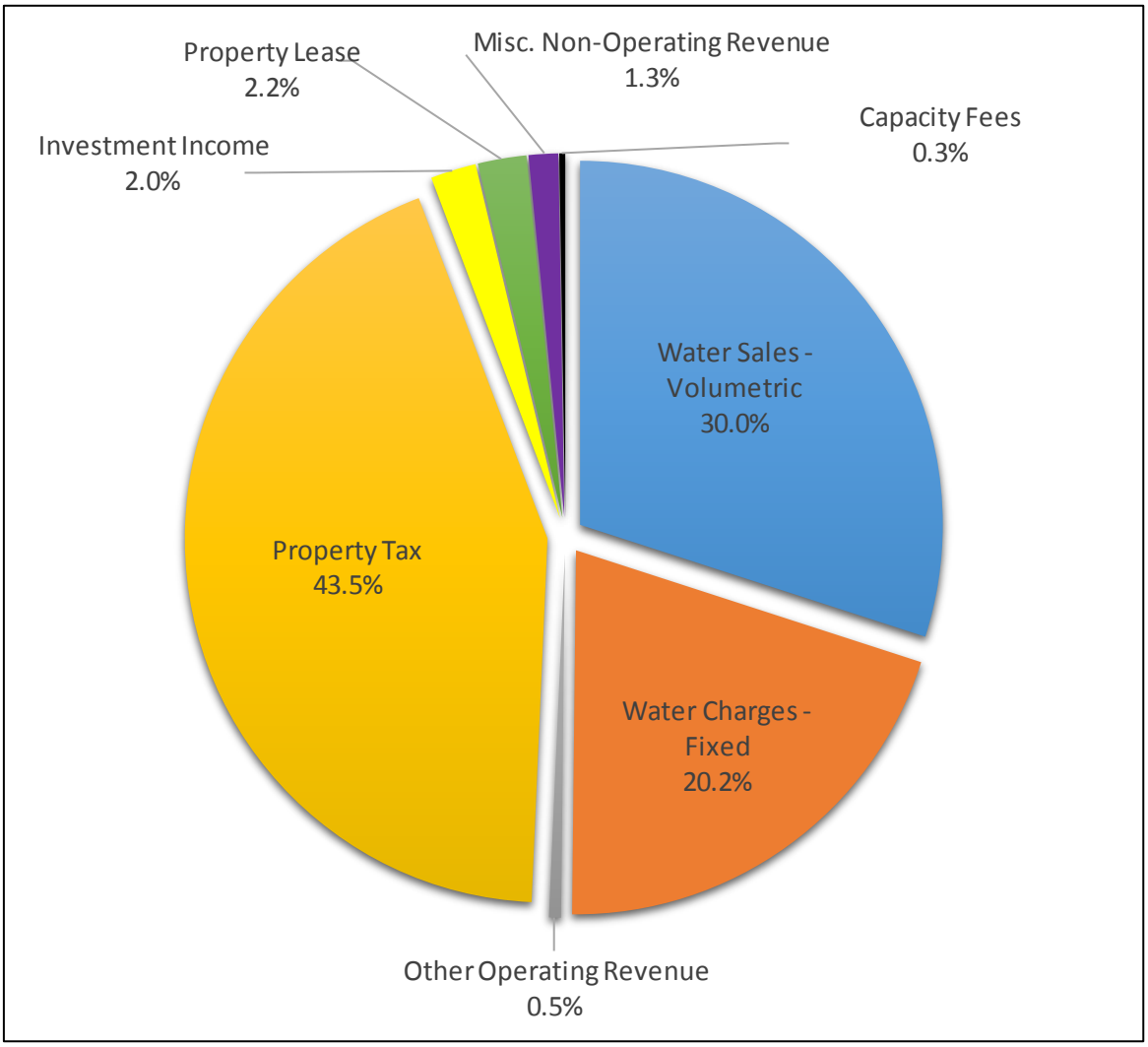
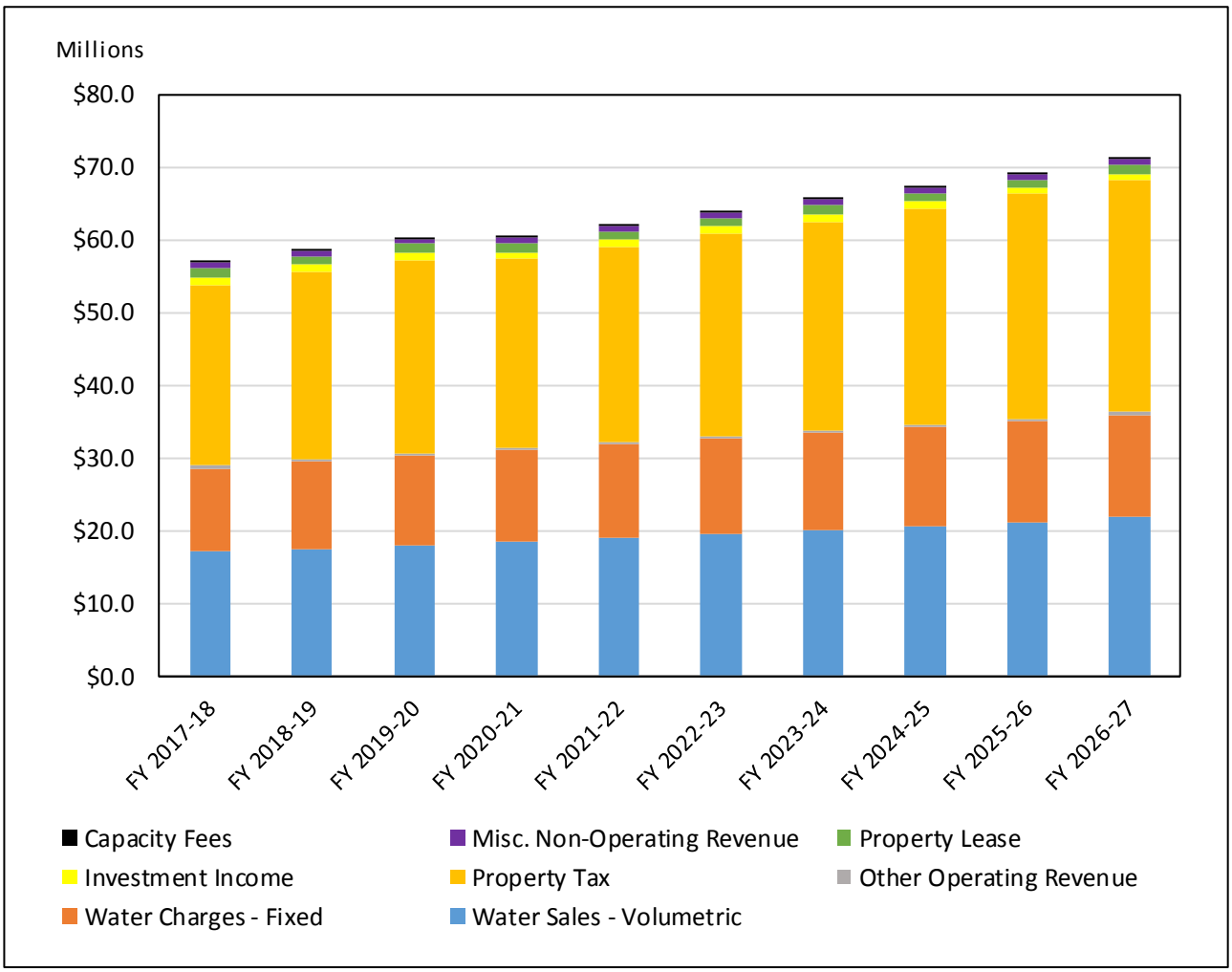


Figure 2-14 presents a summary of the Potable Water System's projected revenues for FY 2017-18 through FY 2026-27 with a cumulative 3.0 percent rate revenue adjustment for the Potable Water System.

Figure 2-14. Potable Water System General Fund Projected Revenues for FY 2017-18 – FY 2026-27



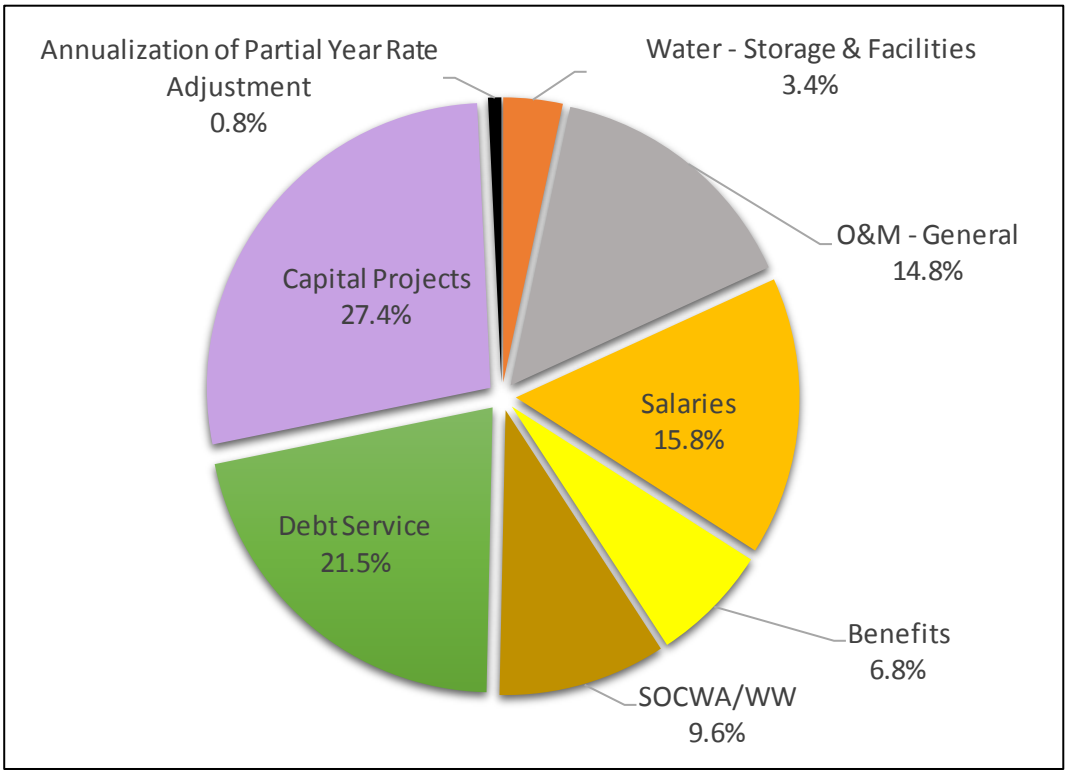
2.5. Recycled Water Financial Plan

The principles for the Recycled Water System financial plan mirror the organization of the Potable Water System financial plan as described in Section 2.4. The following describes the revenue requirements over the next ten fiscal years for the District's Recycled Water System.

2.5.1. Recycled Water Total System Cost

The recycled water total system cost for FY 2017-18 amounts to approximately $11.4 million after rebates from MWDSC's Local Resources Program, offsetting the original cost of $12.3 million by $0.9 million. The Recycled Water System's capital projects is the largest cost, totaling $3.4 million and representing 27.4 percent of the total system cost. Debt service expenses are the second largest cost and are estimated to be $2.6 million, representing 21.5 percent. Other costs include $2.0 million for salaries (representing 15.8 percent), $1.8 million for O&M and general expenses (14.8 percent), $1.2 million for the contribution to SOCWA/WW (9.6 percent), and $0.8 million for benefits (6.8 percent). The remaining 3.4 percent is for the cost associated with water storage and facilities, which amounts to $0.4 million, and annualized partial year rate revenue adjustment (0.8 percent) of $0.1 million (Figure 2-15).

Figure 2-15. Recycled Water Total System Cost, FY 2017-18

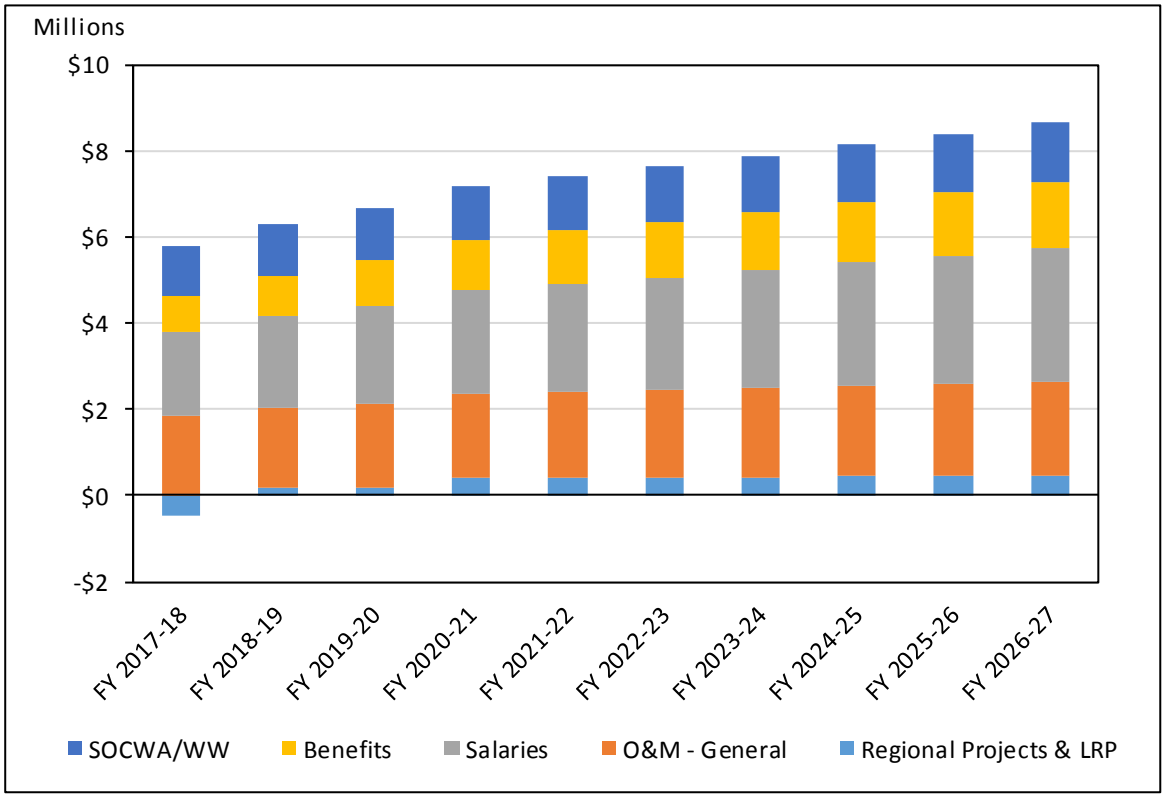


The District will continue to evaluate options for increasing recycled water production, primarily from operational and site improvements at the District's Plant 3A, while ensuring that any expansion of the recycled water program is cost-effective for the District's ratepayers. Recycled water production is a critical component of the District's water

reliability strategies. As such, the District will continue to review the available recycled water production opportunities, available treatment technologies, and recycled water needs of its ratepayers.

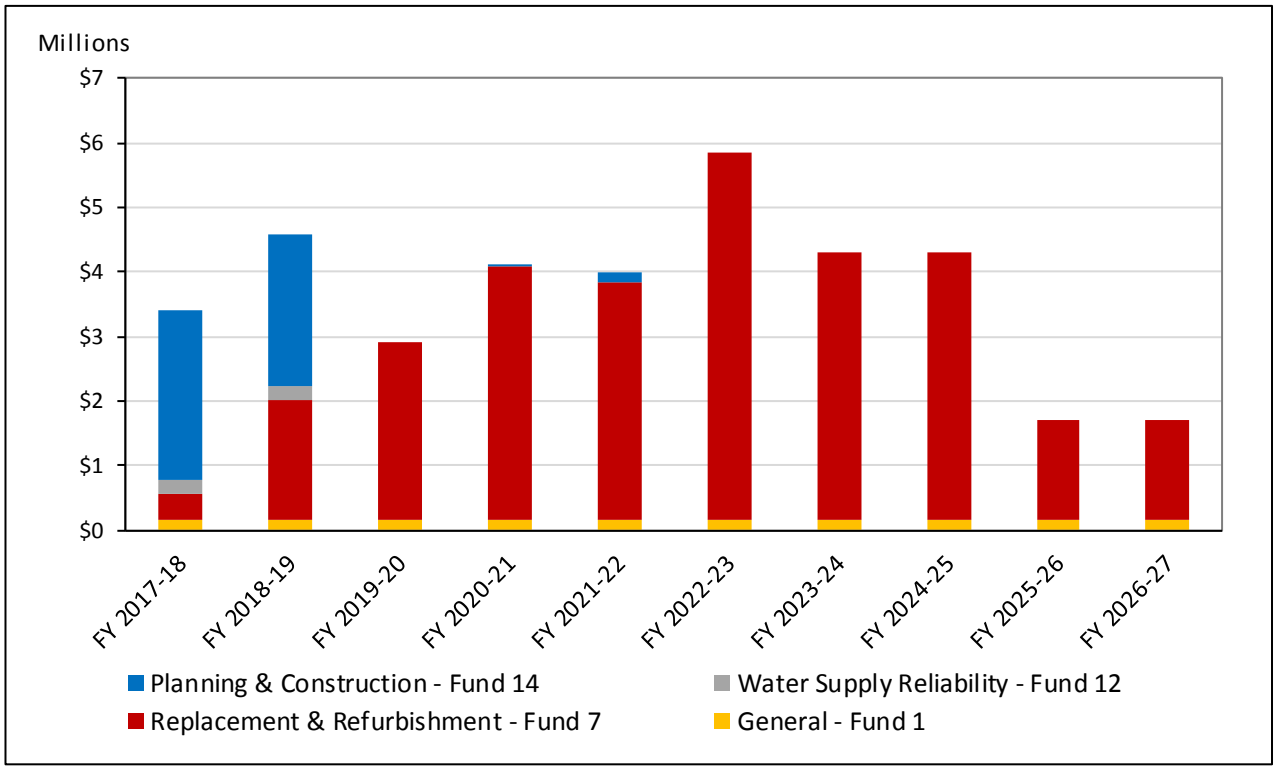
The Recycled Water System's O&M expense projections for the study period are summarized in Figure 2-16. The largest increase in all cost categories comes from salaries, representing a 7.0 percent increase followed by O&M expenses, a 5.3 percent increase per year on average during the projected years. Salary expenditures are projected to increase in accordance with terms of the of the District's MOU with the Employee Association, while the cost of O&M is projected to rise at a larger increment due to the increase of new recycled water customer accounts and expansion of the Recycled Water System. The negative water costs reflect the Local Resources Program funding from MWDSC which decreases as the current agreement expires in 2019 and increases with the expansion of the Recycled Water System as Potable Irrigation customers convert their potable water to recycled water. The plan assumes a new LRP program agreement is initiated for the new recycled water projects.

Figure 2-16. Recycled Water System Operating Budget Summary, FY 2017-18 – FY 2026-27



The District's LRFP projects capital spending for the Recycled Water System from FY 2017-18 through FY 2026-27 based on the District's 10-Year CIP. The Recycled Water System has an expected CIP of approximately $37.0 million over the next 10 years (Figure 2-17). Anticipated projects include a vertical asset improvement program, recycled water main replacement, a valve replacement program, and an electrical system improvement program, among others.

Figure 2-17. Recycled Water System General Fund Capital Improvement Project (CIP), FY 2017-18 – FY 2026-27



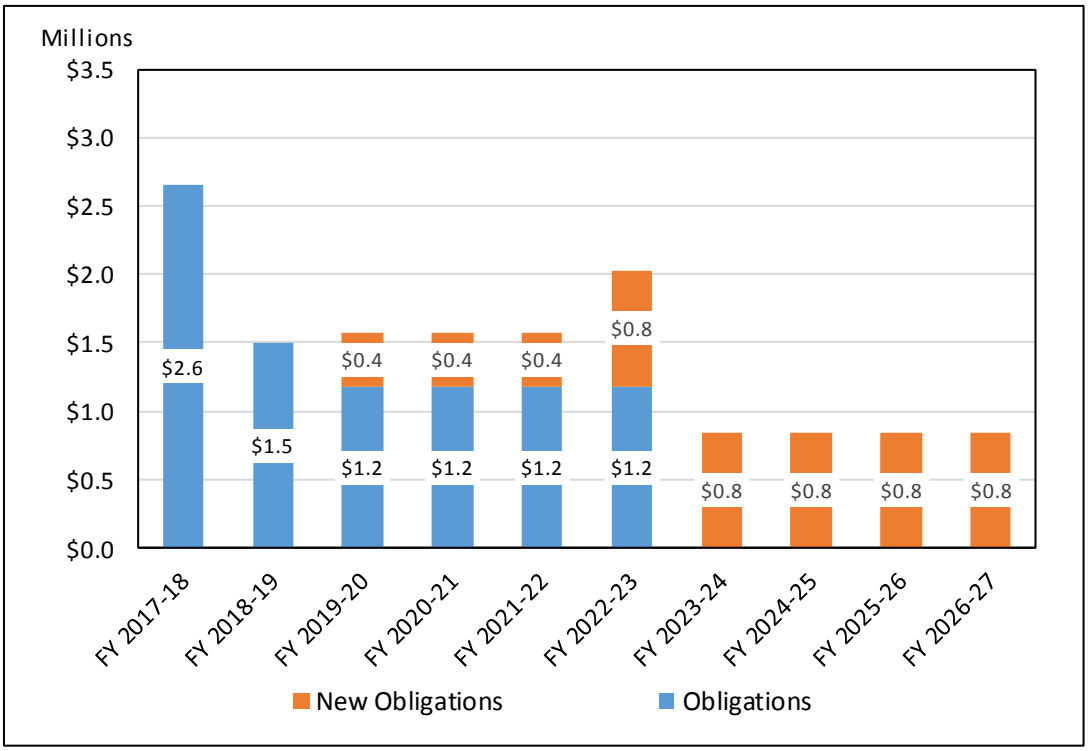
2.5.2. Recycled Water System Debt Service

Existing debt service for the Recycled Water System is largely comprised of three loans from the State Water Resources Control Board, which were used to expand the Recycled Water System. As noted previously, annual debt service expenses have been allocated to the different systems in proportion to the projects that they funded. The annual debt service payments to be recovered from recycled water rates are shown in Figure 2-18. As noted previously, any remaining GOB obligations and associated revenues have been excluded from the development of revenue requirements for any of the System: annual debt service payments are presented less any GOB-related payments, and property tax revenues are presented less GOB-related assessments.

To reflect the IRS expectation that proceeds from tax-exempt bonds be used within three years of issuance date, the potential bond issuances identified in FY 2018-19 and FY 2021-22 have been allocated to the different systems in proportion to their share of rolling 4-year capital project costs assuming a mid-year issuance. The FY 2018-19 and FY 2021-22 issuances add $0.4 million initially (FY 2019-20 – FY 2021-22) and additional $0.4 million starting FY 2022-23, totaling $0.8 million of annual debt payment for the remaining projected years (FY 2022-23 – FY 2026-27).

Figure 2-18 provides a breakdown of existing and proposed debt service associated with the Recycled Water System.

Figure 2-18. Recycled Water System General Fund
Existing and Proposed New Debt Service Obligations, FY 2017-18 – FY 2026-27



2.5.3. Recycled Water System Revenues

The Recycled Water System receives a mix of both rate and non-rate revenue. Figure 2-19 presents the relative amount of revenue that the Recycled Water System is projected to receive in FY 2017-18 by revenue type. Revenues projected for FY 2017-18 total $10.4 million with a 3.0 percent of recycled water rate revenue increase. Property taxes are forecasted to account for 40.0 percent, while recycled water volumetric charges account for 35.6 percent, and fixed charges represent 16.3 percent. Property Lease accounts for 4.7 percent and other revenue components account for 1.5 percent or less.

Figure 2-19. Recycled Water System General Fund Revenue by Type, FY 2017-18

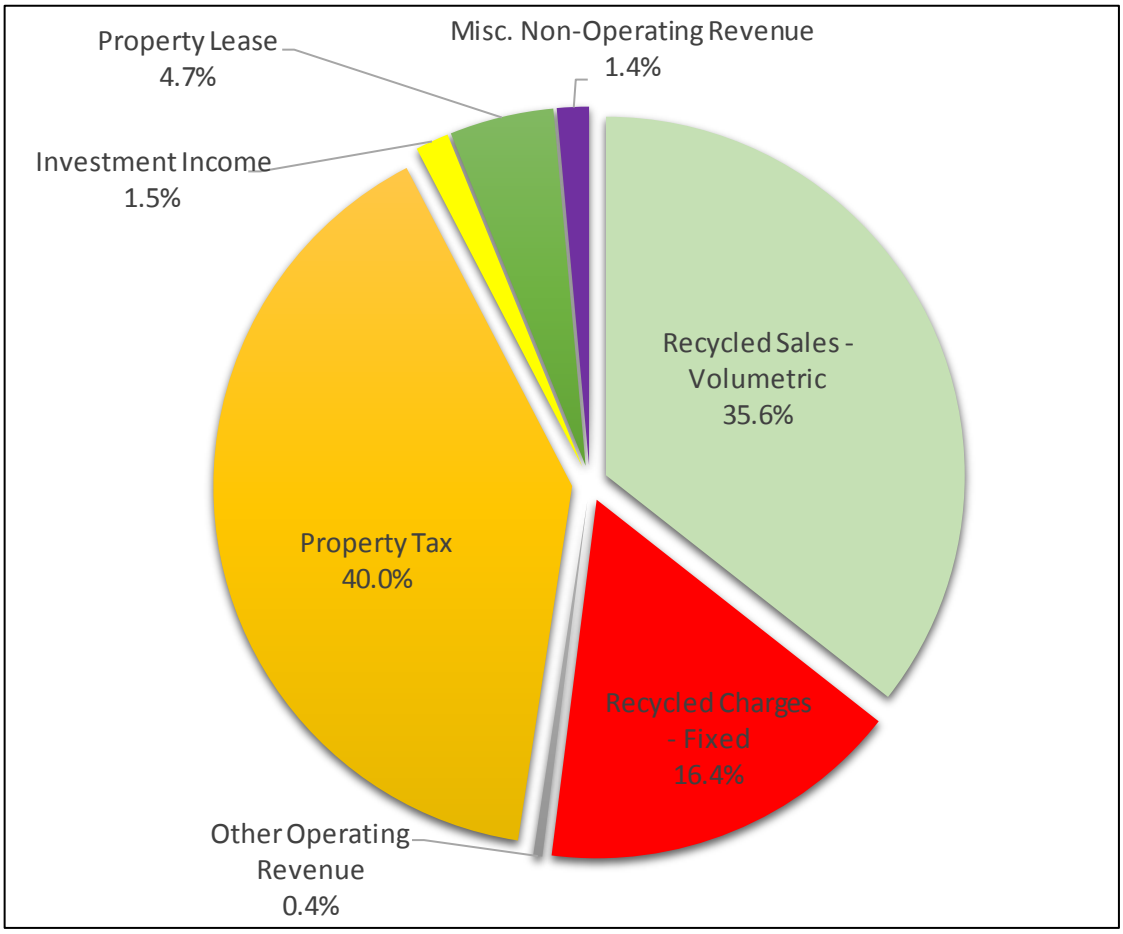
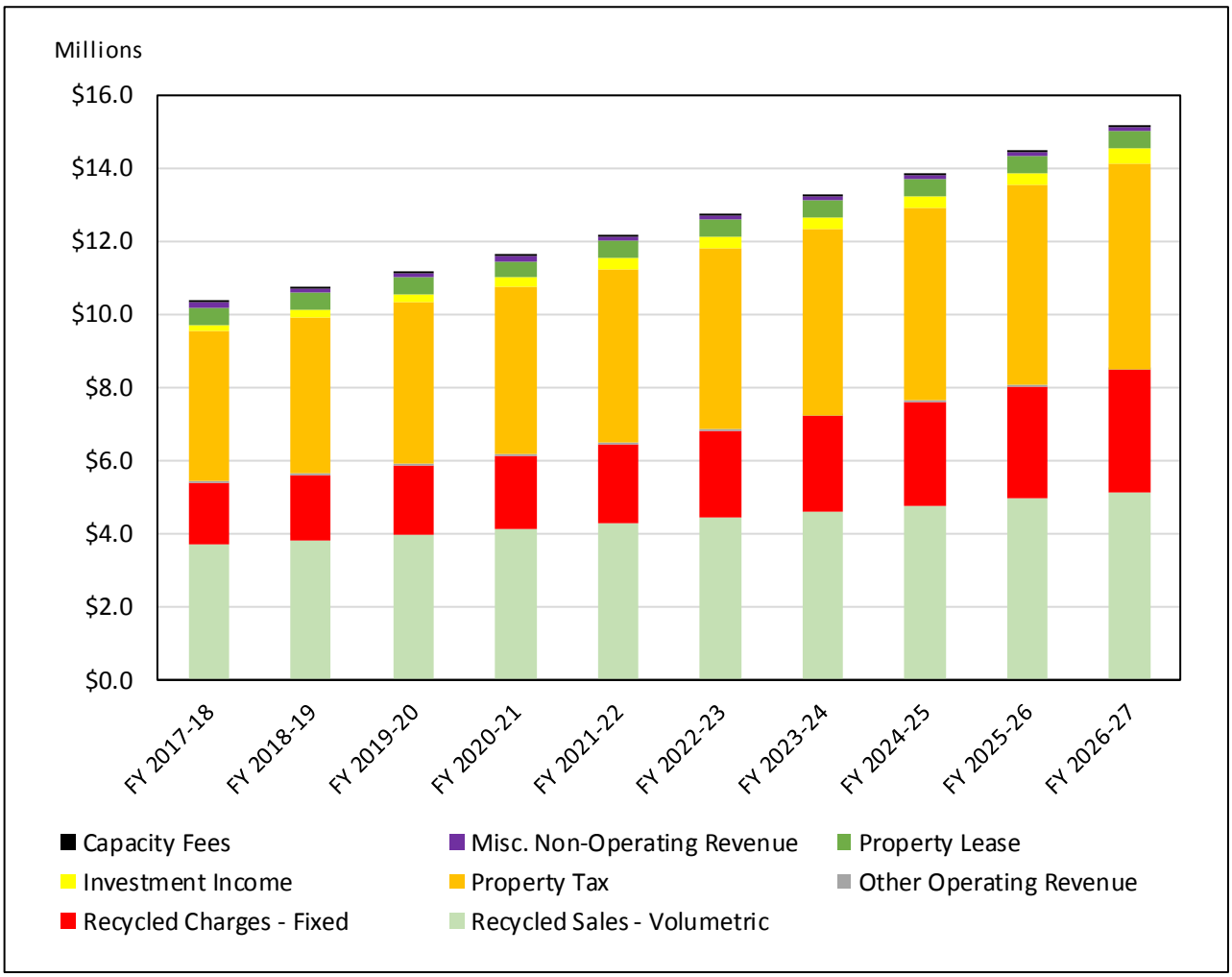


Figure 2-20 shows a summary of the Recycled Water System's projected revenues through FY2026-27 with a cumulative 3.0 percent rate revenue adjustment.

Figure 2-20. Recycled Water System General Fund Projected Revenues for FY 2017-18 – FY 2026-27



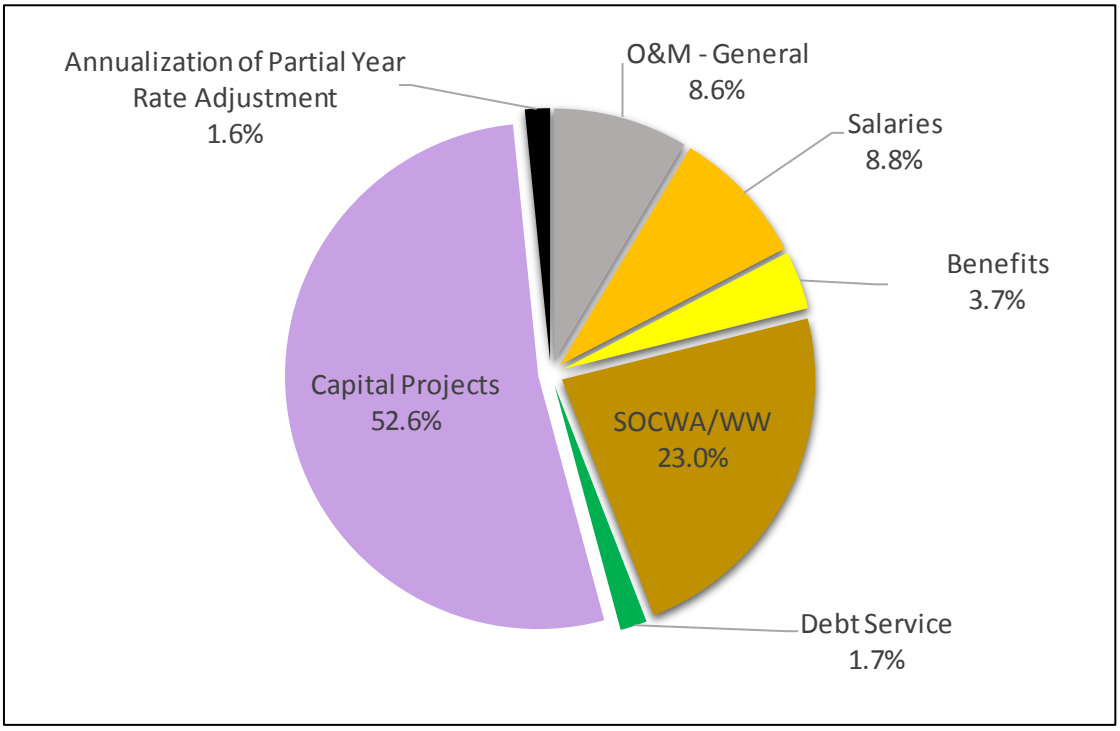
2.6. Wastewater System Financial Plan

The principles for the Wastewater System financial plan mirror the organization of the Potable Water System financial plan as described in Section 2.4. The following describes the revenue requirements over the next ten years for the Wastewater System.

2.6.1. Wastewater Total System Cost

Figure 2-21 presents a breakdown of projected total system cost by categories for the Wastewater System in FY 2017-18. The System's capital projects cost is estimated to be $22.3 million, which is the largest cost of the Wastewater System representing 52.6 percent of the total system cost. Capital project costs include SOCWA related capital expenses projections of approximately $4.5 million. The District's contribution to the SOCWA/WW operating costs, amount to $9.8 million represents 23.0 percent of the total cost. Other large costs for FY 2017-18 include O&M and general expenses of approximately $3.7 million, representing 8.6 percent of the total cost, $3.7 million for salaries (8.8 percent), and $1.6 million for benefits (3.7 percent). The remaining expenses are $0.7 million for annualized partial year rate revenue adjustment (1.6 percent) and $0.7 million for debt service (1.7 percent).

Figure 2-21. Wastewater Total System Cost for FY 2017-18



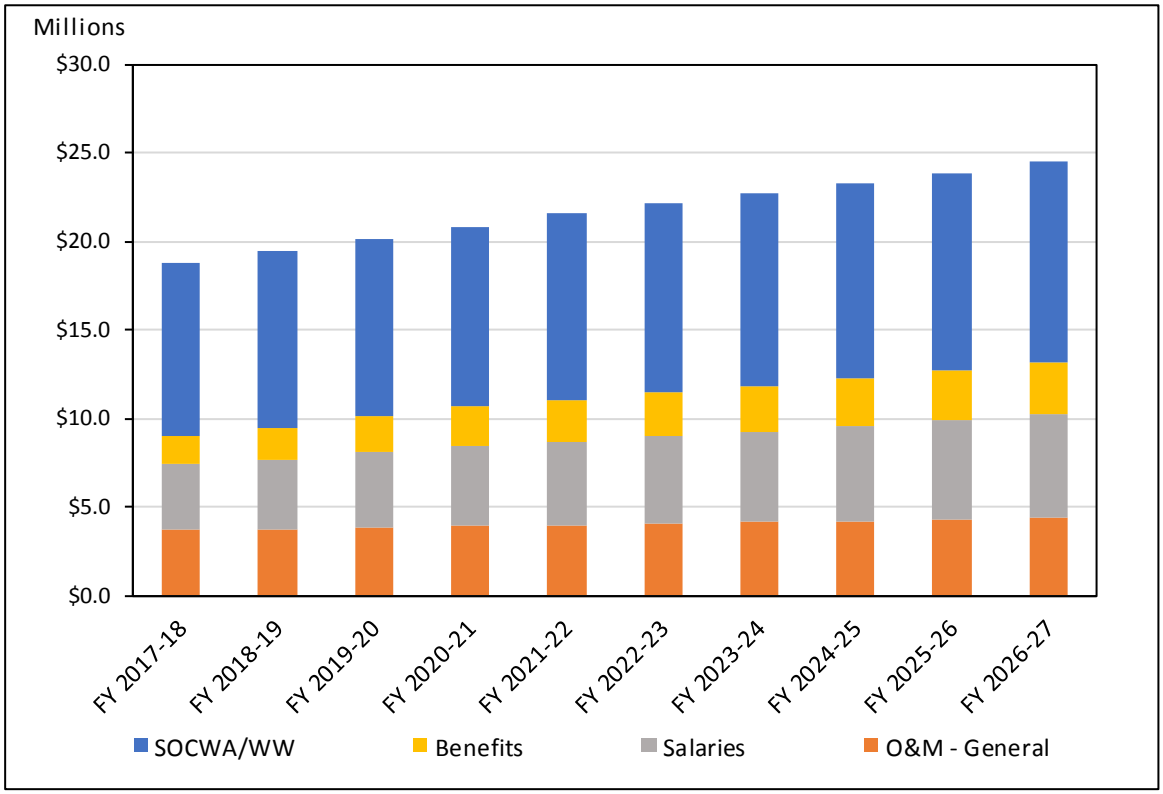
Given the significant annual costs for wastewater treatment, provided for the District by SOCWA for three of the of the District's four treatment plants and by SMWD for Plant 3A, (approximately $25.0 million annually for both operating and capital expenses) there is a growing need to ensure the District's ratepayers receive high-quality and cost-effective wastewater treatment services from its contract service providers. It is imperative that the treatment of wastewater be closely monitored to ensure compliance with all regulations, protection of public health and the

local environment, and financial accountability and transparency for the benefit of all of the District's ratepayers. As the proposed budgets for wastewater treatment continue to increase at unprecedented rates, the District intends to review opportunities to identify the most effective and cost-efficient ways to treat wastewater.

Plant 3A operations by SMWD and potential facility expansion has highlighted the need for close monitoring and assessment of current and future wastewater treatment capacity, along with recycled water production. Regional partnering to optimize wastewater treatment and maximize recycled water production will continue to be a primary focus of the District.

The Wastewater System's O&M expense projections for the study period are summarized in Figure 2-22. The Wastewater System's largest operating expense is the share of annual SOCWA operating costs. Combined with treatment and operating costs from Plant 3A, wastewater treatment by other agencies represents over half of the Wastewater System's annual operating costs. The remaining operating costs are attributable to maintenance of the collection system by District staff.

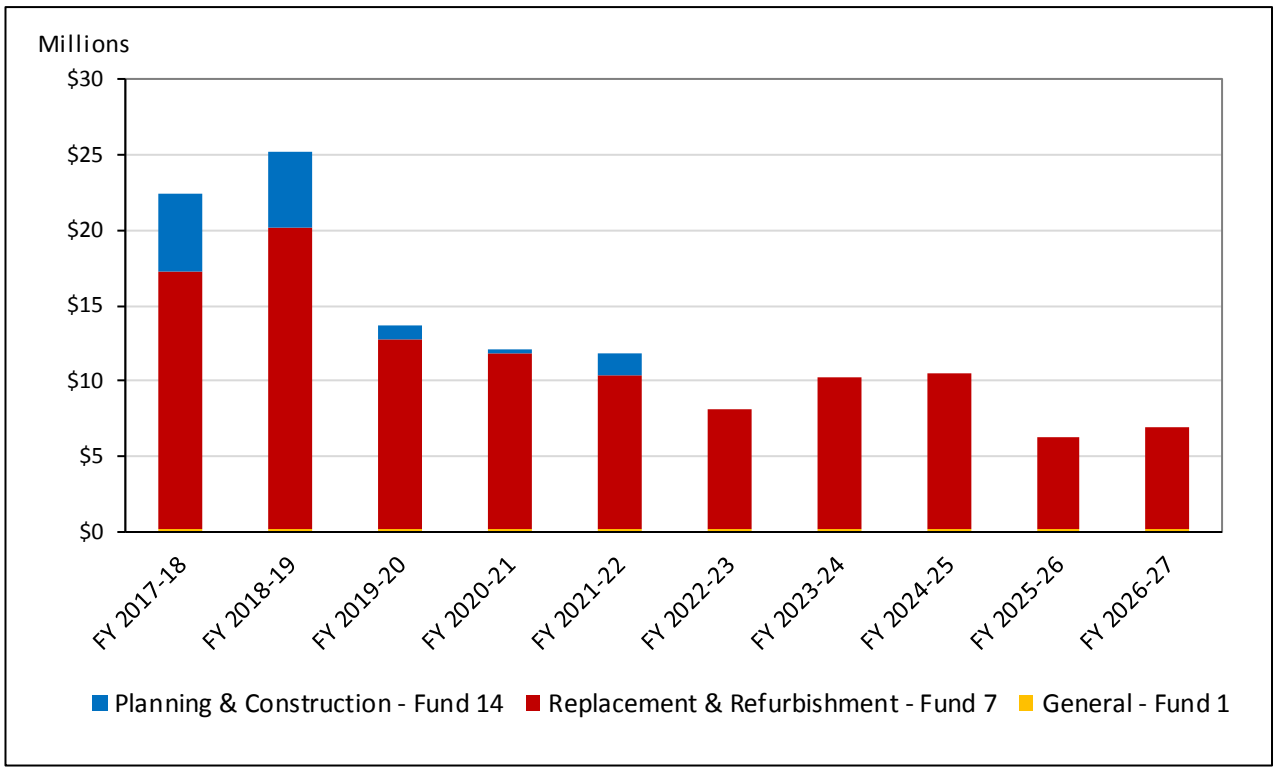
Figure 2-22. Wastewater System Operating Expense Summary, FY 2017-18 – FY 2026-27



The District's LRFP projects capital spending from FY 2017-18 through FY 2026-27 based on the District's 10-Year CIP. The Wastewater System has an expected CIP of approximately $127.3 million over the next 10 years. Anticipated major capital projects include regional lift station force main replacement, lower Salada lift station force main replacement, a manhole rehabilitation program, wastewater project per asset management model, and various effluent

transmission main pipeline replacements, among others. Figure 2-23 displays the projected CIP projects for the 10-year study period summarized by the funding type.

Figure 2-23. Wastewater System General Fund Projected Capital Improvement Project (CIP), FY 2017-18 – FY 2026-27



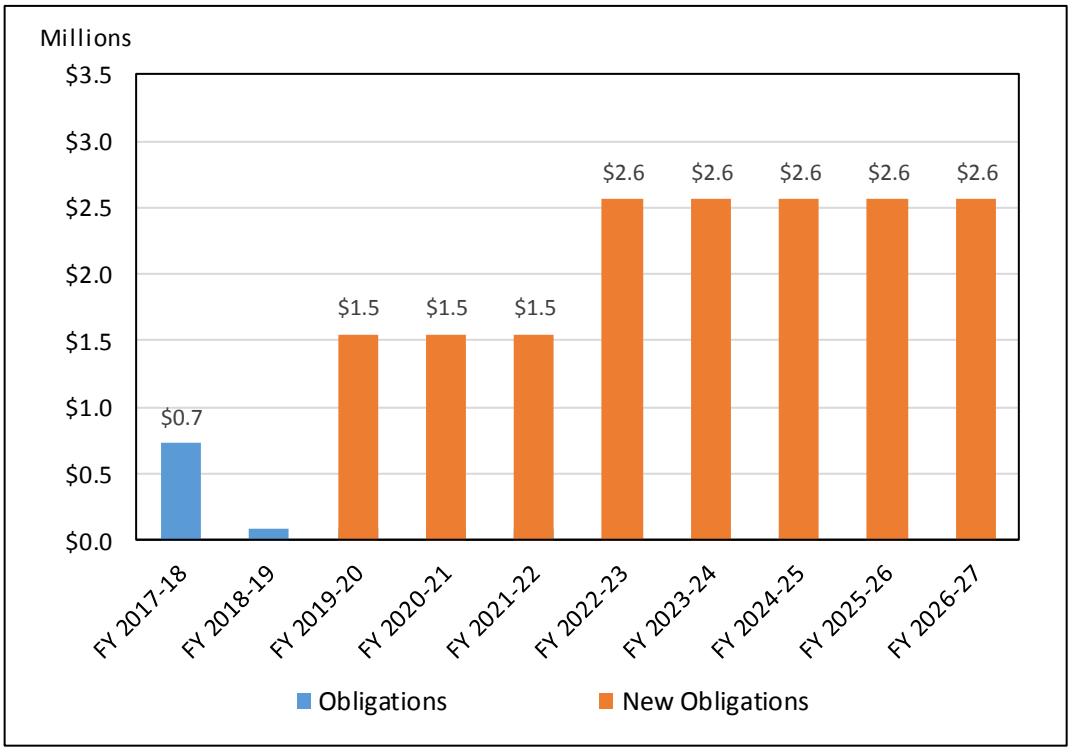
2.6.2. Wastewater System Debt Service

Existing debt service for the Wastewater System is comprised of several issuances and subsequent refunding: one of the District's two CIEDB loans was used to fund a sewer rehabilitation project, and both the 2010 COPs and 2015 Revenue Bonds initially funded water and wastewater infrastructure. Annual debt service expenses have been allocated to the different systems in proportion to the projects that they funded. The annual debt service payments to be recovered from Wastewater rates are shown in Figure 2-24. As noted previously, any remaining GOB obligations and associated revenues have been excluded from the development of revenue requirements for any of the System: annual debt service payments are presented less any GOB-related payments, and property tax revenues are presented less GOB-related assessments.

To reflect the IRS expectation that proceeds from tax-exempt bonds be used within three years of issuance date, the potential bond issuances identified in FY 2018-19 and FY 2021-22 have been allocated to the different systems in proportion to their share of rolling 4-year capital project costs assuming a mid-year issuance. The FY 2018-19 and FY 2021-22 issuances add $1.5 million and $1.1 million in new debt service payments, respectively.

Figure 2-24 provides a breakdown of existing and proposed debt service associated with the Wastewater System.

Figure 2-24. Wastewater System General Fund
Existing and Proposed New Debt Service Obligations, FY 2017-18 – FY 2026-27



2.6.3. Wastewater System Revenues

The Wastewater System also receives a mix of both rate and non-rate revenue. Revenues projected for FY 2017-18 totaled $22.6 million with a 5.5 percent wastewater rate increase. Figure 2-25 presents the relative amount of revenue that the Wastewater System is projected to receive in FY 2017-18 by revenue type. Wastewater charges are forecast to account for 93.5 percent of revenues, while miscellaneous non-operating revenue represents 3.1 percent and other revenue components account for 2.0 percent or less.

Figure 2-25. Wastewater System General Fund Projected Revenues by type for FY 2017-18

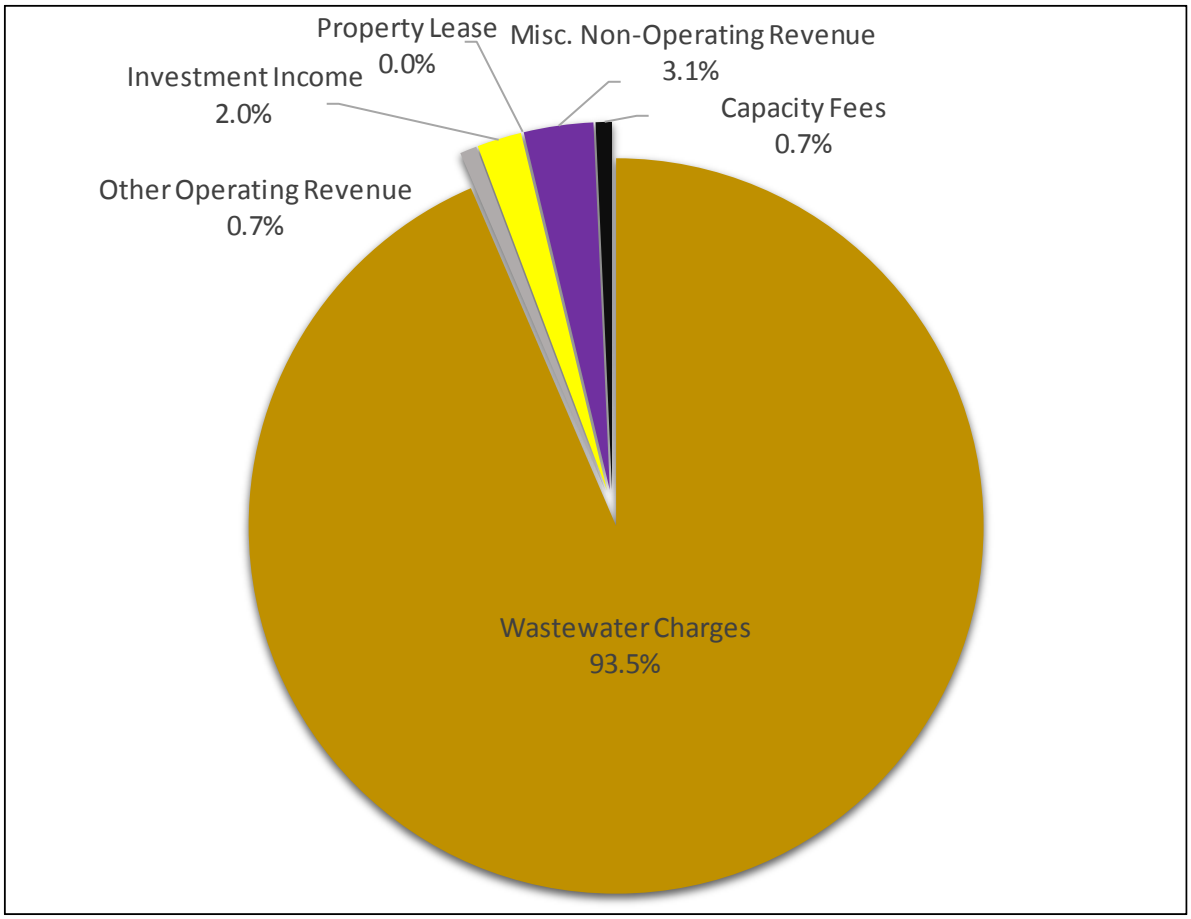
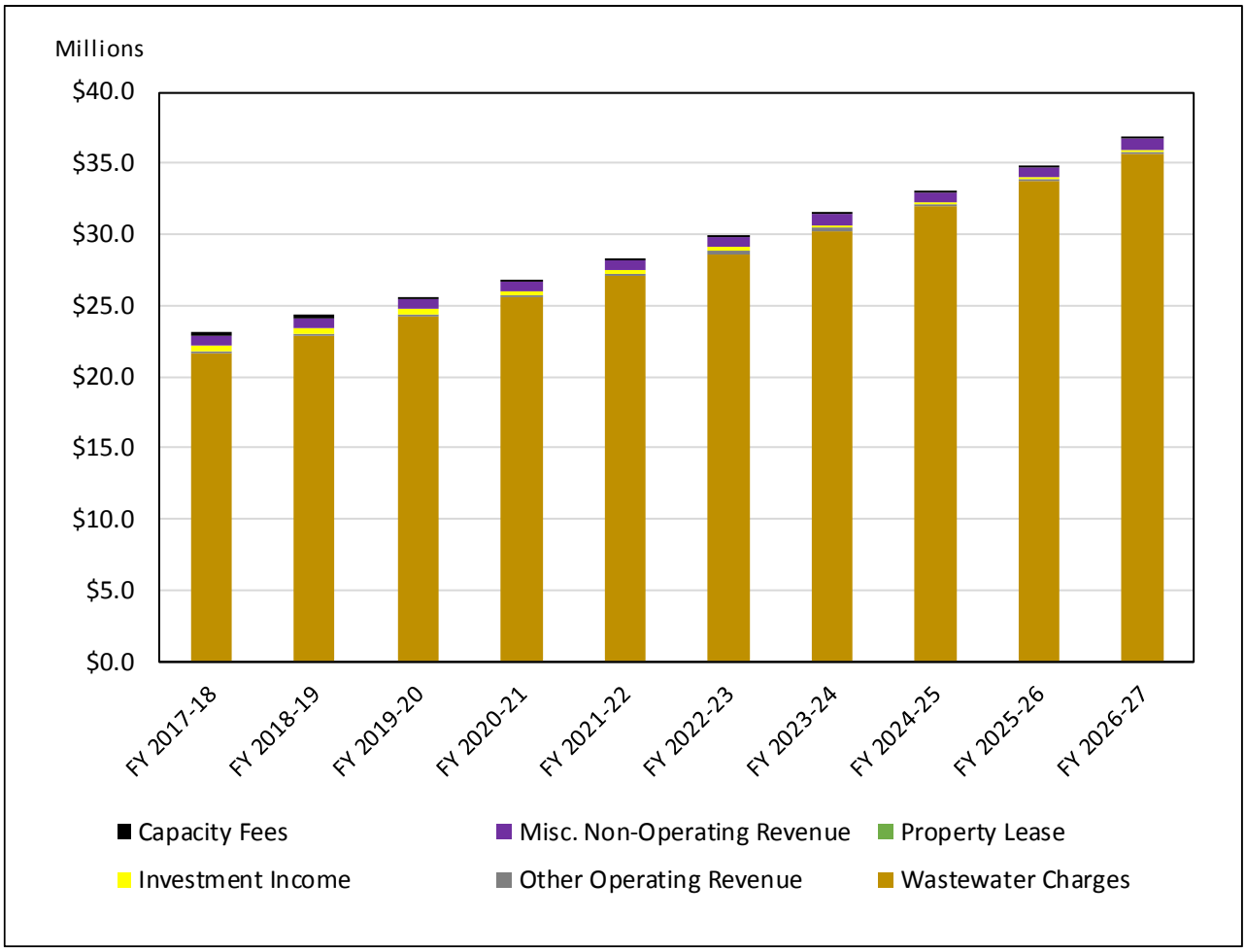


Figure 2-26 shows a summary of the Wastewater System's projected revenue through FY 2017-18 through FY 2026-27, with a cumulative 5.5 percent rate revenue increase.

Figure 2-26. Wastewater System General Fund Projected Revenue for FY 2017-18 – FY 2026-27



2.7. Water Use Efficiency (WUE) Fund Financial Plan

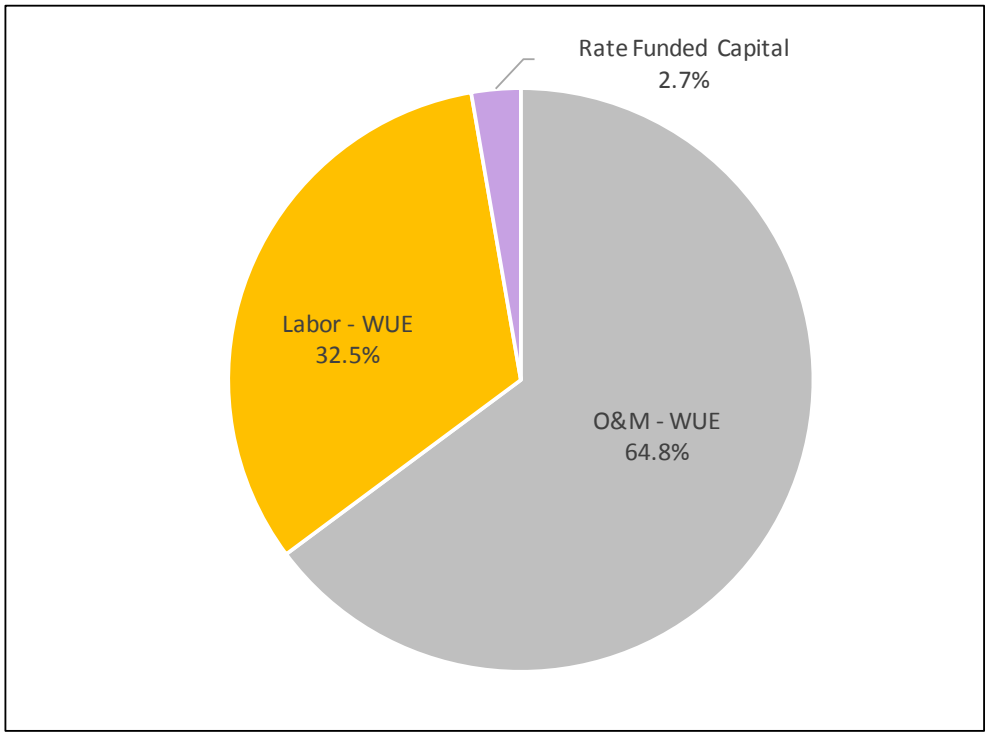
The District's customers are allocated a water budget calculated based on individual needs and certain parameters to promote the efficient use of water. Customers who use water inefficiently—in excess of their calculated water budgets—place greater demands on the District's Potable Water and Recycled Water Systems and supplies. Those customers who use more than their allocated water budgets are therefore subject to higher water use rates to offset the costs their additional demands create. The District maintains a strong cost nexus between increasing marginal supply costs and increasing rates by investing the incremental rate difference in alternative water supply programs, rebates, water conservation, and demand management measures to increase efficient uses of water and offset demand from inefficient water use.

In the absence of the District's new direct install and efficiency assessment programs, the combined effect of reduced conservation messaging from the state and rescinding the District's Water Shortage Contingency Plan Stages I & II warrant a reduction in water use efficiency cost projections in future years. However, as the District continues to take a more active role in the administration of its water use efficiency and rebate programs, it is expected that program participation will increase beyond the level seen in FY 2016-17 and has been reflected in the FY 2017-18 budget. From a financial planning perspective, these potentially offsetting impacts warrant a different methodology be used to develop rate revenue requirements for future years from that which was used to develop the FY 2017-18 budget. Recognizing this, District finance staff has reduced the WUE Fund's non-labor related operating expenses to 59 percent of budgeted values based on the minimum ratio of actuals to budget over the past four years to serve as an estimate of the District's rate revenue requirements for operating costs over the planning horizon.

2.7.1. WUE Total Program Cost

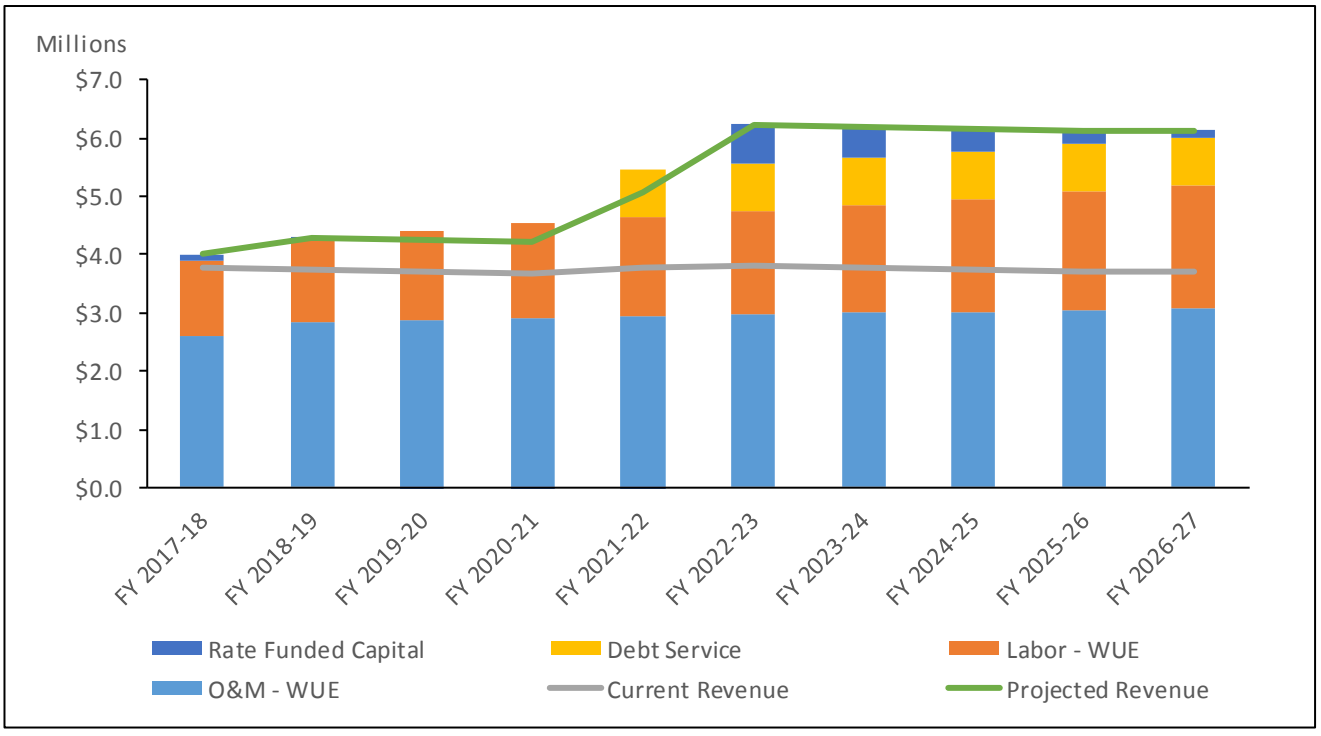
The WUE total program cost is projected to be approximately $4.0 million for FY 2017-18. Of this total, O&M costs are forecasted to account for 64.8 percent ($2.6 million), and labor costs for 32.5 percent ($1.3 million). Rate founded capital costs for the WUE program total $0.1 million, representing 2.7 percent of the total program cost. Figure 2-27 presents a distribution of the total program cost by type.

Figure 2-27. WUE Total Program Cost by Type, FY 2017-18



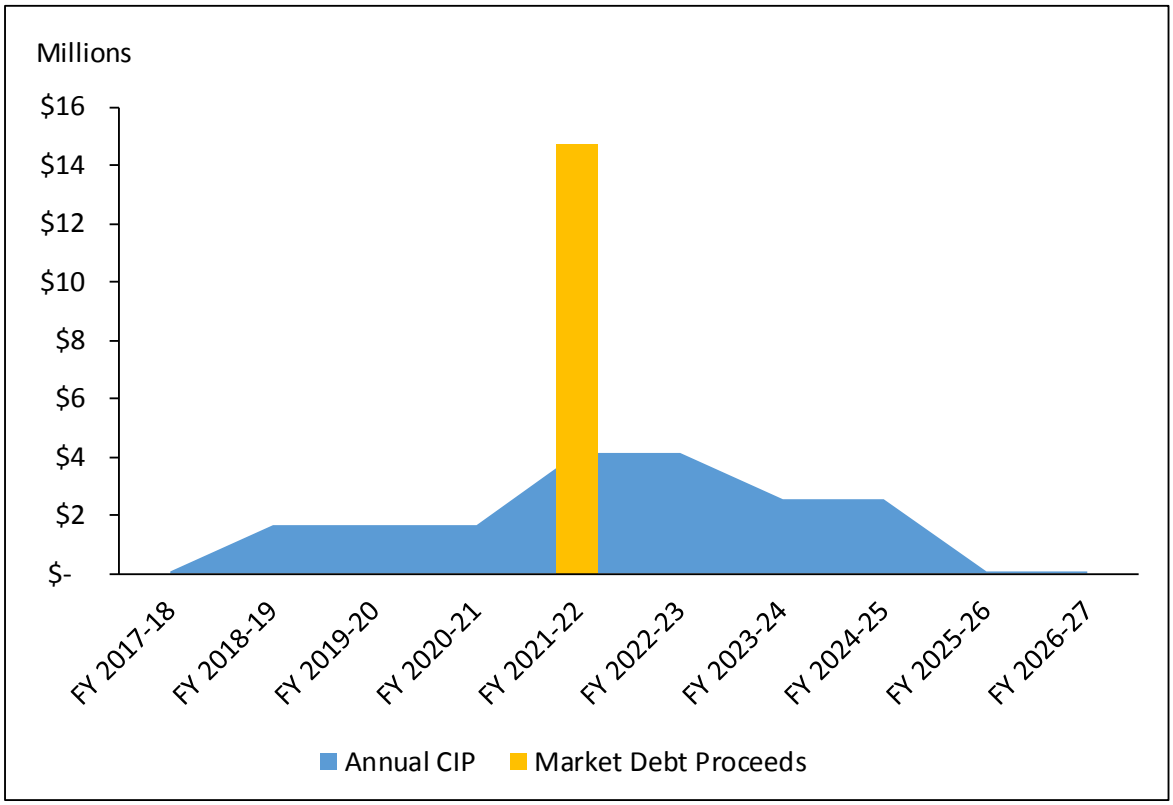
The WUE Program O&M expense projections for FY 2017-18 through FY 2026-27 are summarized in Figure 2-28.

Figure 2-28. WUE Program Expenditures and Current/Projected Revenues, FY 2017-18 – FY 2026-27



In addition to the costs associated with the ongoing management of the District's water use efficiency and conservation programs, a portion of the capital costs associated with future water supply reliability enhancement projects have been allocated to the WUE Fund. There is a natural nexus between efficient water use and long term supply reliability, as any reductions in inefficient water use decrease the size, and ultimately cost, or future supply reliability projects. Conversely, continued inefficient water use necessitates more costly reliability projects. The costs of these projects should be recovered from inefficient usage. Combined with the project costs associated with the District-wide deployment of advanced metering infrastructure (AMI), the District has identified $18.5 million in total capital project costs that are allocated to the WUE Fund, as shown in Figure 2-29.

Figure 2-29. WUE Program 10-Year CIP Costs and Proposed Bond Issuance



2.7.2. WUE Program Revenue

The District's continued investment in conservation efforts and rebate programs and its future supply reliability investments will draw down current WUE Fund balances within three years without an adjustment in rate revenue or a new bond issuance. Based on the revenue requirements and increased spenddown rate of WUE Fund balances, District staff is proposing a one-time adjustment to its WUE rates as part of the recommended four year rate structure, specifically a total annual increase of $0.5 million in additional revenue requirements. The District has historically rate-funded all costs associated with the WUE Fund; however, District staff is cognizant of the significant rate impact that continuing this approach would have on customers as well as the financial volatility in the fund historically. To mitigate

the potential impacts to today's customers, District staff is also proposing that $15.0 million of the projected new money bond issuance in FY 2021-22 be allocated to Fund 6 along with an additional one-time revenue adjustment sufficient to maintain the fund through the remainder of the planning horizon. Staff considers the proposed funding strategy optimal as FY 2021-22 would coincide with the District's 2020 Long Range Financial Plan at which point Fund 6 revenue requirements would be re-evaluated. This one-time adjustment in rates paired with the proposed FY 2021-22 is sufficient to avoid a negative fund balance in any one year of the financial plan. The proposed plan addresses the significant program changes that have occurred since the development of the 2015 Long Range Financial Plan, and should rebate program participation decline significantly from current levels the proposed issuance will not be necessary and the unspent available cash will be used to fund the supply reliability and AMI projects.

Including the proposed one-time revenue adjustment, projected WUE revenues for FY 2017-18 total about $4.3 million. The majority of WUE revenue is collected through rates charged for inefficient potable and recycled water use. In addition to rate revenue, the District also collects Demand Offset Fees[3] and retains any interest earned on WUE Fund balances within the WUE Fund in order to accurately account for the associated revenue of the program fund balance. Figure 2-30 presents the relative amount of revenue that the WUE Fund is projected to receive in FY 2017-18 by revenue type. Revenues received from the Potable Water System and the Recycled Water System total approximately $4.2 million, representing 84.1 percent and 12.0 percent respectively. Other revenues include investment income ($0.1 million), representing 2.7 percent of total revenues, and approximately 1.2 percent ($50,000) of demand offset fees generated from the fees to customers upon establishment of new services which require potable water for dedicated irrigation.

[3] Pursuant to California Government Code Section 66013, the District has adopted "Water Demand Offset Fees" to fund future water reliability and water use efficiency projects, programs, and capital improvement projects, in order to offset the additional potable outdoor demand from new or expanded development that would otherwise impact existing water supply reliability. Such a fee meets the definition of a "Capacity Charge" as outlined in California Government Code Section 66013.

Figure 2-30. Water Efficiency Fund Revenue by Type, FY 2017-18

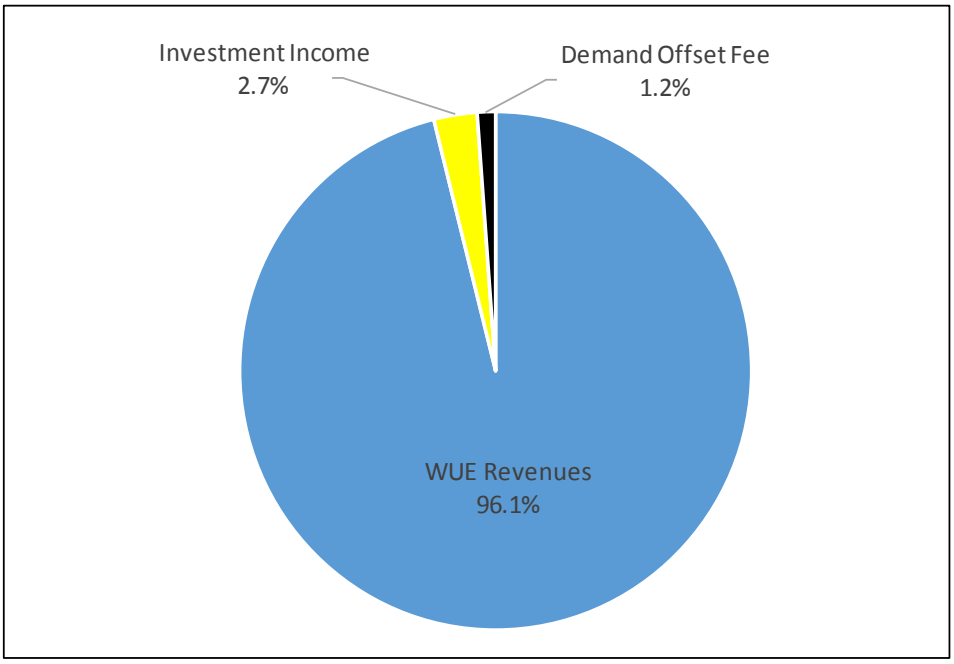
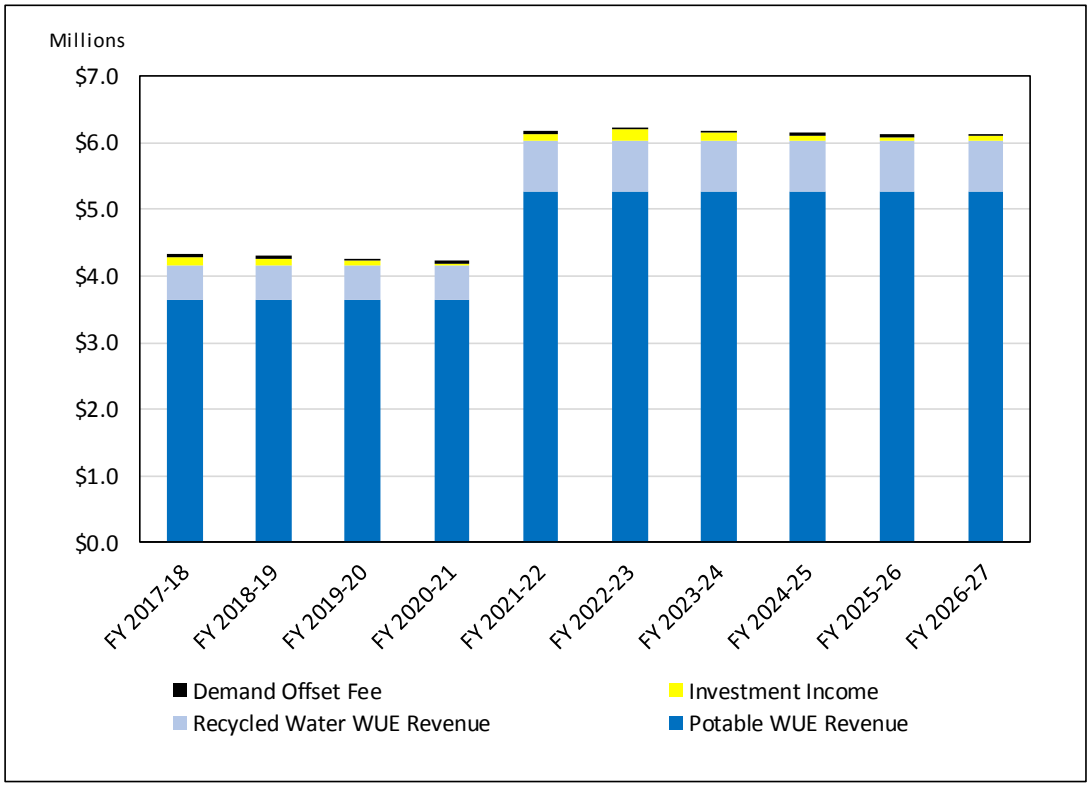


Figure 2-31 presents WUE Program revenue projections by Type for FY 2017-18 through FY 2026-27.

Figure 2-31. WUE Program Projected Revenues, FY 2017-18 – FY 2026-27



2.8. Summary of System Rate Revenue Requirements by Fund

Table 2-5 through Table 2-8 provide a detailed summary of the General Fund and WUE Fund user-charge revenue requirements for each System as outlined in in Sections 2.4 - 2.7.

2.8.1. General Fund User-Charge Revenue Requirements

Table 2-5. Rate Revenue Requirements Potable Water System – General Fund

O&M Expenses	
Water - Imports & Production	$25,586,361
Water - Storage & Facilities	$376,576
O&M - General	$6,856,575
Salaries	$6,564,110
Benefits	$2,702,208
Subtotal O&M Expenses	**$42,085,829**
Debt Service	
Existing (Less GOB Related)	$5,497,285
Proposed	$0
Subtotal Debt Service Expenses	**$5,497,285**
Capital Projects	**$20,419,516**
Annualization of Partial Year Rate Adjustment	**$495,410**
Total Costs for Potable Water System	**$68,498,041**
Change in Fund Balance	**($12,442,737)**
Non-Rate Revenue	
Other Operating Revenue	($302,491)
Property Tax (Less GOB Related)	($23,444,156)
Investment Income	($1,159,543)
Property Lease	($1,237,408)
Misc. Non-Operating Revenue	($753,287)
Subtotal Non-Rate Revenue	**($26,896,886)**
Total Rate Revenue Requirement	**$29,158,418**

Table 2-6. Rate Revenue Requirements Recycled Water System – General Fund

O&M Expenses	
Water - Imports & Production	($905,596)
Water - Storage & Facilities	$416,765
O&M - General	$1,828,716
Salaries	$1,953,226
Benefits	$834,020
SOCWA/WW	$1,179,980
Subtotal O&M Expenses	**$5,307,111**
Debt Service	
Existing (Less GOB Related)	$2,649,113
Proposed	$0
Subtotal Debt Service Expenses	**$2,649,113**
Capital Projects	**$3,385,893**
Annualization of Partial Year Rate Adjustment	**$93,084**
Total Costs for Recycled Water System	**$11,435,200**
Change in Fund Balance	**($1,011,475)**
Non-Rate Revenue	
Other Operating Revenue	($42,458)
Property Tax (Less GOB Related)	($4,137,204)
Investment Income	($155,812)
Property Lease	($486,125)
Misc. Non-Operating Revenue	($123,460)
Subtotal Non-Rate Revenue	**($4,945,058)**
Total Rate Revenue Requirement	**$5,478,668**

Table 2-7. Rate Revenue Requirements Wastewater System – General Fund

O&M Expenses	
O&M - General	$3,650,938
Salaries	$3,728,173
Benefits	$1,584,652
SOCWA/WW	$9,753,942
Subtotal O&M Expenses	**$18,717,706**
Debt Service	
Existing (Less GOB Related)	$727,791
Proposed	$0
Subtotal Debt Service Expenses	**$727,791**
Capital Projects	**$22,332,984**
Annualization of Partial Year Rate Adjustment	**$677,791**
Total Costs for Wastewater System	**$42,456,271**
Change in Fund Balance	**($18,914,031)**
Non-Rate Revenue	
Other Operating Revenue	($96,952)
Investment Income	($452,209)
Property Lease	$0
Misc. Non-Operating Revenue	($705,212)
Subtotal Non-Rate Revenue	**($1,254,373)**
Total Rate Revenue Requirement	**$22,287,867**

2.8.2. Water Efficiency Fund User-Charge Revenue Requirements

Table 2-8. Rate Revenue Requirements WUE Program

O&M Expenses	
O&M - WUE	$2,596,713
Labor - WUE	$1,300,574
Subtotal O&M Expenses	**$3,897,287**
Capital Projects	**$50,000**
Annualization of Partial Year Rate Adjustment	**$316,085**
Total Cost for WUE Program	**$4,263,372**
Change in Fund Balance	**$58,964**
Non-Rate Revenue	
Investment Income	($118,080)
Demand Offset Fees	($50,000)
Subtotal Non-Rate Revenue	**($168,080)**
Total Rate Revenue Requirement	**$4,154,256**

2.9. Recommended Rate Revenue Adjustments

The District's LRFP strategy consists of a combination of drawing on cash reserves and issuing debt in order to minimize rate revenue increases and smooth out the costs of the CIP. Near-term capital improvements will be funded by drawing down on cash reserves. The District plans to issue revenue bonds worth approximately $62.0 million in FY 2018-19 and $48.0 million in FY 2021-22 to fund capital projects and avoid large rate increases. Figure 2-32 displays this pattern of CIP outlays and borrowing.

Figure 2-32. Annual CIPs Funded by Cash Reserves and Market Debt Proceeds, FY 2017-18 – FY 2026-27

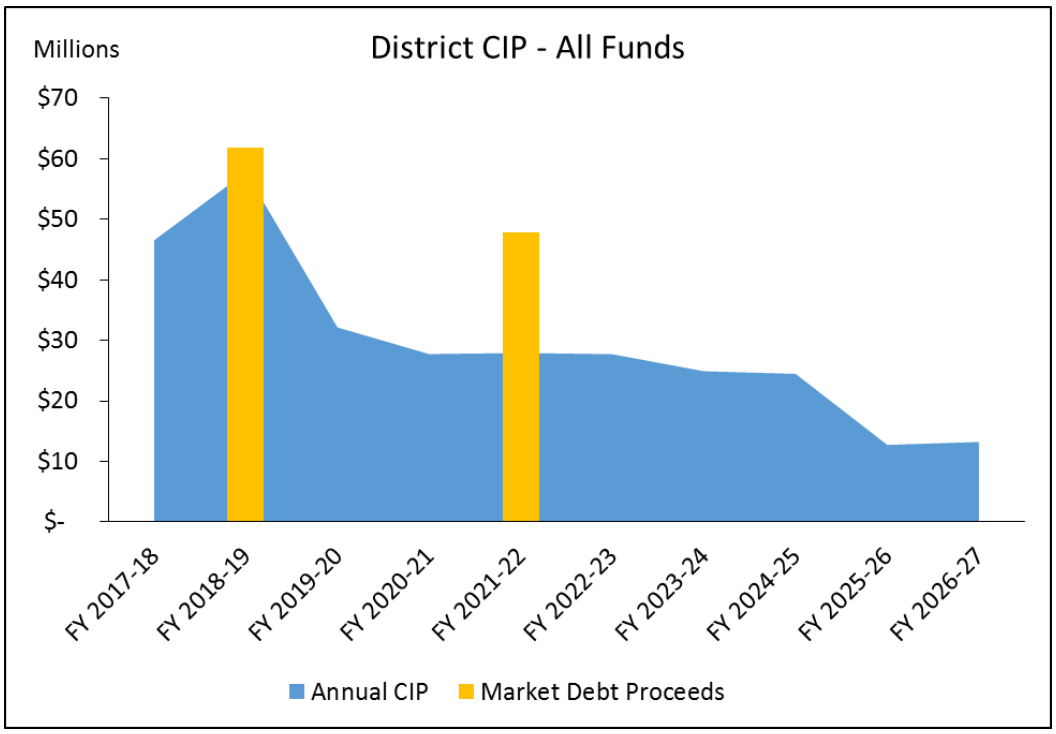


Figure 2-33 provides the planned adjustments to the General Fund rate revenue for all three Systems in order to maintain the District's debt coverage ratio at or above 1.75, and reserves at target levels over the course of the 10-year planning period.

Figure 2-33. Rate Revenue Adjustments for Water, Recycled Water, and Wastewater Systems for FY 2017-18 - FY 2026-27

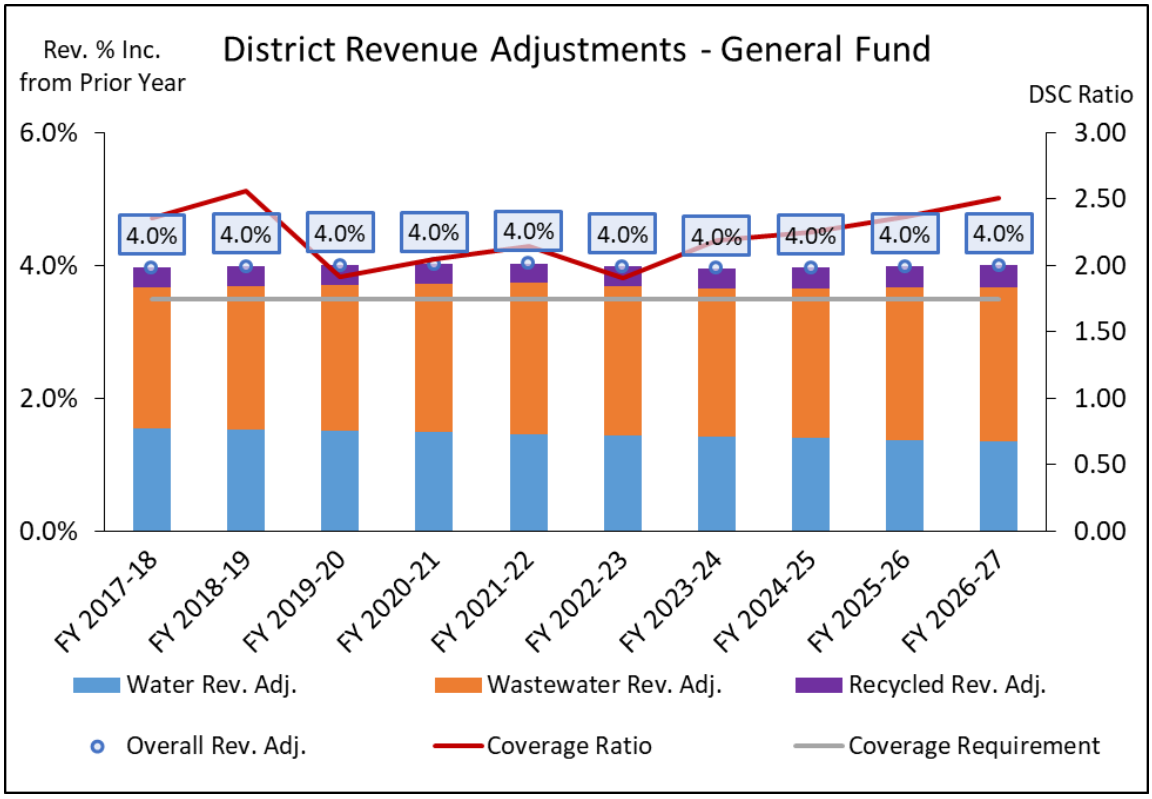
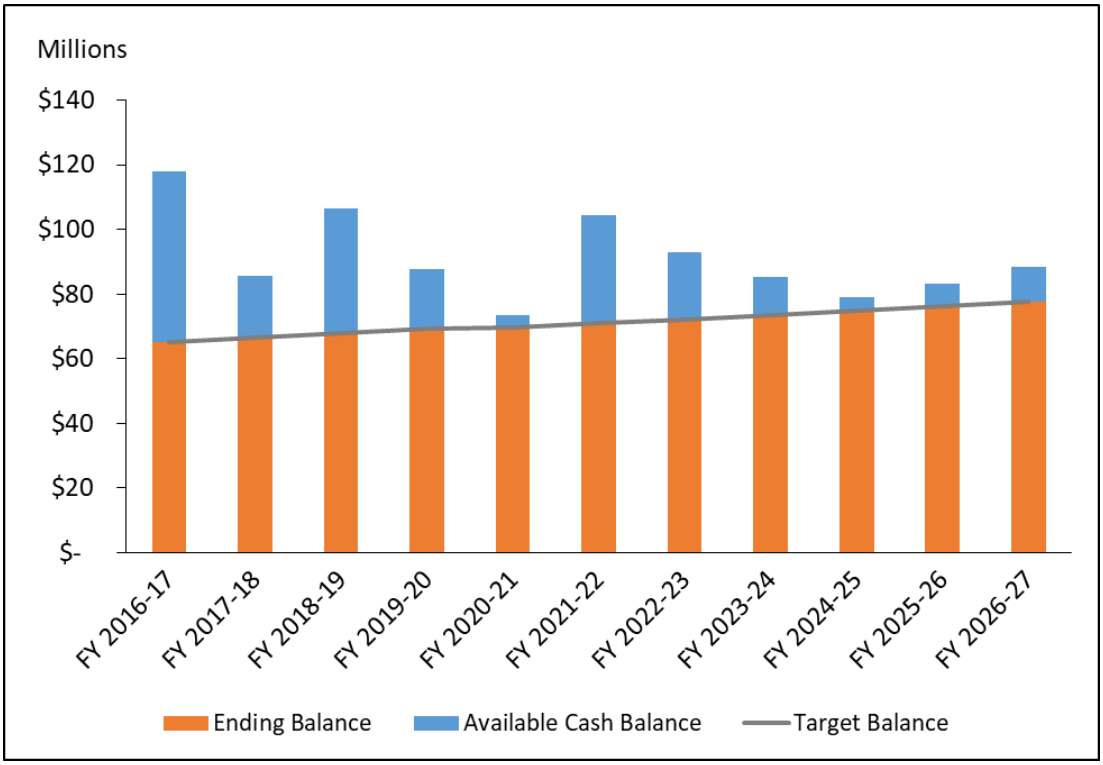


Figure 2-34 provides a 10-year forecast of the District's General Fund reserve levels based on the projected outcome of implementing the above financial strategy. Aggregated across all three Systems, the proposed financial strategy will maintain the District's coverage ratios and reserves at target levels. Specifically, the Figure 2-34 shows that the reserve balance will be maintained above the target balance during the projected years. The District will have the option of using cash balances to fund capital projects and will provide additional policy options and the ability to meet unforeseen risks.

Figure 2-34. General Fund Reserve Levels for FY 2017-18 – FY 2026-27



3. COST-OF-SERVICE ANALYSIS

With the District's revenue requirements discussed in Chapter 2 and the LRFP, the next step is to allocate costs among the customers commensurate with their service requirements. The concept of proportionate allocation of costs to customer classes implies that allocations should take into consideration not only the relative quantity of water used by each class but also the peak rate at which it is consumed. For example, there are costs associated with a pumping station capable of meeting peak demands. These costs need to be allocated appropriately so that the customer class with higher peak demands pays proportionately more to offset the costs of its peak demands. The cost-of-service analysis determines what cost differences exist between serving different classes of customers through the process of functionalization and cost allocation. Annual revenue from rates must recover expenditures such as O&M expenses, debt service payments, and capital improvement project costs, as discussed in Section 2.9.

3.1. Potable Water System Cost-of-Service

The Potable Water System customers place the following demands on the System:

- Customer service requirements such as bill processing, customer service support, meter reading, and other administrative services, determined by the number of customers connected to the Potable Water System
- The water capacity demands measured by each class's average-day water use (base), maximum-day (max-day) use, and maximum-hour (max-hour) use (impacting the size of a customer's meter and other system capacity)
- Reservation for fire flow capacity to provide water service during fire events that is applicable to the Potable Water System
- Costs for the inefficient usage of Potable Water, will be discussed in Section 3.4.

3.1.1. Customer Classes

The cost of providing services can reasonably be determined for groups or classes of customers that have similar service characteristics and water use demand patterns. Assigning costs accurately to classes of customers based on their service requirements is critical in designing nondiscriminatory rates that proportionately allocate the costs of service among the various customer types. The District's Potable Water System consists of the following customer classes:

- **Residential:** Customers who reside in single-family detached homes, or individually metered condominiums and townhouses.
- **Multi-family**: Customers who reside in a housing structure where multiple housing units share a single meter (master meter).

- **Commercial**: Nonresidential or nonindustrial business enterprise customers, from small retail shops to office buildings, car washes, and restaurants.
- **Potable Irrigation:** Customers who use individually metered potable water service for the sole purpose of outdoor irrigation. This class includes private irrigation connections such as homeowners associations and some municipal accounts with a separate meter dedicated to outdoor irrigation.
- **Private Fire Protection:** Customers with private fire protection within a structure, such as apartments and commercial buildings equipped with water systems that provide sufficient capacity for fire protection. While these accounts use very little water, the District's distribution infrastructure has to be sized in order to serve high volume water when needed.

Table 3-1 displays the number of the Potable Water customer accounts by customer class.

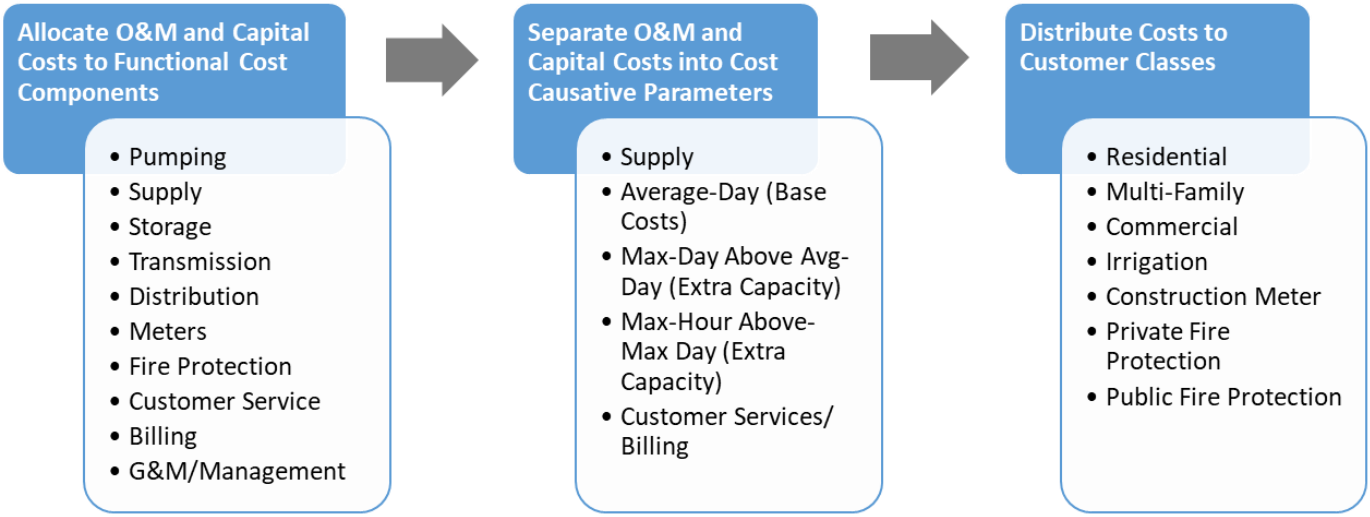
Table 3-1. Number of Potable Water Customer Accounts by Customer Class

Customer Class	Number of Accounts
Residential	47,793
Multi-Family	2,133
Commercial	1,853
Irrigation	1,341
Private Fire Protection	955
Public Fire Protection	-
Total	**54,075**

Construction Meters (temporary meters) are used as requested to install fire hydrants for temporary activities such as providing water to construction sites or street cleaning. The costs incurred from the Public Fire Protection services are first allocated to its class, but are eventually reallocated to other Potable Water customer classes in proportion to the number of equivalent meters of each customer class.

Figure 3-1 illustrates the general process for allocating costs of service to customer classes. The cost-of-service methodology first allocates costs to major functional cost components, then to cost categories, and subsequently distributes the costs to customer classes.

Figure 3-1. MNWD Potable Water System Cost-of-Service Analysis Flow Chart



3.1.2. Cost Functionalization

The District is composed of various facilities that serve a particular function to provide water service. These facilities are designed and operated to meet the average-day and peak demands as well as customer-related requirements. The revenue requirements to operate, maintain, and expand the Potable Water System are allocated to the functions which provide specific services. For purposes of the cost-of-service analysis, the Potable Water System costs are allocated into the following major functional areas:

- Pumping: costs associated with pumping water from treatment facilities to transmission and distribution systems
- Supply: costs associated with the (source of) supply of water, including supply development
- Storage: costs associated with storing water, such as reservoir maintenance
- Transmission: costs associated with transmitting of water from treatment facilities to the distribution system. An Internal diameter of 12” or greater was used to distinguish pipes and delivery infrastructure associated with transmission
- Distribution: costs associated with distributing water to end users. An internal diameter of less than 12” was used to distinguish pipes and delivery infrastructure associated with transmission
- Meters: costs associated with customer water meters, including provision, replacement, servicing, and testing

- Fire Protection: costs associated with private suppression systems and public fire hydrants to provide water service during fire events
- Customer Service and Billing: costs associated with meter reading, billing, collections, and managing customer accounts (such as responding to customer requests and complaints)
- General and Administrative: costs associated with the overall management of the District's operations, as well as supplementary tasks such as accounting, legal services, and human resources

Costs are allocated for each District employee, based on job description, salary, and the percentage of the employee's time spent on tasks corresponding to each functional category. Each of these functional categories contains specific facilities associated with that function. Costs are further allocated to specific facilities in a particular function to assist the cost allocation.

3.1.3. Cost Allocation

The cost of serving customers depends not only on the total volume of water used, but also on the rate of use or peak demand requirements. In using the base-extra capacity method described in the AWWA M1, costs are typically separated into three broad cost components: "Base," "Extra Capacity," and "Customer." Calculated peaking factors are used as a proxy for determining and allocating the cost of providing extra capacity in the System to meet peak demands. Based on the District's expenditures and the System characteristics, costs are also allocated to "Supply", which includes subcomponents of Diemer and Baker water supply. It should be noted that these Supply costs will be further divided into their respective fixed and variable components to facilitate the development of marginal cost based volumetric rates, discussed in detail in Section 4.2.3. "Customer" is another cost component that the District further separates into two subcomponents, "Customer" and "Meter." A COS analysis considers both the average quantity of water consumed in a day (base costs) and the peal rate at which it is consumed (peaking or capacity costs as identified by maximum day and maximum hour demands). 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 customers share the same responsibility for peaking related costs. Each cost component is described in detail below:

- **Supply (Diemer/Baker)**: Costs associated with water imports and production including water purchase, MWDOC annual connection charge, IRWD Baker fixed and variable costs, and pipeline maintenance, among others. As noted, these Supply costs will be further divided into their respective fixed and variable components to facilitate the development of marginal cost based volumetric rates, discussed in detail in Section 4.2.3.

- **Base Costs**: Costs that tend to vary with the total quantity of water used, plus the costs incurred to provide water under average daily demand conditions. Base demands for customer classes are measured as average daily demand of each customer class.
- **Extra-Capacity Costs (Max-Day and Max-Hour)**[4]: Costs incurred to meet peak demands for water in excess of basic demand (base). This cost category includes the infrastructure costs related to providing the required extra capacity of the System to meet maximum-day (max-day) and maximum-hour (max-hour) demands such as tanks and pump stations.
- **Customer Services/Meter**: Costs associated with serving customers such as the costs of meter reading, maintenance and capital projects on meters and services, customer accounting, general and administrative costs, and other related expenses. The customer costs are allocated based on the number of customer accounts. These costs are incurred at the same level regardless of whether the District provides water to the customers.
- **Billing:** Costs related to the number of bills issued and distributed to customer classes on the basis of the number of bills rendered to customers within each class.

Functionalization provides a reasonable, appropriate, and industry-standard basis for proportionately distributing costs to customers based on their usage patterns. It is also grounded in cost-of-service principles and standards.

3.1.4. Average Daily Water Demands

In the base-extra capacity method, costs are carefully separated between base costs and extra capacity costs. The base costs are incurred as a result of providing water to meet demands at an average daily rate. Since customer meters are not read on a daily basis, the average daily demands were estimated by dividing average monthly demand by 30 days. Based on the best available data, this COS analysis used the water usage data from July 1, 2016 to June 30, 2017 (fiscal year 2016-2017). Table 3-2 shows the annual water demands and average daily water demands by the Potable customer classes. The cost implications of water demands are discussed in the next section.

[4] Maximum day demand is the maximum amount of water used in a single day in a year. Maximum hour demand is the maximum usage of water in an hour on the maximum usage day.

Table 3-2. Potable Water System Annual Water Demand and Average Daily Demand by Customer Class for FY 2016-17

Customer Class	Annual Water Demand (ccf)	Average Daily Water Demand (ccf /day)
Residential	6,399,267	17,182
Multi-Family	1,040,826	2,788
Commercial	1,021,053	2,735
Irrigation	1,169,087	3,198
Construction Meter - Potable	1,067	3
Private Fire Protection	10,453	29
Total Potable Usage	**9,641,754**	**26,416**

3.1.5. Maximum-Day and Maximum-Hour Demands

The peak demands have significant cost-of-service implications because infrastructure for water supply and the distribution system needs to be sized to provide not just the average water demand, but rather the peak demands of customers. Customers with high seasonal use, such as summertime irrigators, tend to have the highest max-day and max-hour demands. The total Potable Water System had a maximum-day usage of 40,062 ccf (approximately 29.5 mgd) during the 2016 calendar year from January through December, which represents approximately 1.5 times the average daily (i.e., base) demand of 26,321 ccf (19.7 mgd). Because individual customer meters are not read daily, a peaking factor for each customer class was computed by dividing the maximum-month water demand (September) by the average-month demand using the monthly usage data for FY 2016-17. The max-hour demand is estimated to be 1.5 times the max-day demand for all customer classes based on minimum design requirements per the California Code of Regulations (Titles 17 and 22 of the California Code of Regulations California Regulations Related to Drinking Water, 2016).

Table 3-3 presents average-day, max-day, and max-hour demands by customer class for the Potable Water System and Table 3-4 presents their distribution as percentages.

Table 3-3. Potable Water System Average Day, Max-Day, and Max-Hour Demand by Customer Class

Customer Class	Total Annual Usage (ccf)	Avg-Day Usage (ccf)	Max-Day Usage (ccf)	Max-Day above Avg Day (ccf)	Max-Hr Usage (ccf)	Max-Hr above Max-Day (ccf)
Residential	6,399,267	17,182	23,701	6,519	35,551	11,850
Multi-Family	1,040,826	2,788	3,186	398	4,779	1,593
Commercial	1,021,053	2,735	3,485	749	5,227	1,742
Irrigation	1,169,087	3,198	6,138	2,940	9,206	3,069
Construction Meter	1,067	3	1	0	2	1
Private Fire Protection	10,453	29	331	302	496	165
Public Fire Protection	0	0	642	642	3,850	3,208
Total	**9,641,754**	**25,935**	**37,483**	**11,550**	**59,112**	**21,629**

Note: These max-day and max-hour demand are estimated for ratemaking purposes. They are meant to be reasonable approximations of demands and should not be construed as actual measurements.

Table 3-4. Potable Water System Average Day (Base), Max-Day, and Max-Hour Demand Distribution among Cost Components

Customer Class	Avg-Day - Base (%)	Max-Day above Avg-Day (%)	Max-Hr above Max-Day (%)	Total
Residential	48.33%	18.34%	33.33%	100.00%
Multi-Family	58.33%	8.33%	33.33%	100.00%
Commercial	52.33%	14.34%	33.33%	100.00%
Irrigation	34.73%	31.93%	33.33%	100.00%
Private Fire Protection	5.85%	60.81%	33.33%	100.00%
Public Fire Protection	0.00%	16.67%	83.33%	100.00%

Note: The computed percentages for base and peaking factors are rounded to the nearest two decimal points, and sums of these percentages may therefore not add up to totals.

Public fire protection capacity was added to reflect a fire-flow requirement of 2,000 gallons per minute (GPM) for a 4 - hour duration, yielding approximately 0.5 mgd for max - day and 2.9 mgd for max-hour demand. The methodology used to calculate water service for public fire protection demands and associated costs are based on development requirements outlined in the District's Standards and Specifications and District engineering staff estimates of fire flow capacity requirements consistent with methodologies outlined in the AWWA M1.

3.1.6. Customer-Related Costs (Customer Services/Billing)

Customer-related costs such as customer services and billing must be distributed among customer classes proportionally based on certain demands associated with these costs. Customer costs are related to the number of customer accounts served in the District's service area. Meter costs are related to the number and size of the meters. The number of equivalent meters is used to compute the Customer-related demands, which vary depending on the size of service pipe, materials used, locations of meters and other local characteristics. The meter costs are ultimately assessed in proportion to a meter equivalency ratio established by AWWA based on the rated capacity in gallons per minute of a Class I Turbine meter at increasing sizes as shown in the AWWA M36 Water Audits and Loss Control Programs, Fourth Edition. 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. The ratios shown in Table 3-6 are the ratio of potential flow through each meter size compared to the flow through a 5/8-inch meter as the standard meter size. As a result of District's service area's rapid development, a variety of water meter sizes are used to deliver water to parcels with otherwise similar water demands. As these parcels place similar demands on the Systems, 3/4-inch and 1-inch meters are assigned the same ratio as the smaller 5/8-inch meter. For example, the second column of Table 3-6 shows that the flow through a 2-inch meter is 5.3 times that of a 5/8-inch meter. The number of customer accounts and the equivalent

meter counts are summarized in Table 3-5. The AWWA-recommended equivalent meter and service ratios used to compute the equivalent meter counts are presented in Table 3-6.

Table 3-5. Potable Water System Number of Customer Accounts and Equivalent Meters by Customer Class

Customer Class	# of Customer Accounts	# of Equivalent Meters
Residential	47,793	48,168
Multi-Family	2,133	11,369
Commercial	1,853	8,757
Irrigation	1,341	6,380
Private Fire Protection	955	29,417
Total	**54,085**	**104,216**

Table 3-6. AWWA Equivalent Meter and Service Ratios

Meter Size	AWWA Ratio
5/8"	1.0
3/4"	1.0
1"	1.0
1.5"	3.3
2"	5.3
3"	11.7
4"	20.0
6"	41.7
8"	60.0
10"	96.7

Billing Costs are related to the number of bills issued and distributed to customer classes on the basis of the number of bills rendered to customers within each class. MNWD bills customers monthly, thus the District's customer class responsibility for billing is determined by multiplying the billing unit cost by 12 in each customer class rendered for the test year.

3.1.7. Cost-of-Service Analysis Procedure

Procedure 1: Functionalize Potable Water System Costs

The first step of the cost-of-service analysis is to analyze and segregate the O&M costs of the Potable Water System by the system functions. The functional categories discussed in Section 3.1.2 and their associated values were used to determine the proper allocation of O&M costs to the customer classes based on their demand characteristics.

Table 3-7 provides a summary of the test year O&M expenses by function and a distribution of the costs. The values were assigned based on reviewing each line item of the District's O&M budget.

Table 3-7. Potable Water System O&M Cost Allocation and Distribution by Function

System Function	Cost Allocation	% Allocated
Pumping	$1,801,279	4.3%
Supply Deimer	$17,729,777	42.1%
Supply Baker	$8,141,094	19.3%
Supply Other	$14,445	0.0%
Storage	$1,034,838	2.5%
Transmission	$1,480,452	3.5%
Distribution	$2,156,130	5.1%
Meters	$2,311,079	5.5%
Fire	$860	0.0%
Customer Service	$575,799	1.4%
Billing	$663,986	1.6%
G&A - O&M	$6,174,706	14.7%
Total	**$42,084,444**	**100.0%**

The capital costs of the Potable Water System were also analyzed and segregated by the system functions. A summary of the net capital assets by function and the resultant capital budget allocation by function are presented in Table 3-8. Total Potable Water System capital costs for the test year are $26.4 million. However, the revenue requirements that must be recovered through rates and other revenues are offset with $12.4 million of cash, resulting a total net capital requirement of $14.0 million.

Table 3-8. Potable Water System Assets and Capital Expenses by Functions

System Function	Cost Allocation	% Allocated
Pumping	$1,424,232	10.2%
Supply	$285,271	2.0%
Storage	$2,768,343	19.8%
Transmission	$4,227,476	30.3%
Distribution	$1,620,987	11.6%
Meters	$515,777	3.7%
Fire	$29,421	0.2%
Customer Service	$52,908	0.4%
Billing	$13,114	0.1%
G&A - CIP	$3,031,945	21.7%
Total	**$13,969,475**	**100.0%**

Procedure 2: Allocate Costs Based on Customer Service Characteristics

The functionalized O&M and capital costs are then assigned to the cost components described in Section 3.1.3. Table 3-9 and Table 3-10 summarize the cost allocations of the functionalized O&M and the capital costs to each Potable Water System customer class.

Table 3-9. Potable Water System Functionalized O&M Cost Allocation by Customer Class

Customer Class	Supply - Deimer	Supply - Baker	Supply - Other	Base	Max-Day	Max-Hour	Customer	Meter	Total
Residential	$11,867,775	$5,335,430	$9,570	$5,444,327	$947,143	$1,173,328	$1,284,003	$1,251,936	**$27,313,512**
Multi-Family	$1,847,871	$922,782	$1,553	$883,314	$57,859	$157,720	$57,299	$295,488	**$4,223,884**
Commercial	$1,822,239	$899,024	$1,524	$866,784	$108,881	$172,523	$49,794	$227,599	**$4,148,367**
Irrigation	$2,179,331	$974,287	$1,781	$1,013,255	$427,130	$303,848	$36,028	$165,820	**$5,101,481**
Construction Meter	$376	$101	$2	$939	$0	$57	$287	$3,235	**$4,996**
Private Fire Protection	$3,683	$991	$16	$9,201	$43,833	$16,373	$25,657	$764,580	**$864,334**
Public Fire Protection	$0	$0	$0	$0	$93,226	$317,663	$0	$0	**$410,888**
Total	**$17,721,275**	**$8,132,614**	**$14,445**	**$8,217,819**	**$1,678,072**	**$2,141,511**	**$1,453,067**	**$2,708,659**	**$42,067,462**

Table 3-10. Potable Water System Functionalized Capital Cost Allocation by Customer Class

Customer Class	Supply	Base	Max-Day	Max-Hour	Customer	Meter	Total
Residential	$188,993	$4,685,613	$1,762,410	$1,504,544	$74,513	$304,474	**$8,520,548**
Multi-Family	$30,663	$760,217	$107,662	$202,242	$3,325	$71,864	**$1,175,973**
Commercial	$30,089	$745,990	$202,602	$221,224	$2,890	$55,353	**$1,258,147**
Irrigation	$35,174	$872,049	$794,788	$389,621	$2,091	$40,328	**$2,134,051**
Construction Meter	$33	$808	$0	$73	$17	$787	**$1,717**
Private Fire Protectior	$319	$7,918	$81,562	$20,995	$1,489	$185,948	**$298,232**
Public Fire Protection	$0	$0	$173,471	$407,335	$0	$0	**$580,806**
Total	**$285,271**	**$7,072,596**	**$3,122,496**	**$2,746,034**	**$84,324**	**$658,753**	**$13,969,475**

Table 3-11 and Table 3-12 display the distribution of Potable Water System O&M costs and capital costs among customer classes.

Table 3-11. Potable Water System O&M Cost Distribution by Customer Class

Customer Class	Cost Allocation	% Allocated
Residential	$27,313,512	64.9%
Multi-Family	$4,223,884	10.0%
Commercial	$4,148,367	9.9%
Potable Irrigation	$5,101,481	12.1%
Construction Meter	$4,996	0.0%
Private Fire Protection	$864,334	2.1%
Public Fire Protection	$410,888	1.0%
Total	**$42,067,462**	**100.0%**

Table 3-12. Potable Water System Capital Cost Distribution by Customer Class

Customer Class	Cost Allocation	% Allocated
Residential	$8,520,548	61.0%
Multi-Family	$1,175,973	8.4%
Commercial	$1,258,147	9.0%
Potable Irrigation	$2,134,051	15.3%
Construction Meter	$1,717	0.0%
Private Fire Protection	$298,232	2.1%
Public Fire Protection	$580,806	4.2%
Total	**$13,969,475**	**100.0%**

Procedure 3: Allocate Non-Rate Revenues to Customer Classes

Non-rate revenues are allocated back to customer classes based on the number of equivalent meters in each customer class as shown in Table 3-6, reflecting the relative demands of each customer class. The non-rate revenues allocated to the Potable Water System customers are used to minimize the bill impact to individual customer classes include the District's share of *ad valorem* property tax, investment income, property lease, miscellaneous non-operating revenue, and capacity fees. The revenue from *ad valorem* property tax amounts to approximately $23.4 million, representing 87.2 percent of the Potable Water System's total non-rate revenues. The non-rate revenues are unrestricted revenues that may be used by the District for any purpose. Table 3-13 summarizes the non-rate revenue credited to each customer class.

Table 3-13. Potable Water System Non-Rate Revenue Allocation by Customer Class

Customer Class	Property Tax	Other Non-Rate Revenues	Total Non-Rate Revenues
Residential	$15,518,983	$2,257,049	**$17,776,032**
Multi-Family	$2,381,785	$328,009	**$2,709,794**
Commercial	$2,485,236	$386,015	**$2,871,251**
Potable Irrigation	$3,058,153	$481,656	**$3,539,808**
Total	**$23,444,156**	**$3,452,729**	**$26,896,885**

Procedure 4: Distribute Total Costs to Specific Customer Classes

The total rate revenue requirement is determined by combining the O&M and capital costs and subtracting the credits from non-rate revenues for each respective class. From the total rate revenue requirements, the Public Fire Protection revenue requirements are allocated among the remaining customer classes (except Construction Meters) based on their respective capacity demands on the distribution system measured by the number of equivalent meters. The values in the last column of Table 3-14 are the revenue requirements used when calculating the water rates for each customer class of the Potable Water System as described in Section 4.2.

Table 3-14. Potable Water System Summary of Rate Revenue Requirements

	a	b	c	d	a+b-c-d			
	Total O&M Revenue Requirements	Total Capital Revenue Requirements	Non-rate Revenue Credit	Property Tax	Total Rate Revenue Requirements	Reallocation of Public Fire Protection	Rate Revenue Requirements	Cost Allocation (%)
Residential	$27,313,512	$8,520,548	$2,257,049	$15,518,983	$18,058,029	$411,116	**$18,469,145**	63.4%
Multi-Family	$4,223,884	$1,175,973	$328,009	$2,381,785	$2,690,063	$97,034	**$2,787,097**	9.6%
Commercial	$4,148,367	$1,258,147	$386,015	$2,485,236	$2,535,263	$74,740	**$2,610,003**	9.0%
Potable Irrigation	$5,101,481	$2,134,051	$481,656	$3,058,153	$3,695,724	$54,453	**$3,750,177**	12.9%
Construction Meter	$4,996	$1,717	$0	$0	$6,713	$1,062	**$7,775**	0.0%
Private Fire Protection	$864,334	$298,232	$0	$0	$1,162,565	$353,289	**$1,515,855**	5.2%
Public Fire Protection	$410,888	$580,806	$0	$0	$991,694	($991,694)	**$0**	0.0%
Total	**$42,067,462**	**$13,969,475**	**$3,452,729**	**$23,444,156**	**$29,140,052**	**$0**	**$29,140,052**	**100.0%**

3.1.8. Cost Allocation Comparison (Current vs. Proposed)

Table 3-15 summarizes the required rate revenues derived from each customer class based on the proposed cost allocation identified in Section 3.1.7, and compares them to the current cost allocation. Approximately 93.0 percent of *ad valorem* property tax revenue is allocated to the Potable Water System and 7.0 percent to the Recycled Water System under the current allocation. Under the proposed cost allocation however, 85 percent of the total *ad valorem* property tax revenue is allocated to the Potable Water System customers while 15 percent is allocated to the Recycled Water System customers. The District recognizes the importance of incentivizing the Recycled Water System's expansion and increased utilization, and incentivizing customers' transition to recycled water use. The incentive ultimately reduces the strain on the Potable Water System as more customers use recycled water instead of potable water supplies for outdoor irrigation. Allocating 15 percent of property tax to the Recycled Water System shifts the cost distribution among customer classes slightly when compared to the current cost allocation. It is important to note that the Recycled Water System revenue requirements are determined independent of the Potable System revenue requirements. The Recycled Water System cost of service is provided in detail in Section 3.2, but is shown in summary to highlight the overall allocation of property tax to each system and customer class. Fire Protection and Recycled Irrigation customers' cost share will each increase by 0.2 percent and 0.3 percent, respectively, and Residential customers' share will decrease by 0.4 percent, while the cost share of Commercial customers will decrease by 0.1 percent under the proposed cost allocation.

Table 3-15. Potable Water System Current vs. Proposed Cost Allocation by Customer Class

	a	b	c	d	e = c - a	f = d - b
Customer Class	**Revenues under Current Rate Structure**	**Cost Distribution (%)**	**Revenues under Proposed Rate Structure**	**Cost Distribution (%)**	**Cost Difference**	**% Difference**
Residential	$18,031,250	53.6%	$18,469,914	53.2%	$438,664	-0.4%
Multi-Family	$2,695,860	8.0%	$2,787,985	8.0%	$92,125	0.0%
Commercial	$2,562,646	7.6%	$2,610,359	7.5%	$47,713	-0.1%
Irrigation	$3,622,491	10.8%	$3,749,765	10.8%	$127,274	0.0%
Fire Protection	$1,396,898	4.2%	$1,515,857	4.4%	$118,959	0.2%
Recycled Irrigation	$5,319,095	15.8%	$5,567,410	16.1%	$248,315	0.3%
Total	**$33,628,240**	**100.0%**	**$34,701,290**	**100.0%**	**$1,073,050**	

3.2. Recycled Water System Cost-of-Service

The Recycled Water System customers place the following demands on the System:

- Customer service requirements such as bill processing, customer service support, meter reading, and other administrative services, determined by the number of customers connected to the Recycled Water System
- The water capacity demands measured by average day water use, max-day use, and max-hour use (impacting the size of a customer's meter)
- Costs for the inefficient usage of Recycled Water, which will be discussed in Section 3.4.

3.2.1. Customer Classes

The District currently provides recycled water services to a customer class identified as Recycled Irrigation. The District also rents Construction Meters (temporary meters) described in section 3.1.1 to provide recycled water, however this class accounts for only 0.2 percent of the total System demand.

Table 3-16. Number of Recycled Water Customer Accounts

Customer Class	Number of Accounts
Recycled Irrigation	1,321

The cost-of-service methodology is the same in all three Systems, however, the functions, cost components, and customer classes vary depending on the System, because some facilities related to the functions, cost components, and customer classes may be specific to that System.

3.2.2. Cost Functionalization

The Recycled Water System's functions are similar to those of the Potable Water System since both systems operate in the same manner. These facilities are designed and operated to meet both average-day and peak demands, as well as customer-related requirements. The only function that is part of the Potable Water System but not of the Recycled

Water System is Fire Protection. The Recycled Water System costs are allocated into the following major functional areas (see the detailed description for each function in Section 3.1.2):

- Pumping
- Supply
- Storage
- Transmission
- Distribution
- Meters
- Customer Service/Billing
- General and Administrative

Each of these functional categories contains specific facilities associated with that function. Costs are further allocated to specific facilities associated with a particular function.

3.2.3. Cost Allocation

The main principle of the cost allocation to the cost categories defined by the District applies to the Recycled Water System. The costs of serving customers depend not only on the total volume of water used, but also on the rate of use or peak demand requirements. The five cost components of the Potable Water System also exist for the Recycled Water System: Supply (Diemer only), Base, Extra Capacity (Max-Day and Max-Hour), Customer, and Meter. See the description of the cost categories in Section 3.1.3.

This functional allocation process provides a reasonable, appropriate, and industry-standard basis for proportionately distributing costs to customers based on their usage patterns, and it is grounded in cost-of-service principles and standards.

3.2.4. Average Daily Water Demands

The base costs are incurred as a result of providing water to meet demands at an average daily rate. Since customer meters are not read on a daily basis, the average daily demands were estimated by dividing average monthly demand by 30 days. Based on the best available data, this cost-of-service analysis used the water usage data from 1 July 2016 to 30 June 2017 (fiscal year 2016-2017). Table 3-17 shows the annual water demands and average daily water demands by the Recycled Water customer classes. The cost implications of water demands are discussed in the next section.

Table 3-17. Recycled Water System Annual Water Demand and Average Daily Demand by Customer Class for FY 2016-17

Customer Class	Annual Water Demand (ccf)	Average Daily Water Demand (ccf /day)
Recycled Irrigation	3,033,399	7,876
Construction Meter	5,141	14
Total Potable Usage	**3,038,540**	**8,325**

3.2.5. Maximum-Day and Maximum-Hour Demands

A peaking analysis was performed to compute the rate of peak demand (max-day demand over average-day demand and max-hour demand above max-day demand) for Recycled Irrigation customers. In aggregate, Recycled Irrigation customer demand has a peaking factor of 2.1 times average-day demand for max-day usage and 3.2 times average-day demand for max-hour usage, which equates to 16,622 ccf (approximately 12.4 mgd) and 24,933 ccf (18.6 mgd) of recycled water consumption, respectively. Recycled Water demand spikes during the summer months such as August and September, to approximately 1.7 times its average month. Table 3-18 presents average-day, max-day, and max-hour demand by customer class for the Recycled Water System and Table 3-19 presents their distribution as percentages.

Table 3-18. Recycled Water System Average Day, Max-Day, and Max-Hour Demand by Customer Class

	Total Annual Usage (ccf)	Avg-Day Usage (ccf)	Max-Day Usage (ccf)	Max-Day above Avg Day (ccf)	Max-Hr Usage (ccf)	Max-Hr above Max-Day (ccf)
Recycled Irrigation	3,033,399	7,876	17,777	9,900	26,665	8,888
Construction Meter	5,141	14	23	9	34	11
Total	**2,273**	**7,890**	**17,799**	**9,909**	**26,699**	**8,900**

Note: These max-day and max-hour demand are estimated to be used for ratemaking purposes. They are meant to be reasonable approximations of demands and should not be construed as actual measurements.

Table 3-19. Recycled Water System Average Day (Base), Max-Day, and Max-Hour Demand Distribution among Cost Components

	Avg-Day - Base (%)	Max-Day above Avg-Day (ccf)	Max-Hr above Max-Day (ccf)	Total
Recycled Irrigation	30.0%	37.0%	33.0%	**100.0%**

3.2.6. Customer-Related Costs (Customer/Meter)

Customer-related costs such as Customer and Meter are distributed to the Recycled Water System customers proportionally based on certain demands associated with these costs. The number of customer accounts and the equivalent meter counts are summarized in Table 3-20.

Table 3-20. Recycled Water System Number of Customer Accounts and Equivalent Meters by Customer Class

Customer Class	# of Customer Accounts	# of Equivalent Meters
Recycled Irrigation	1,321	7,497

3.2.7. Cost-of-Service Analysis Procedure

Procedure 1: Functionalize Recycled Water System Costs

O&M costs of the Recycled Water System were analyzed and segregated by the system functions. The functional categories discussed in Section 3.2.2 and their associated values were used to determine the proper allocation of the O&M costs. Table 3-21 provides a summary of the test year O&M costs by function and a distribution of the costs.

Table 3-21. Recycled Water System O&M Cost Allocation and Distribution by Function

System Function	Cost Allocation	% Allocated
Pumping	$921,342	17.4%
Supply	$363,670	6.9%
Storage	$615,607	11.6%
Transmission	$1,013,083	19.1%
Distribution	$332,301	6.3%
Meters	$248,080	4.7%
Customer Service	$61,487	1.2%
Billing	$29,817	0.6%
G&A - O&M	$1,721,345	32.4%
Total	**$5,306,733**	**100.0%**

The capital costs of the Recycled Water System were also analyzed and segregated by the system functions. Total Recycled Water System capital costs for the test year are $6.1 million, which includes debt service, capital projects, and annualized partial year rate revenue adjustment (Section 2.5.1). Available cash balances are used to offset this amount by $1.0 million, resulting a total net capital rate revenue requirement of $5.1 million shown in Table 3-22.

Table 3-22. Recycled Water System Assets and Capital Expenses by Functions

System Function	Cost Allocation	% Allocated
Pumping	$388,195	7.6%
Supply	$996,569	19.5%
Storage	$401,688	7.9%
Transmission	$2,137,367	41.8%
Distribution	$296,318	5.8%
Meters	$66,804	1.3%
Customer Service	$2,914	0.1%
Billing	$5,592	0.1%
G&A - CIP	$821,168	16.0%
Total	**$5,116,615**	**100.0%**

Procedure 2: Allocate Costs Based on Customer Service Characteristics

The functionalized O&M and capital costs are then assigned to the cost components described in Section 3.2.3. Table 3-23 and Table 3-24 summarize the cost allocations of the functionalized O&M and the capital costs to Recycled Water System customer classes.

Table 3-23. Recycled Water System Functionalized O&M Cost Allocation by Customer Class

Customer Class	Supply	Base	Max-Day	Max-Hour	Customer	Meter	Total
Recycled Irrigation	$362,882	$1,653,973	$1,859,959	$921,065	$133,666	$359,039	**$5,290,584**
Construction Meter	$649	$2,958	$1,607	$1,173	$1,476	$8,149	**$16,012**
Total	**$363,531**	**$1,656,931**	**$1,861,566**	**$922,238**	**$135,142**	**$367,188**	**$5,306,596**

Table 3-24. Recycled Water System Functionalized Capital Cost Allocation by Customer Class

Customer Class	Supply	Base	Max-Day	Max-Hour	Customer	Meter	Total
Recycled Irrigation	$994,519	$1,698,476	$1,895,898	$430,740	$10,021	$77,810	**$5,107,464**
Construction Meter	$1,779	$3,038	$1,638	$549	$111	$1,766	**$8,881**
Total	**$996,298**	**$1,701,514**	**$1,897,536**	**$431,289**	**$10,132**	**$79,576**	**$5,116,345**

Table 3-25 and Table 3-26 display the allocation of Recycled Water System O&M costs and capital costs to its customer classes.

Table 3-25. Recycled Water System O&M Cost Distribution by Customer Class

Customer Class	Cost Allocation	% Allocated
Recycled Irrigation	$5,290,584	99.7%
Construction Meter	$16,011	0.3%
Total	**$5,306,595**	**100.0%**

Table 3-26. Recycled Water System Capital Cost Distribution by Customer Class

Customer Class	Cost Allocation	% Allocated
Recycled Irrigation	$5,107,465	99.8%
Construction Meter	$8,879	0.2%
Total	**$5,116,344**	**100.0%**

Procedure 3: Allocate Non-Rate Revenues to Customer Classes

Non-rate revenues are allocated to the Recycled Water System customers as shown in Table 3-27. The System's non-rate revenues include *ad valorem* property tax, investment income, property lease, miscellaneous non-operating revenue, and capacity fees. The *ad valorem* property tax revenue amounts to approximately $4.1 million, representing 14.7 percent of the total *ad valorem* property tax revenues ($27.6 million) of the District. The expansion of the Recycled Water System and increased utilization to meet the needs of outdoor irrigation improves the availability of potable water supplies for all customers. The District recognizes the continued District-wide benefit that an affordable recycled water supply provides, and elects to utilize its unrestricted Ad Valorem property tax revenue to incentivize the adoption of recycled water use. The non-rate revenues are unrestricted revenues that may be used for any purpose of the District.

Table 3-27. Recycled Water System Non-Rate Revenue Allocation by Customer Class

Customer Class	Property Tax	Other Non-Rate Revenues	Total Non-Rate Revenues
Recycled Irrigation	$4,137,204	$807,853	**$4,945,058**

Procedure 4: Distribute Total Costs to Specific Customer Classes

The total rate revenue requirement is determined by combining the O&M and capital costs and subtracting the credits for non-rate revenues for the Recycled Water System customers. The values in the last column of Table 3-28 are the revenue requirements used when calculating the water rates for the Recycled Water System customers as described in Section 4.2.

Table 3-28. Potable Water System Summary of Rate Revenue Requirements

	a	b	c	d	a + b - c - d
	Total O&M Revenue Requirements	Total Capital Revenue Requirements	Non-rate Revenue Credit	Property Tax	Total Rate Revenue Requirements
Recycled Irrigation	$5,290,584	$5,107,465	$807,853	$4,137,204	$5,452,991
Construction Meter	$16,011	$8,879	$0	$0	$24,890
Total	**$5,306,595**	**$5,116,344**	**$807,853**	**$4,137,204**	**$5,477,881**

3.3. Wastewater System Cost-of-Service

Much like the Potable and Recycled Water Systems, the Wastewater System incurs costs as a result of its customer demands. The Wastewater System customer demands were measured and costs were allocated to the following cost components:

- **Flow**: Costs that vary with the hydraulic flow of sewage. The Flow costs typically include the operating, maintenance, and capital costs associated with treatment or collection lines or lift stations, and outfall infrastructure, which are typically designed to accommodate maximum hydraulic flow rates. These costs were assigned to the customer classes based on demand characteristics of each customer class.
- **Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS) Loadings:** Costs associated with sewage loadings. Loadings are measures of the concentration and mass of wastes contributed to the Wastewater System. SOCWA, like most wastewater utilities, measures waste composition for two primary categories BOD and TSS Loadings. The removal of BOD is primarily associated with the degradation of organic compounds. The cost of BOD removal is measured by total BOD loadings by customer class, as described in Section 3.3.2. The cost of TSS removal is primarily associated with the separation and disposal of solids. The cost of TSS removal is measured by total TSS loadings by customer class, as described in Section 3.3.2.
- **Customer Costs:** Costs incurred as a result of serving customers are incurred regardless of the amount of wastewater produced, because the District's Wastewater System costs are not impacted by the amount of produced wastewater. This policy was driven by the District's service agreement with SOCWA whereby the District pays for SOCWA's O&M and capital costs based on the District's ownership of SOCWA facilities, not based on the actual wastewater flows or composition. Customer costs include the costs of billing, customer accounting, general and administrative costs, and other customer-related costs. The Customer costs are measured by the number of accounts in each customer class.

3.3.1. Customer Classes

The District's Wastewater System is composed of the following customer classes:

- Residential
- Multi-Family
- Commercial, which is subdivided into four categories based on sewage strength

Costs were allocated to customer classes using the standard user strength data published by the California State Water Quality Control Board in the Revenue Program Guidelines, March 1998, in which customers are charged based on the approximate volume and strength of their wastewater. Table 3-29 lists the six customer classes, along with industry standard values for wastewater concentrations by customer class, including examples of the type of customers that fall into each respective class.

Table 3-29. Wastewater Strength by Customer Class

Customer Class	BOD(mg/L)	TSS(mg/L)	Description
Residential	213	213	Single Family Residential
Multi-family	213	213	Master Metered Residential
Commercial 1	132	134	Banks, car washes, churches, department stores, laundromats, offices, schools, and colleges
Commercial 2	278	188	Beauty and barber shops, hospitals and convalescence, commercial laundry, repair shops, service stations, and veterinarian hospitals
Commercial 3	700	733	Hotels with dining facilities, markets with garbage disposals, mortuaries, and fast food restaurants
Commercial 4	955	783	Restaurants, auto steam cleaning and bakeries

Wastewater flow demands are difficult to measure accurately since individual customer discharges to the Wastewater System are not metered. Currently wastewater demands are estimated based on metered potable water usage. However, using metered potable water usage as a proxy for the volume of wastewater discharge does not fully account for the "return-to-sewer" factor. "Return-to-sewer" factor describes how much discharged potable water goes back to a sewer drain. To compute this factor, the average wintertime (December through March) water usage was compared to year-round average water usage, assuming that the wintertime water demand is primarily for indoor use (returned to the Wastewater System) while during the rest of the year customers were assumed to use both indoor and outdoor water. Although some irrigation does occur during the wintertime, this approach uses the best available data and is applied equally (therefore equitably) to all customer classes. For purposes of this analysis, water usage data was used from FY 2016-17. The results are provided in Table 3-30.

Table 3-30. Wastewater System Return-to-Sewer Factors by Customer Class

Customer Class	Return to Sewer Factor
Residential	0.82
Multi-family	1.00
Commercial 1	0.88
Commercial 2	0.94
Commercial 3	0.96
Commercial 4	0.98

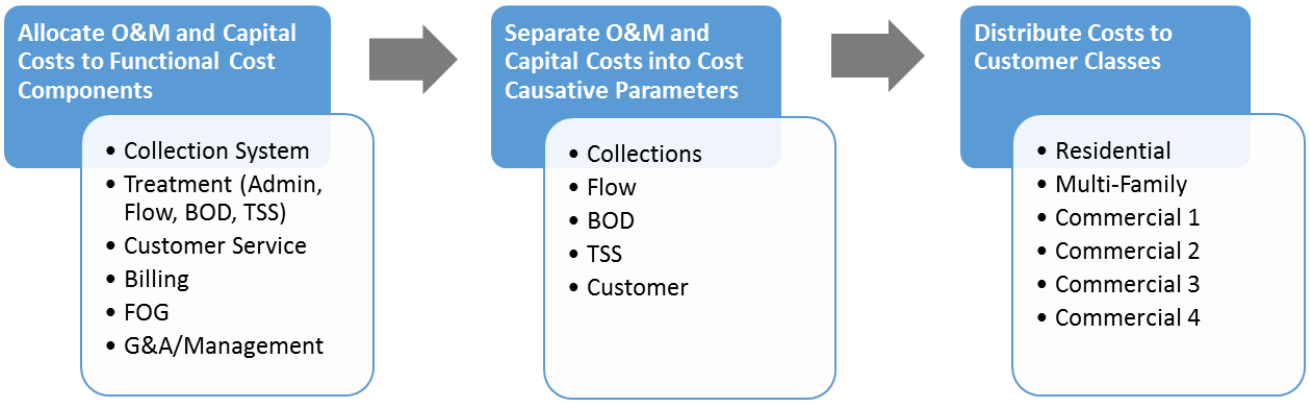
Based on the assumptions listed above and using projected water usage data, the total flow and loading values by customer class were projected for the test year and are provided in Table 3-31.

Table 3-31. Number of Customer Accounts and Equivalent Meters, and Wastewater Flows and Loading, FY 2017-18

Customer Class	# of Customer Accounts	# of Equivalent Meters	Wastewater Flow	BOD Loadings	TSS Loadings
Residential	47,357	47,665	3,814,104	9,042,349	9,042,349
Multi-family	2,103	10,788	941,185	2,231,330	2,231,330
Commercial 1	1,146	4,746	328,279	483,749	489,853
Commercial 2	348	1,656	259,304	804,237	543,873
Commercial 3	167	631	118,444	924,995	969,042
Commercial 4	78	289	51,200	545,511	446,976

Figure 3-2 illustrates the general process of allocating costs-of-service to the Wastewater System customers.

Figure 3-2. Wastewater System Cost-of-Service Analysis Flow Chart



The District has a fats, oils, and grease (FOG) program, which is administered by a third party to permit fats, oil, and grease interceptors for food waste facilities. In developing the Wastewater System revenue requirements, the costs of administering this permit program are offset by approximately $75,000 in projected FOG fees.

3.3.2. Cost-of-Service Analysis Procedure

Procedure 1: Functionalize Costs

O&M costs for the Wastewater System were analyzed and segregated by the distinct System functions. The functions were as follows:

- **Collection System:** Costs associated with conveying sewage from the customer site to treatment facilities.
- **Treatment Administrative:** Costs associated with the administrative function at SOCWA.
- **Treatment Flow:** Costs associated with the conveyance of sewage through the treatment plant(s).
- **Treatment BOD:** Costs associated with the removal of BOD.
- **Treatment TSS:** Costs associated with the removal of TSS.
- **Billing**: Costs associated with billing customers for wastewater services.
- **Customer Service:** Costs associated with serving customers.
- **General/Administrative:** District overhead costs.

Table 3-32 provides a summary of the test year O&M expenses by function for the Wastewater System.

Table 3-32. Wastewater System O&M Cost Allocation and Distribution by Function

System Function	Total Cost	% Allocated
Collection System	$4,529,075	24.2%
Treatment Admin	$1,225,111	6.5%
Treatment Flow	$3,710,498	19.8%
Treatment BOD	$2,695,307	14.4%
Treatment TSS	$2,183,995	11.7%
Customer Service	$452,798	2.4%
Billing	$631,995	3.4%
FOG	$62,284	0.3%
G&A - O&M	$3,226,645	17.2%
Total	**$18,717,706**	**100.0%**

The capital costs of the Wastewater System were also analyzed and segregated by function. A summary of the capital budget allocation by function is presented in Table 3-33. The total Wastewater System capital costs for the test year are estimated to be approximately $23.7 million. The District's cash reserves will be used to offset this cost by $18.9 million, resulting in a capital revenue requirement of approximately $4.8 million.

Table 3-33. Wastewater System Capital Expenses by Functions

System Function	Total Cost	% Allocated
Collection System	$2,632,269	54.6%
Treatment Admin	$221,068	4.6%
Treatment Flow	$768,162	15.9%
Treatment BOD	$487,542	10.1%
Treatment TSS	$549,042	11.4%
Customer Service	$21,983	0.5%
G&A - CIP	$144,468	3.0%
Total	**$4,824,534**	**100.0%**

Procedure 2: Allocate Costs Based on Customer Service Characteristics

The functionalized O&M and capital costs were then assigned to the cost categories described in the previous section. A summary of the test year assignment of O&M and capital costs by customer class for the Wastewater System are shown in Table 3-34 and Table 3-35, respectively.

Table 3-34. Wastewater System Functionalized O&M Cost Allocation by Customer Class

Customer Class	Collections	Flow	BOD	TSS	FOG	Customer	Total
Residential	$3,789,010	$4,129,115	$2,100,091	$1,739,979	$0	$1,213,218	**$12,971,413**
Multi-family	$934,993	$1,018,918	$518,228	$429,365	$0	$53,881	**$2,955,385**
Commercial 1	$326,119	$355,391	$112,351	$94,260	$0	$29,355	**$917,476**
Commercial 2	$257,598	$280,721	$186,785	$104,655	$0	$8,922	**$838,680**
Commercial 3	$117,664	$128,226	$214,831	$186,468	$37,455	$4,281	**$688,925**
Commercial 4	$50,863	$55,429	$126,695	$86,010	$24,829	$2,000	**$345,826**
Total	$5,476,247	$5,967,800	$3,258,980	$2,640,737	$62,284	$1,311,657	**$18,717,706**

Table 3-35. Wastewater System Functionalized Capital Cost Allocation by Customer Class

Customer Class	Collections	Flow	BOD	TSS	Customer	Total
Residential	$1,877,485	$705,576	$323,871	$372,930	$20,961	**$3,300,822**
Multi-family	$463,296	$174,111	$79,920	$92,026	$931	**$810,284**
Commercial 1	$161,594	$60,729	$17,326	$20,203	$507	**$260,360**
Commercial 2	$127,642	$47,969	$28,805	$22,431	$154	**$227,001**
Commercial 3	$58,304	$21,911	$33,131	$39,966	$74	**$153,385**
Commercial 4	$25,203	$9,472	$19,539	$18,434	$35	**$72,682**
Total	**$2,713,524**	**$1,019,767**	**$502,592**	**$565,990**	**$22,662**	**$4,824,534**

Procedure 3: Allocate Non-Rate Revenues to Customer Classes

As with the Potable and Recycled Water Systems, non-rate revenues are applied as credits against the rate revenue requirement for the Wastewater System. Table 3-36 summarizes the non-rate revenue credits by function.

Table 3-36. Wastewater System Non-Rate Revenue Allocation by Customer Class

Customer Class	Non-Rate Revenues
Residential	$758,269
Multi-Family	$250,875
Commercial 1	$84,670
Commercial 2	$107,876
Commercial 3	$37,631
Commercial 4	$15,052
Total	**$1,254,373**

The total rate revenue requirements by customer class for the Wastewater System are shown in Table 3-37. The values in the second-to-last column (a+b-c-d) are the revenue requirements that will be used to calculate the Wastewater rates for each customer class, as described in Section 4.3.

Table 3-37. Wastewater System Summary of Rate Revenue Requirements by Customer Class

	a	b	c	d	a + b - c - d	
	Total O&M Revenue Requirements	Total Capital Revenue Requirements	Non-rate Revenue Credit	Property Tax	Total Rate Revenue Requirements	Cost Allocation (%)
Residential	$12,971,413	$3,300,822	$758,269	$0	$15,513,966	69.6%
Multi-Family	$2,955,385	$810,284	$250,875	$0	$3,514,794	15.8%
Commercial 1	$917,476	$260,360	$84,670	$0	$1,093,166	4.9%
Commercial 2	$838,680	$227,001	$107,876	$0	$957,805	4.3%
Commercial 3	$688,925	$153,385	$37,631	$0	$804,679	3.6%
Commercial 4	$345,826	$72,682	$15,052	$0	$403,456	1.8%
Total	**$18,717,705**	**$4,824,534**	**$1,254,373**	**$0**	**$22,287,866**	**100.0%**

3.3.3. Cost Allocation Comparison (Current vs. Proposed)

Table 3-38 summarizes the required rate revenues derived from each customer class based on the proposed cost allocation identified in Section 3.3.2, and compares them to the current cost allocation. Under the proposed cost allocation, the cost shares of Residential and Multi-Family customers will decrease by 0.9 and 0.2 percent, respectively. On the other hand, the cost share of Commercial 2, 3, and 4 customers will increase ranging from 0.2 to 0.4 percent. There will be no change for Commercial 1 customers.

Table 3-38. Wastewater System Current vs. Proposed Cost Allocation by Customer Class

	a	b	c	d	e = c - a	f = d - b
Customer Class	**Revenues under Current Rate Structure**	**Cost Distribution (%)**	**Revenues under New Proposed Structure**	**Cost Distribution (%)**	**Cost Difference**	**% Difference**
Residential	$14,900,549	70.5%	$15,513,967	69.6%	$613,418	-0.9%
Multi-Family	$3,365,182	15.9%	$3,514,794	15.8%	$149,612	-0.2%
Commercial 1	$1,037,609	4.9%	$1,093,166	4.9%	$55,557	0.0%
Commercial 2	$824,171	3.9%	$957,806	4.3%	$133,635	0.4%
Commercial 3	$667,911	3.2%	$804,679	3.6%	$136,768	0.4%
Commercial 4	$330,518	1.6%	$403,455	1.8%	$72,937	0.2%
Total	**$21,125,940**	**100.0%**	**$22,287,867**	**100.0%**	**$1,161,927**	

3.4. WUE Program

The District's rate structure allocates a water budget to each customer based on individual needs and certain parameters to promote the efficient use of water. Customers who use water inefficiently (i.e. in excess of their calculated water budgets) place greater demands on the District's Potable Water and Recycled Water Systems and supplies. Inefficient customers are therefore subject to higher water use rates to offset the costs resulting from the higher demand they place on the District's Potable Water and Recycled Water Systems. The District invests the rate revenues from water sales in Tiers 3, 4, and 5 of the Potable Water and Recycled Water System customer classes in alternative water supply programs, rebates, and water conservation and/or demand management measures to increase efficient uses of water and offset their demand. In addition, the District uses interest income earned from the WUE fund cash balances, as well as revenue from demand offset fees to supplement the WUE program fund. The WUE program COS analysis procedures are discussed in the Section 4.2.3.

Procedure 1: Functionalize Costs

O&M costs and capital costs for the WUE program were analyzed and segregated by the distinct System functions. The defined functions were as follows:

- **Customer Service:** costs associated with responding to customer inquiries concerning the WUE program
- **Rebate Program Administration:** costs associated with the management of the District's rebate programs and other efficiency programs
- **Water Resources:** costs associated with Recycled Water System efficiency retrofits, and other supply reliability projects
- **Efficiency Device Rebates:** costs associated with improving end-user efficiency, such as MNWD's commercial audit program, installation of smart timers, and rebate programs for washing machines and drip irrigation
- **Turf Removal Rebates:** costs associated with conservation programs, such as turf inspections, rebates and installation

Table 3-39 provides a summary of combined Potable Water and Recycled Water O&M expenses by function for the WUE program.

Table 3-39. WUE Program O&M Cost Allocation and Distribution by Function

System Function	Total Cost	Percentage
Customer Service	$363,425	9.3%
Rebate Program Admin	$606,196	15.5%
Water Resources	$45,068	1.2%
Efficiency Device Rebates	$1,114,371	28.6%
Turf Removal Rebates	$1,769,988	45.4%
Total	**$3,899,048**	**100.0%**

Table 3-40 provides a summary of combined Potable and Recycled Water capital expenses by function for the WUE program. The District's cash reserves were allocated to the WUE program for both Potable and Recycled Water, offsetting most of the costs on the program's capital expenses.

Table 3-40. WUE Program Capital Cost Allocation and Distribution by Function

System Function	Total Cost	Percentage
Customer Service	$35,272	19.9%
Rebate Program Admin	$60,023	33.9%
Water Resources	$50,000	28.3%
Efficiency Device Rebates	$7,077	4.0%
Turf Removal Rebates	$24,481	13.8%
Total	**$176,853**	**100.0%**

Procedure 2: Allocate Costs Based on Customer Service Characteristics

Table 3-41 and Table 3-42 summarize the cost allocations of the functionalized O&M and the capital costs to each Potable Water and Recycled Water System customer class. The costs are allocated to each customer class based on the amount of usage in Tier 3, 4, and 5.

Table 3-41. WUE Program O&M Cost Distribution by Customer Class

Customer Class	Cost Allocation	% Allocated
Residential	$2,538,106	65.1%
Multi-Family	$217,060	5.6%
Commercial	$235,284	6.0%
Potable Irrigation	$472,517	12.1%
Recycled Irrigation	$436,080	11.2%
Total	**$3,899,048**	**100.0%**

Table 3-42. WUE Program Capital Cost Distribution by Customer Class

Customer Class	Cost Allocation	% Allocated
Residential	$238,615	56.1%
Multi-Family	$20,407	4.8%
Commercial	$22,120	5.2%
Potable Irrigation	$44,423	10.5%
Recycled Irrigation	$99,485	23.4%
Total	**$425,049**	**100.0%**

Procedure 3: Allocate Non-Rate Revenues to Customer Classes

Non-rate revenues are allocated to the WUE Program as shown in Table 3-43. The non-rate revenues allocated to the WUE program include investment income and demand offset fees. Demand offset fees are charged for new development and used to offset new Potable Irrigation customers' demands on the System and create equity in reliability between new and existing customers. The non-rate revenues are unrestricted revenues that may be used by the District for any purpose.

Table 3-43. WUE Program Non-Rate Revenue Allocation by Customer Class

Customer Class	Investment Income	Demand Offset Fees	Total Non-Rate Revenues
Residential	$67,534	$28,597	**$96,130**
Multi-Family	$9,814	$4,156	**$13,970**
Commercial	$11,550	$4,891	**$16,441**
Potable Irrigation	$14,412	$6,103	**$20,514**
Recycled Irrigation	$14,770	$6,254	**$21,025**
Total	**$118,080**	**$50,000**	**$168,080**

Procedure 4: Distribute Total Costs to Specific Customer Classes

The total rate revenue requirement is determined by combining the O&M and capital costs and subtracting the credits for non-rate revenues for the WUE program. The values in the last column of Table 3-44 are the actual revenue requirements used for the WUE program as described in Section 4.2.

Table 3-44. WUE Program Potable Water, Summary of Rate Revenue Requirements by Customer Class

	a	b	c	d	a+b-c-d	
	Total O&M Revenue Requirements	Total Capital Revenue Requirements	Non-rate Revenue Credit	Property Tax	Total Rate Revenue Requirements	Cost Allocation (%)
Residential	$2,538,106	$238,615	$96,130	$0	$2,680,591	64.5%
Multi-Family	$217,060	$20,407	$13,970	$0	$223,497	5.4%
Commercial	$235,284	$22,120	$16,441	$0	$240,963	5.8%
Potable Irrigation	$472,517	$44,423	$20,514	$0	$496,426	11.9%
Recycled Irrigation	$436,080	$99,485	$21,025	$0	$514,540	12.4%
Total	**$3,899,048**	**$425,049**	**$168,080**	**$0**	**$4,156,017**	**100.0%**

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4. RATE DESIGN & RATE SCHEDULE RECOMMENDATION

The District first implemented a Water Budget Based Rate Structure (WBBRS) in July 2011 and further refined the structure in 2015. Under this rate structure, a customized monthly water budget is calculated for each customer based on the efficient water use needs of the parcel-specific characteristics of their property and landscape. The underlying rationale of any WBBRS is that customers who use water inefficiently (i.e. in excess of their calculated water budgets) place greater demands on the District's Potable Water and Recycled Water Systems and supplies than those customers who continue to use water efficiently (i.e. within their calculated water budgets). Because of the higher demand and consequently higher cost that inefficient usage places on the District's Potable Water and Recycled Water Systems, water usage in excess of a customer's allocated budget is subject to higher water use rates. The District maintains a strong cost nexus between increasing marginal supply costs and increasing rates by investing the incremental rate difference in alternative water supply programs, rebates, water conservation, and demand management, which measures to increase efficient uses of water and offset demand from inefficient water use. The WBBRS provides customers with choice and an incentive to partner with the District in its effort to meet long term efficiency goals and maintain a reliable source of water by incentivizing efficient water use.

On July 15, 2014, the State Water Resources Control Board (SWRCB) implemented regulations requiring water utilities to implement mandatory outdoor watering restrictions. The District was one of two agencies in the State to receive approval of an Alternate Plan for Demand Reductions, as the District was able to successfully demonstrate that its water budget based rates were superior to watering restrictions at achieving demand reductions. This approach permits the District to achieve the stated goals of the Plan and allows customers to maintain choice in managing their household water needs. Additionally, the SWRCB recognized the District's WBBRS as a best practice for California water agencies as a top three rate structure in the State of California. The California Department of Water Resources also recognized the District's rate structure as a best practice and included a case study in the 2015 Urban Water Management Plan Guidebook in Appendix N on the District's rate structure and Water Shortage Contingency Plan.

4.1. Recommended Changes to Potable Water and Recycled Water Rate Structure

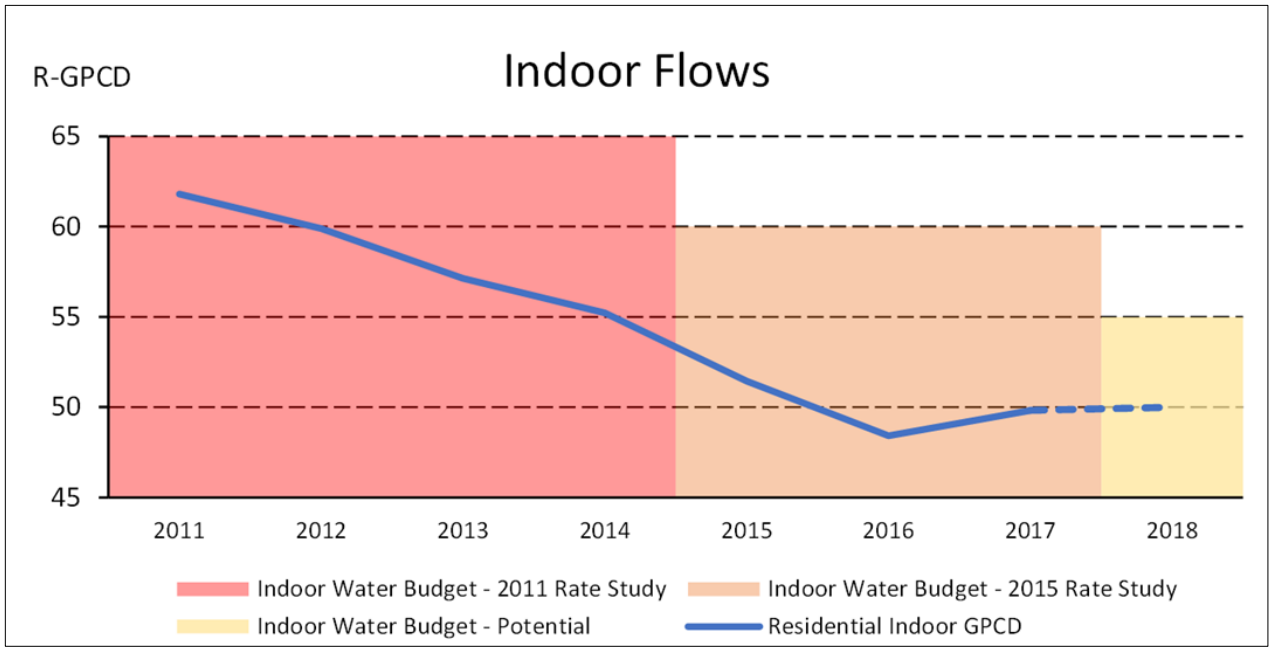
Since its adoption in 2015, the current rate structure has proven its ability to both safeguard the District's financial health and provide customers with economic incentives to increase efficient water use. The District intends to build upon this success by continuing to refine the rate structure's ability to both accurately reflect the District's underlying cost structure and ensure those costs are proportionally recovered from customers while providing a strong price signal to encourage efficient water use. The proposed refinements are consistent with several made in the 2015 COS in that they are intended to ensure the rate structure collects sufficient revenue, reflects current water usage trends, aligns cost recovery with cost creation, encourages recycled water use, and equitably recovers costs. RDN acknowledges the

robust design of the current rate structure and supports retaining the same basic structure with the proposed refinements:

1) Annual General Fund rate revenue increases of 3.0 percent for both the Potable Water and Recycled Water Systems to ensure sufficient recovery of revenue requirements, as discussed in Chapter 2.

2) Align indoor budget factors with calculated indoor water use. Based on inflows at wastewater treatment plants, current average indoor water usage is 50 GPCD[5]. Figure 4-1 below shows the past indoor GPCD amounts for the rate structure and actual indoor flows, showing the trend of decreasing indoor water use and iteratively updating the factors used in calculating the indoor water budget to reflect best available data and analysis. Due to differences in housing development, many households will be above this calculated average. As such the proposed rate structure includes and adjustment to 55 GPCD for indoor water use.

Figure 4-1. Residential Wastewater Flows



3) Allocation of new water deliveries from the Baker WTP to water demands in Tier 1 and Tier 2 in order to create a low-cost "blended" supply for efficient water use.

[5] Residential indoor flows are estimated by subtracting the water usage associated with Commercial accounts from measured influent flows at wastewater treatment plants and dividing the remaining volume over the District service area population, as estimated by the Center for Demographic Research. This approach is consistent with methodologies used by the State Water Resources Control Board to estimate residential indoor flows.

4) Alignment of potable water fixed-variable costs and revenues – Currently, the District utilizes *ad valorem* property tax revenues to offset the supply cost of water to its customers for within budget usage as a way to incentivize efficient water use. As a result, the District recovers a portion of its variable costs from fixed revenues. Because of this relationship between fixed and variable costs and revenues, the District faces a potential risk from increases in water demand for supplies that are sold at a discount. The District could minimize or eliminate this potential risk by better aligning the ratio of its fixed and variable revenues with its ratio of fixed to variable costs.

5) The use of unrestricted non-rate revenues to continue providing a cost incentive for recycled water use. The District currently applies 93.0 percent of available property tax revenue to reduce potable water volumetric rates, and applies the remaining 7.0 percent to recycled water rates. This Report endorses the District's plan (see Sections 3.1.8 and 3.2.7) to increase the share of property tax applied to recycled water volumetric rates to 15.0 percent (of $27.6 million in FY 2017-18). The remaining 85.0 percent will be applied to offset potable water rates. This reallocation acknowledges the continued District-wide benefit provided by an affordable recycled water supply and the costs incurred by customers who have converted to recycled water, as well as incentivizing further adoption of recycled water.

6) A one-time 15.0 percent increase in FY 2017-18 to the rate revenue (Tier 3, 4, and 5) funding for the WUE Fund. This rate revenue increase is required for the District to continue funding rebates and water efficiency programs, future groundwater banking programs, and Advanced Metering Infrastructure, while preventing the WUE fund from having a negative balance during the projected years. This adjustment is consistent with the overall goal of spending down the WUE Fund to zero at the end of the ten year financial plan.

The water demand for FY 2017-18 is projected to be at the same level as that of FY 2016-17. The overall service charges will be decreased under the proposed rates while the volumetric charges will be proportionally increased. Thus the District will experience no fiscal impact by making these changes to the rate structure and will remain revenue neutral.

4.2. Potable and Recycled Water Rate Design

The District's rate schedule must be designed to sufficiently recover rate revenue requirements while promoting water use efficiency and conservation. The District's recommended rate schedule should support and optimize its objectives: be compliant with all legal and regulatory standards, encourage efficiency of water use, minimize adverse impacts to customers, and assure reasonable and prudent revenue stability for the District. The District's Potable Water and Recycled Water Systems accomplish these goals through WBBRS, volumetric allotments of water to customers based on customer-specific characteristics and conservative resource standards.

4.2.1. Potable Water and Recycled Water Budgets

Monthly water budgets for Residential (Single-family detached or individually metered attached dwelling) and Multi-family (master metered developments) customers are calculated to provide for two potentially efficient uses of water: an indoor budget, which is calculated based on the amount of water needed to meet the needs of each person in the respective household or dwelling; and an outdoor budget, which is calculated to provide sufficient water supply to efficiently meet the mixed irrigation needs of the native plant species and functional turf grass that are maintained on a customer's property. Establishing a rate structure that provides for the sufficient but not excessive use of water indoors and outdoors has allowed the District to keep water use decisions in the hands of its customers. Customers who have decided to proactively become more efficient are not asked to bear the cost of less efficient customers, and as a result enjoy the lowest bills in South Orange County. Customers who may have only recently become interested in or more aware of opportunities to become more efficient are able to partner with the District in its efforts to extend the life of its existing water supply and delivery infrastructure. Customers who have elected to maintain water use at levels in excess of efficient indoor and outdoor needs may do so knowing that such supplies are available only by the increased efficiency of their neighbors and that the higher rates associated with increasingly inefficient levels of water use account for their proportionate impact on supply by directly funding rebates and other water use efficiency programs.

The indoor water budget is calculated based on the three factors:

1. **Persons per Household**: Household sizes are based on Census averages for different types of dwellings. Customers who have the option to submit information on the actual number of people in the household as well.
    - **I**ndividually metered service: an average size of four persons per household is assumed for accounts serving detached residential homes, and three persons per household for accounts serving attached condos and townhomes.
    - Master metered service: an average size of two persons per dwelling unit per metered connection is assumed for multi-family or other residential accounts served by a single meter.
2. **Gallons per Capita per Day (GPCD)**: a volume of water sufficient for efficiently meeting the indoor water use needs of each person residing in a household, such as showers and washing clothes using a water-efficient device.
3. **Number of Days in the Billing Cycle**: the number of days, typically 28 to 35 days, for which customers were provided service.

As an equation, the indoor water budget allocation is expressed as follows:

$$Indoor\ Allocation\ (ccf) = \frac{Persons\ per\ Household\ \times GPCD \times Days\ billed}{748}$$

Note: The conversion factor converts from gallons to hundred cubic feet (ccf). 1 ccf = 748 gal

The outdoor water budget is commonly calculated based on the following three factors:

1. **Irrigable Area:** The amount of irrigable area per parcel based on either County Assessor parcel data and the District's Geographic Information System (GIS), on-site measurements for all non-residential accounts, and for residential accounts requesting a variance, and supplemental aerial imagery where appropriate
2. **ET (Evapotranspiration)**: The amount of water, in inches, lost by plants due to evaporation and transpiration. ET will vary across the District due to neighborhood-specific factors such as wind, humidity, and temperature. To account for this variability, each parcel is mapped into one of over 110 individually tracked 1 km^2 "microzones" which reflect the neighborhood-specific environmental factors that increase or decrease the water demand of landscaped areas
3. **Plant Factor**: A relative factor reflecting the water needs of specific types of plants. The specific plant factors for efficient outdoor use are discussed further below.

$$Outdoor\ allocation\ (ccf) = \frac{Irrigable\ Area \times ET \times Plant\ Factor \times 0.62}{748}$$

Note: The conversion factor converts from gallons to hundred cubic feet (ccf). 1 ccf = 748 gal

Note: 0.62 is a conversion factor from acre-inches per acre to gallons

Residential (Individually Metered) and Multi-family (Master Metered) Customer Water Budgets

The District's Residential and Multi-family customer rates are structured to include five tiers:

Tier 1 - Indoor water budget

Tier 2 - Outdoor water budget

Tier 3 - Usage above 100% of total water budget up to 125% of the total water budget

Tier 4 - Usage above 125% of total water budget up to 150% of the total water budget

Tier 5 – Usage above 150% of water budget

The indoor water budget (Tier 1) is proposed to be calculated based on 55 GPCD to reflect current indoor water use and efficiency goals. As note previously, household size for a given account is set at the average associated with their connection type; however, the number of people in the household used to calculate indoor water budget can be

updated to more accurately reflect present household size through the District's variance program. An example calculation of a monthly water budget for a residential customer is provided below:

$$\boldsymbol{Residential\ (SFR)\ Indoor\ (ccf) = \frac{(4\ to\ 3)\ \times 55 \times Days\ billed}{748}}$$

$$\boldsymbol{Multi-family\ (MFR)\ Indoor\ (ccf) = \frac{2\ \times 55 \times Days\ billed}{748}}$$

Note: The conversion factor converts from gallons to hundred cubic feet (ccf). 1 ccf = 748 gal

To compute the outdoor water budget, the District used a combination of geospatial analysis and in-person site visits to determine the irrigable area associated with each meter. The Plant factor of 0.7, which represents a mixed landscape of turf and low-water use plants was used to reflect the most common landscape features in the District's service area. As noted, actual daily evapotranspiration (ET) is measured at 110 virtual weather stations that calculate data for microclimate zones within the District's service area. The conversion factor (748) converts from gallons to hundred cubic feet (ccf), and 0.62 converts acre-inches per acre to gallons. The District's equation for Residential and Multi-family customers' Tier 2 allocation is as follows:

$$\boldsymbol{Residential\ (SFR/MFR)\ Outdoor\ (ccf) = \frac{Irrigable\ Area \times ET \times 0.7 \times 0.62}{748}}$$

Non-residential Customer Water Budgets

The current rates for Commercial customers, and both Potable and Recycled Irrigation customers are structured into a four tier budget-based rate structure with Tier 2 up to 125 percent of the water budget and Tier 3 up to 150 percent of the water budget.

Tier 1 - up to total water budget

Tier 2 - Usage above 100 percent of total water budget up to 125% of the total water budget

Tier 3 - Usage above 125 percent of Total water budget up to 150% of the total water budget

Tier 4 - Usage above 150 percent of water budget

Most Commercial customers have two metered connections, a dedicated irrigation meter for measuring outdoor water use and a commercial meter for measuring indoor water use. To determine the water budget for commercial meters, the District uses a rolling average of the current month usage and the usage associated with the respective month from the prior two years to determine the total water budget. Each month's usage is weighted by the number of days in that bill to account for the potential difference in meter read dates for the different years. This 3-year rolling monthly average accounts for typical monthly usage for Commercial customers as well as for potential increases in business

activity or recent efficiency improvements that may have been made within the current month. An example calculation of a monthly water budget for a Commercial customer is provided below:

$$\boldsymbol{Jan\ 2018\ Budget} = \left(\frac{\boldsymbol{Jan\ 2018\ Usage}}{\boldsymbol{Days\ in\ Jan\ 2018\ Bill}} + \frac{\boldsymbol{Jan\ 2017\ Usage}}{\boldsymbol{Days\ in\ Jan\ 2017\ Bill}} + \frac{\boldsymbol{Jan\ 2016\ Usage}}{\boldsymbol{Days\ in\ Jan\ 2016\ Bill}}\right) \div \mathbf{3} \times (\boldsymbol{Days\ in\ Jan\ 2018\ Bill})$$

Outdoor water budgets for non- residential accounts with areas irrigated by potable water are calculated as follows:

$$\boldsymbol{Potable\ Water\ Irrigation\ in-budget\ Usage\ (ccf)} = \frac{\boldsymbol{Irrigable\ Area \times ET \times 0.7 \times 0.62}}{\mathbf{748}}$$

Outdoor water budgets for areas irrigated with recycled water are calculated similarly to potable irrigation meters outdoor water budgets, but with a higher plant factor to account for the additional salinity of recycled water.

$$\boldsymbol{Recycled\ Water\ Irrigation\ in-budget\ Usage\ (ccf)} = \frac{\boldsymbol{Irrigable\ Area \times ET \times 0.8 \times 0.62}}{\mathbf{748}}$$

For areas defined as functional or high-traffic public spaces, which include public parks and sports facilities, outdoor water budgets are calculated with a plant factor of 1.0, regardless of water type.

$$\boldsymbol{Public\ Spaces\ Irrigation\ in-budget\ Usage\ (ccf)} = \frac{\boldsymbol{Irrigable\ Area \times ET \times 1.0 \times 0.62}}{\mathbf{748}}$$

Variance Program

Each customer has the ability to apply for a variance to update budget billing factors such as household size or irrigable area, as described by the District's adopted Variance and Adjustment program rules.

4.2.2. Potable and Recycled Water Demands

Based on the parcel-specific budgets established in Section 4.2.1, each customer's tiered use is aggregated to determine the total water demand for each of the respective usage tiers.

Test Year Water Demands

As noted throughout this Report, water budgets are calculated based on efficiently meeting the water needs of each customer, and the width of each tier of the District's rate structure is calculated to reflect relative levels of efficient (or inefficient) usage. Actual customer demands for FY 2016-17 are used for test year calculations as they are most representative of current customer usage characteristics. RDN supports this approach as the General Fund volumetric rates are set so as to only recover the marginal cost of water purchases and the District will utilize unrestricted non-rate revenues to establish volumetric rates for in-budget usage below the marginal cost of supply, ensuring that the recommended rates will provide sufficient revenue to cover cost requirements in the event of decreased or increased

water sales. Table 4-1 presents potable and recycled water demand for the test year based on the budget factors established in Section 4.2.1. Note, in order to accurately capture the total volume of inefficient water usage for the test year, non-residential efficient in-budget usage is shown entirely in Tier 2 and the out of budget tiers begin with Tier 3.

RDN conducted an analysis on the widths of Tier 3 and Tier 4, and verified that the District's tier break points reflect relative levels of inefficient usage (Robert D. Niehaus, 2017).

Table 4-1. Potable and Recycled Water Demands by Tier, FY 2016-17

Water Demand by Tier (in HCF)		
	Potable	Recycled
Tier 1	4,843,429	-
Tier 2	3,642,684	2,621,358
Tier 3	512,768	89,950
Tier 4	239,223	30,694
Tier 5	392,130	42,931
Total Demand	**9,630,234**	**2,784,933**

4.2.3. Potable Water and Recycled Water Rate Calculation

With the functionalized cost allocations of each customer class identified, their respective budgets calculated, and tiered water use determined, the Rate Design process may begin. Unit rates will be developed by dividing the total revenue requirement of each functional cost center over its respective demands.

The District currently collects a volumetric charge and a basic service charge for water service. The volumetric charge is a variable charge, assessed on the basis of volume of water delivered to the parcel, and is intended to capture both the marginal supply cost of imported water and the incremental cost of inefficient usage that places additional demands on existing supply. The basic service charge is a fixed charge intended to reflect each customer's proportionate share of capacity in the water system and is assessed based on the diameter of the meter delivering water to the associated parcel.

Potable Water Volumetric Rate Calculation – General Fund

As noted throughout this Report and the attached LRFP, the use of marginal cost based pricing has been a major contributor to the District's present financial strength. Recognizing this, the proposed rates do not attempt to recover any of the District's fixed water supply costs through its volumetric rates. Any proportional differences in system capacity or peaking related costs are recovered on a fixed basis through the basic service charge, and as a result the unit cost of water supply does not vary between customer classes. As such, the water supply unit rates for each tier will be calculated on the basis of total water demand in each tier.

Since the development of the 2015 COS study, the Baker WTP has become operational and is now delivering approximately 9,400 AF of treated water supply per year to the District. As noted in Section 2.1.3, the variable costs of

water deliveries from Baker WTP are lower than the Tier 1 volumetric rate for fully treated MWDSC water deliveries. From a COS standpoint, lower cost treated water from Baker WTP effectively serves as a local supply source that can be used to offset a proportion of its imported water demand. Recognizing that providing access to low-cost water for efficient use is a benefit to all of its customers, the District has allocated supplies from Baker WTP entirely to usage within Tiers 1 and 2. As the supply from Baker WTP will meet only a portion of efficient water use needs, the remaining in-budget demands are met with imported water, which creates a lower-cost "blended" water supply for Tiers 1 and 2. The marginal supply cost of water is determined for each tier by dividing the associated supply cost over the volume of water required to meet the respective demands of that tier. The resulting rates are effectively the price paid by the District from its General Fund for each unit of water delivered to customers. As shown in Table 4-2 and Table 4-3, the effective volumetric unit rates for in- and out-of-budget usage are calculated as $2.20/ccf and $2.61/ccf, respectively. It is important to note that these rates represent only the cost of purchasing an additional unit of water, and do not consider any costs incurred as a result of the additional demands placed on the system by the incremental use.

Table 4-2. Blended Supply Cost

a			b	c	d	e	f = d + e
Demand		Supply Source	Total Supply (AF)		Total Supply Cost		Blended Supply Cost
			Baker	Deimer	Baker	Deimer	
Tier 1	11,119 AF	Baker + Deimer	5,365 AF	5,754 AF	$4,136,571	$ 6,534,504	**$10,671,075**
Tier 2	8,363 AF	Baker + Deimer	4,035 AF	4,328 AF	$3,111,264	$ 4,914,836	**$ 8,026,100**
Tier 3	1,178 AF	Deimer	-	1,178 AF	$ -	$ 1,337,763	**$ 1,337,763**
Tier 4	550 AF	Deimer	-	550 AF	$ -	$ 624,592	**$ 624,592**
Tier 5	901 AF	Deimer	-	901 AF	$ -	$ 1,023,195	**$ 1,023,195**
Total	**22,111 AF**		**9,400 AF**	**12,711 AF**	**$7,247,835**	**$14,434,890**	**$21,682,725**

Table 4-3. Effective General Fund Supply Rates

a			b	c = a / b	d = c / 435.6
Demand		Supply Source	Effective Supply Cost	Effective Unit Supply Rate	Effective Volumetric Rate
Tier 1	11,119 AF	Baker + Deimer	$10,671,075	$959.72/AF	$2.20/ccf
Tier 2	8,363 AF	Baker + Deimer	$8,026,100	$959.72/AF	$2.20/ccf
Tier 3	1,178 AF	Deimer	$1,337,763	$1,135.62/AF	$2.61/ccf
Tier 4	550 AF	Deimer	$624,592	$1,135.62/AF	$2.61/ccf
Tier 5	901 AF	Deimer	$1,023,195	$1,135.62/AF	$2.61/ccf
Total	**22,111 AF**		**$21,682,725**		

Access to the blended supply that was made possible by the District's investment in the Baker WTP has provided customers with both improved system reliability in the event of an emergency as well as an incentive for continued efficient use of water because of the new supply source's lower volumetric cost. Recognizing that the essential health

and safety indoor water needs of its customers are provided for in Tier 1, and the supply reliability benefits of efficient outdoor water use, the District has allocated a portion of the *ad valorem* property tax revenues to offset the marginal supply cost of water to create below cost tiers for within budget water use (Tier 1 and Tier 2). In total, approximately 15% of the *ad valorem* property tax revenue allocated to the Potable Water System was used to offset the General Fund supply rates with the remainder used to offset meter service charges and mitigate the potential bill impacts to customers as a result of the COS analysis. The resulting tiered supply rates are presented in Table 4-4. The effect of property tax revenues on the overall rate structure design is illustrated in Figure 4-2.

Table 4-4: Property Tax Offset

	a	b	c = a+b
	Calculated Rate	Property Tax Offset	Effective Rate
Tier 1	$2.20/ccf	-$0.51/ccf	$1.69/ccf
Tier 2	$2.20/ccf	-$0.26/ccf	$1.94/ccf
Tier 3	$2.61/ccf	-$0.01/ccf	$2.60/ccf
Tier 4	$2.61/ccf	-$0.01/ccf	$2.60/ccf
Tier 5	$2.61/ccf	-$0.01/ccf	$2.60/ccf

Recycled Volumetric Rate Calculation – General Fund

A similar unit rate approach was used to develop the General Fund volumetric rates for recycled water sales, as shown in Table 4-5. The marginal supply cost of recycled water (column c) is determined for each tier by dividing the associated supply cost (column a) over the volume of water required to meet the respective demands of that tier (column b). The resulting rates reflect the price paid by the District from its General Fund for each unit of recycled water delivered to customers. The volumetric unit rates for in- and out-of-budget usage are calculated as $2.15/ccf and $3.04/ccf, respectively. Recognizing the supply reliability benefits that recycled water provides, the District has allocated a portion of the ad-valorem property tax revenues it receives to offset the marginal supply cost of recycled water (column d) to ensure that there is a continued price incentive to use recycled water to meet outdoor water needs. In total, approximately 97 percent of the property tax revenue allocated to the Recycled Water System was used to offset the General Fund supply rates and meter service charges, and mitigate the potential bill impacts to customers as a result of the COS analysis. The effective rate for each tier is shown in column e of Table 4-5.

Table 4-5. Recycled Volumetric Rate Calculation – General Fund

	a	b	c = a / b	d	e = c + d
Tier	**Supply Cost**	**Demand**	**Calculated Rate**	**Property Tax Offset**	**Effective Rate**
Tier 1	-	-	-	-	-
Tier 2	$5,635,920	2,621,358	$2.15/ccf	-$0.76/ccf	$1.39/ccf
Tier 3	$273,448	89,950	$3.04/ccf	-$1.25/ccf	$1.79/ccf
Tier 4	$93,310	30,694	$3.04/ccf	-$1.25/ccf	$1.79/ccf
Tier 5	$130,510	42,931	$3.04/ccf	-$1.25/ccf	$1.79/ccf
Total	**$6,133,188**	**2,784,933**			

Volumetric Rate Calculation – WUE Fund

By specifically allocating the costs of its water efficiency programs and rebates to increasingly inefficient levels of water use, the District has been able to develop a conservation-based tiered rate structure that proportionally recovers the additional cost of incremental inefficient usage. RDN approves continuing this approach as the tiered WBBRS adopted in 2015 has proven itself as an effective demand management tool and earned praise from state agencies and customers alike.

As part of the detailed COS analysis presented in Section 3.4, specific efficiency program costs were allocated across all customer classes relative to their out of budget usage. The total cost assigned to each tier reflects the costs associated with the level of intervention that the District takes to offset the supply impacts caused by inefficient usage, as shown in Table 4-6.

The District continues to emphasize a “one-water” approach for its long range supply planning to reflect the increased supply reliability that recycled water provides by offsetting outdoor water demands that would otherwise be met with potable water. This approach also captures the overall collective benefit provided by the efficient use of water from any source: efficient potable water use reduces demand on potable supplies while efficient recycled water use further extends existing recycled supplies. To support the rationale that all water supplies should be used efficiently, the efficiency and rebate program costs allocated to each tier are spread over the total volume of water associated with that tier.

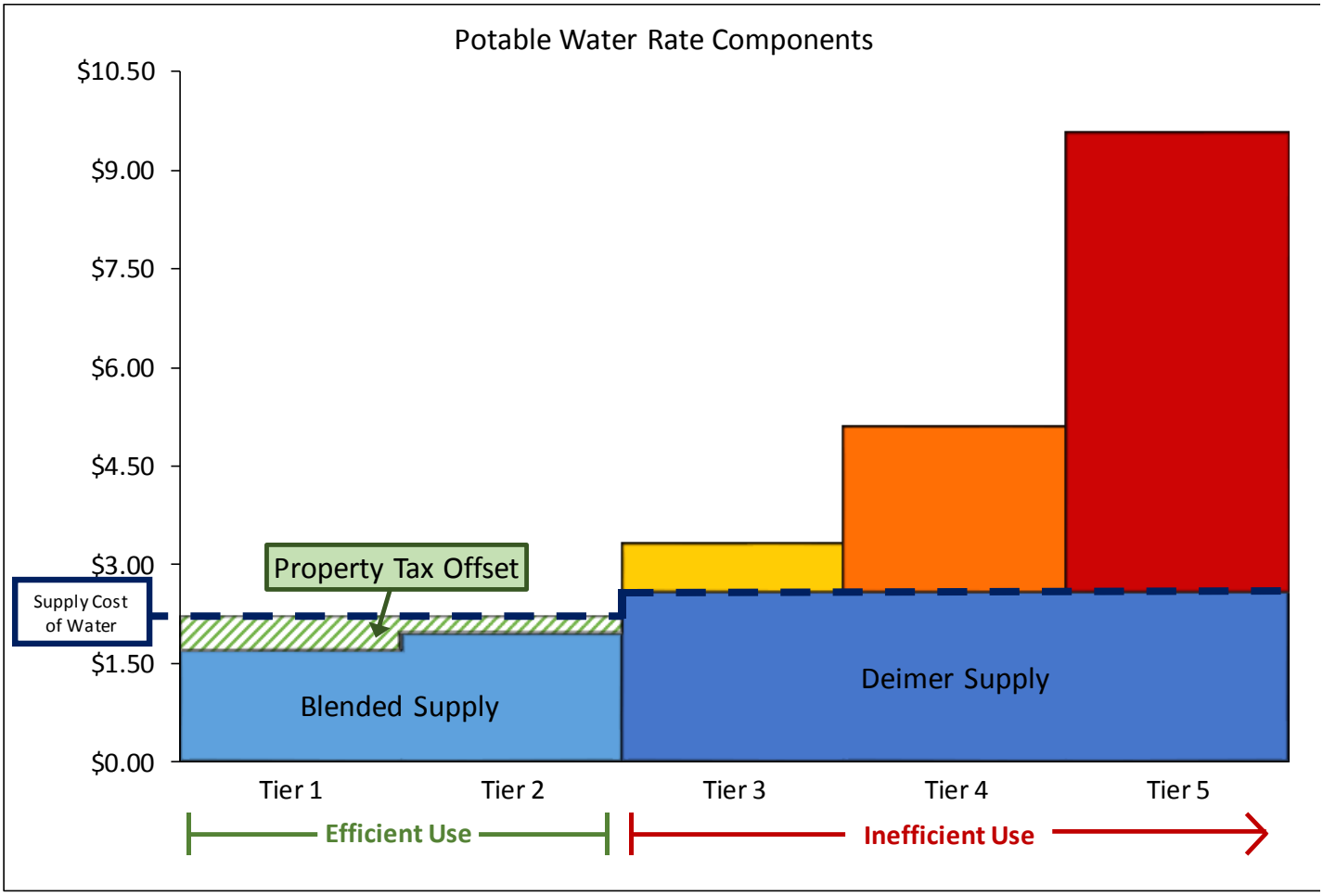
Table 4-6. WUE Fund Unit Rate Calculation

		a	b	c = a / b
Tier	Components	Cost	Inefficient Use	Unit Rate
Tier 3	Customer Service + Rebate Program Administration	$436,397	602,718 ccf	$0.72/ccf
Tier 4	Efficiency Device Rebates + Water Resources + Customer Service + Rebate Program Administration	$680,398	269,917 ccf	$2.52/ccf
Tier 5	Turf Removal Rebates + Efficiency Device Rebates + Water Resources + Customer Service + Rebate Program Administration	$3,039,221	435,061 ccf	$6.99/ccf

Because of the higher demand, and consequently higher cost, that inefficient usage places on the District's water and recycled water systems, water usage in excess of a customer's allocated budget is subject to higher water use rates. The District maintains a strong cost nexus between increasing marginal supply costs and increasing rates by investing the incremental rate difference in alternative water supply programs, rebates, water conservation, and demand management measures to increase efficient uses of water and offset demand from inefficient water use.

As part of its holistic approach to demand management and public finance, the District further revised the rate structure to not only disincentive inefficient usage but also to incentivize and reward efficient water usage. By allocating its *ad valorem* property tax and other unrestricted revenues, the District was able to effectively create below cost tiers for within budget water use by offsetting the marginal supply cost of water. The resulting tiered rate structure creates a strong price signal to customers who may inadvertently exceed their budgets, and any revenues collected are immediately reinvested in programs and rebates to help those same customers get back into budget. Figure 4-2 illustrates the use of unrestricted property tax revenues and careful allocation of WUE program costs to create a conservation based tiered rate structure. The non-discounted General Fund effective volumetric rates calculated in Table 4-3 are represented by the dashed dark blue "Supply Cost of Water" line. The dashed green area below this line represents the unrestricted property tax revenue that offsets the supply cost of in budget water usage. The effective General Fund rates derived in Table 4-4 (column c) are illustrated in Figure 4-2 as the light blue "Blended Supply" and darker blue "Diemer Supply." The unit rates for increasingly inefficient water use, calculated in Table 4-6 and represented in Figure 4-2 by their respective color, are added to the supply cost of water to capture the additional costs associated with offsetting the supply reliability impacts attributable to these additional demands.

Figure 4-2. Volumetric Rate Components

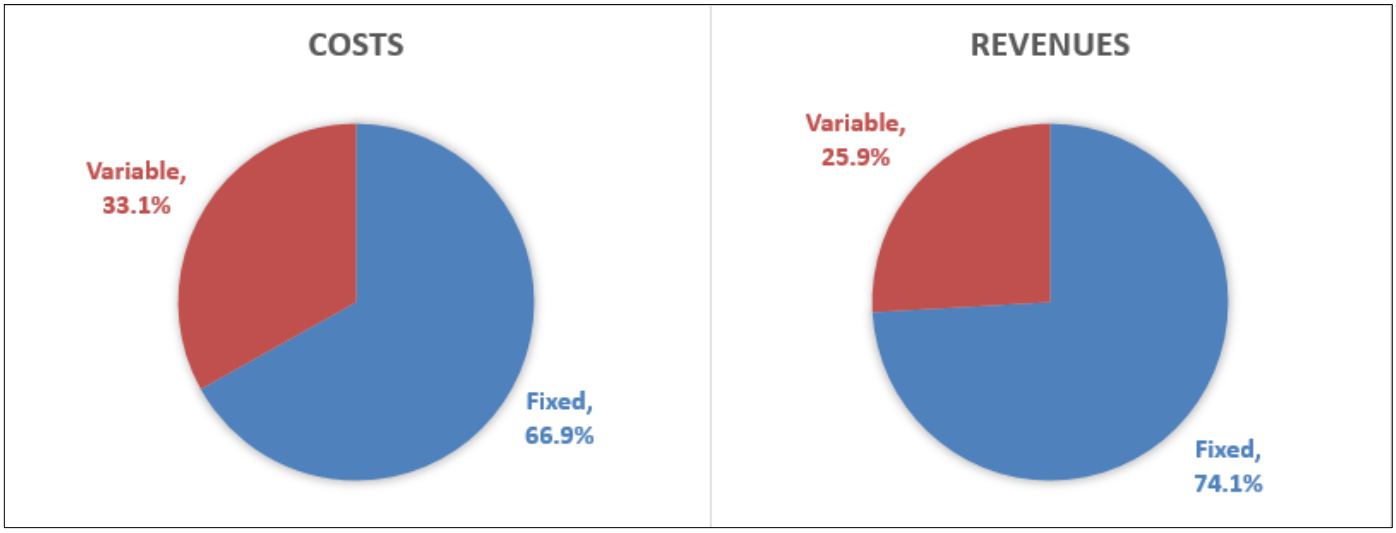


Meter Service Charge Calculation

Recognizing that the overall cost of providing essential water service to customers is only partially driven by incremental increases in usage and that the majority of the District's ongoing costs are related to the continual maintenance, needed replacement, or potential expansion of existing system infrastructure, the District recovers the fixed share of its potable and recycled water system costs via a monthly basic service charge assessed on the basis of meter size.

According to its updated LRFP, the District projects Potable Water System variable (volume-related) General Fund costs to account for 33.1 percent of total FY 2017-2018 costs, but projects variable General Fund revenues to account for only 25.9 percent of the total. Figure 4-3 displays the share of variable and fixed components in costs and revenues for FY 2017-18.

Figure 4-3. General Fund Variable and Fixed Costs vs. Revenues, FY 2017-18



To evaluate the robustness of the proposed financial plan, District staff conducted several financial "stress test" scenarios to identify potential risks to the District's long term financial health and if necessary develop appropriate strategies to mitigate exposure to risk. One such test identified a situation in which increased in-budget water usage negatively impacted the District's financial position should variable revenues and costs not be brought into alignment. A detailed discussion of these scenarios and strategies can be found in the LRFP Report, attached to this Report as APPENDIX A. The District plans to realign its rate revenue structure with underlying costs by decreasing water service charges, and increasing volumetric rates. To reduce potential financial impact on customers, the adjustment will be phased in over four years by gradually shifting the allocation of Ad Valorem property tax revenues between volumetric rates and water services charges. This will improve revenue stability and provide the additional benefit of giving customers more control over their bills.

The phase-in of the proposed realignment was factored into the rate design by calculating for each year the share of total unrestricted property tax revenue necessary to offset variable rates such that the District's projected variable revenues would be equivalent to its projected variable costs by calendar year 2021, with the remaining unrestricted non-rate revenues used to offset fixed rate revenue requirements. Using this method, the annual fixed rate revenue requirement for each class can be calculated as the difference between its total rate revenue requirement and projected variable rate revenue. Table 4-7 illustrates this calculation for the test year revenue requirements developed in Chapter 3.

Table 4-7. Fixed Rate Revenue Requirement Calculation

	a	b	c = a - b
Customer Class	Total Rate Revenue Requirement	Variable Rate Revenue	Fixed Rate Revenue Requirement
Residential	$18,469,914	$11,985,359	$6,484,555
Multi-family	$2,787,985	$1,827,668	$960,317
Commercial	$2,610,359	$2,028,769	$581,590
Irrigation	$3,749,765	$2,367,075	$1,382,690
Recycled	$5,592,300	$3,942,715	$1,649,585
Total	**$33,210,323**	**$22,151,586**	**$11,058,737**

The resulting fixed rate revenue requirements consist of both customer and meter costs, as described in Section 3.1.6. For each customer class, the customer costs are recovered uniformly on a per account basis, and the meter costs are recovered proportionally on an equivalent meter basis. The uniform per account charge and scaled meter charge are combined and assessed as a single fixed charge on the basis of meter size, as shown in Table 4-8.

Table 4-8. Calculated Monthly Water Service Charges Effective January 1, 2018 ($/Meter Size in Inches)

	Residential	Multi-Family	Commercial	Potable Irrigation	Recycled Irrigation
5/8"	$11.22	$10.78	$5.54	$18.06	$18.06
3/4"	$11.22	$10.78	$5.54	$18.06	$18.06
1"	$11.22	$10.78	$5.54	$18.06	$18.06
1 1/2"	$37.41	$25.20	$18.46	$60.21	$60.21
2"	$59.85	$37.56	$29.54	$96.34	$96.34
3"	$130.94	$76.70	$64.61	$210.76	$210.76
4"	$224.46	$128.19	$110.76	$361.29	$361.29
6"	$467.62	$262.09	$230.76	$752.68	$752.68
8"	$673.37	$375.38	$332.29	$1,083.86	$1,083.86
10"	$1,084.87	$601.96	$535.36	$1,746.22	$1,746.22

A result of the phasing in the realignment is that fixed charges will actually decrease in each year of the proposed rate structure. It is important to emphasize that this result is caused by shifting the property tax revenue offset from the variable rates to the fixed water service charges and should not be misinterpreted as a result of decreasing costs. The decreasing rates are shown for the Residential customer class in Table 4-9 below.

Table 4-9. Residential Monthly Water Service Charge Comparison ($/Meter)

	2017	2018	2019	2020	2021
5/8"	$11.91	$11.22	$10.71	$10.22	$9.77
3/4"	$11.91	$11.22	$10.71	$10.22	$9.77
1"	$11.91	$11.22	$10.71	$10.22	$9.77
1.5"	$39.73	$37.41	$35.69	$34.08	$32.56
2"	$63.57	$59.85	$57.11	$54.53	$52.10
3"	$139.06	$130.94	$124.95	$119.29	$113.98
4"	$238.36	$224.46	$214.19	$204.49	$195.39
6"	$497.00	$467.62	$446.23	$426.03	$407.06
8"	$715.10	$673.37	$642.56	$613.47	$586.16
10"	$1,152.50	$1,084.87	$1,035.24	$988.38	$944.36

Private Fire Protection and Construction Meters

The District also has a monthly service charge and for Private Fire Protection accounts which are assessed based on the size of connection required to provide sufficient flow for water service in the event of a fire. Despite the relatively small volume of water used for private fire protection within a given year, a rigorous cost of service study must appropriately allocate costs to account for not only the actual volume of water delivered to meet customer demands, but also the costs of building and maintaining a system with sufficient capacity reserved to meet potential fire flow demands. However, recognizing that early fire suppression presents a potential benefit to neighboring parcels and property through avoided fire damage, Private Fire Protection Service accounts are not charged for water used for fire suppression. These charges are reflected below in Table 4-10 and Table 4-11.

Table 4-10. Proposed Private Fire Protection Service Monthly Service Charge Effective January 1, 2018 ($/Connection Size in Inches)

Connection Size	Fire Protection
5/8"	$4.29
3/4"	$4.29
1"	$4.29
1 1/2"	$14.31
2"	$22.90
2.5"	$36.50
3"	$50.10
4"	$85.88
6"	$178.92
8"	$257.65
10"	$415.10

Though not subject to the provisions of Proposition 218 because the fees are not related to charges imposed for services provided on an ongoing basis to a parcel, construction meters are subject to subject to California Constitution

Article XIII C, Section 1(e) and are accounted for in the COS analysis to ensure a comprehensive cost nexus. These meters are temporarily connected to fire hydrants to provide recycled and potable water to contractors, developers, or other construction customers who require a relatively large volume of water over a relatively short period of time and not on an emergency basis. To meet their needs, these customers acquire a temporary service connection from the District and are then charged the General Fund volumetric rate of their respective supply source based on the total volume delivered, as well as a monthly service meter fee, prorated over the period the temporary meter was in use.

Table 4-11. Proposed Construction Meter Rates Effective January 1, 2018

Meter Charge ($/month)	$60.95
Volumetric Charge ($/ccf)	
Potable Water	$2.61
Recycled Water	$2.15

Recommended Water & Recycled Water Rates

The proposed rate schedules for potable water and recycled water for FY 2017-18 are summarized in Table 4-12 and Table 4-13. The volumetric rates are the same between all potable water customer classes to reflect the fact that cost of potable water is largely the same, irrespective of the customer demands. Approximately 15.0 percent of property tax is allocated to the Recycled Water System customers to maintain lower rates for the District-wide benefit that an affordable recycled water supply provides.

The monthly water service charge, on the other hand, varies significantly between customers classes, reflecting the fixed costs associated with service demands of each customer class. These fixed cost drivers include system capacity, peaking factors, meter maintenance, billing costs, and customer service support.

The proposed rate schedule was designed in order to meet the results of the COS analysis. These costs were calculated using a complex model which calculated anticipated revenue based on the current water use patterns of existing customers. All volumetric rate revenue from rates at or below $2.60 (in FY 2107-18) is used to meet the revenue requirements of the General Fund. All Water rate revenue from volumetric rates above $2.60 is used to meet the revenue requirements of the WUE Fund. As explained in Section 3.4, those customers who exceed their allocation are those that drive the costs of the WUE program, and therefore shall bear the costs of the program.

Table 4-12. Recommended Water Service Charge for Potable and Recycled Water Customers

	Residential	Multi-Family	Commercial	Potable Irrigation	Recycled Irrigation
5/8"	$11.22	$10.78	$5.54	$18.06	$18.06
3/4"	$11.22	$10.78	$5.54	$18.06	$18.06
1"	$11.22	$10.78	$5.54	$18.06	$18.06
1 1/2"	$37.41	$25.20	$18.46	$60.21	$60.21
2"	$59.85	$37.56	$29.54	$96.34	$96.34
3"	$130.94	$76.70	$64.61	$210.76	$210.76
4"	$224.46	$128.19	$110.76	$361.29	$361.29
6"	$467.62	$262.09	$230.76	$752.68	$752.68
8"	$673.37	$375.38	$332.29	$1,083.86	$1,083.86
10"	$1,084.87	$601.96	$535.36	$1,746.22	$1,746.22

Table 4-13. Recommended Water Usage Rates for Potable and Recycled Water Customers

	Residential	Multi-Family	Commercial	Potable Irrigation	Recycled Irrigation
Tier 1	$1.69	$1.69			
Tier 2	$1.94	$1.94	$1.94	$1.94	$1.39
Tier 3	$3.32	$3.32	$3.32	$3.32	$2.51
Tier 4	$5.12	$5.12	$5.12	$5.12	$4.31
Tier 5	$9.59	$9.59	$9.59	$9.59	$8.78

Note: Potable volumetric rates above the $2.60/ccf threshold will be designated for the WUE Fund.

The threshold for Recycled Water is $1.79/ccf

As discussed in Section 4.1, Table 4-14 and Table 4-15 present the District's plan to phase in the fixed and variable revenue realignment over four years (with a straight-line transition). During the phase-in, volumetric rates will be lower than those resulting from an immediate cost-revenue realignment and meter fees will be proportionally higher. It is important to restate that this phase-in is achieved through use of unrestricted non-rate revenues and does not recover more than the cost of providing service to any customer.

Table 4-14. Proposed Potable Water and Recycled Water Volumetric Charges Adjustment Schedule for CY 2018- CY 2021

	2018		2019		2020		2020	
	Potable	Recycled	Potable	Recycled	Potable	Recycled	Potable	Recycled
Tier 1	$1.69	-	$1.82	-	$1.95	-	$2.08	-
Tier 2	$1.94	$1.39	$2.10	$1.47	$2.26	$1.55	$2.42	$1.63
Tier 3	$3.32	$2.51	$3.41	$2.69	$3.50	$2.87	$3.59	$3.05
Tier 4	$5.12	$4.31	$5.21	$4.49	$5.30	$4.67	$5.39	$4.85
Tier 5	$9.59	$8.78	$9.68	$8.96	$9.77	$9.14	$9.86	$9.32

Note: Proposed charges would be effective on January 1st of the respective calendar year

Table 4-15. Proposed Potable Water and Recycled Water Monthly Service Charges Adjustment Schedule for CY 2018 – CY 2021

Rates for Monthly Water Service Charges Effective January 1, 2018 ($/Meter)					
	Residential	Multi-Family	Commercial	Potable Irrigation	Recycled Irrigation
5/8"	$11.22	$10.78	$5.54	$18.06	$18.06
3/4"	$11.22	$10.78	$5.54	$18.06	$18.06
1"	$11.22	$10.78	$5.54	$18.06	$18.06
1.5"	$37.41	$25.20	$18.46	$60.21	$60.21
2"	$59.85	$37.56	$29.54	$96.34	$96.34
3"	$130.94	$76.70	$64.61	$210.76	$210.76
4"	$224.46	$128.19	$110.76	$361.29	$361.29
6"	$467.62	$262.09	$230.76	$752.68	$752.68
8"	$673.37	$375.38	$332.29	$1,083.86	$1,083.86
10"	$1,084.87	$601.96	$535.36	$1,746.22	$1,746.22

Rates for Monthly Water Service Charges Effective January 1, 2019 ($/Meter)					
	Residential	Multi-Family	Commercial	Potable Irrigation	Recycled Irrigation
5/8"	$10.71	$10.59	$4.91	$17.24	$17.24
3/4"	$10.71	$10.59	$4.91	$17.24	$17.24
1"	$10.71	$10.59	$4.91	$17.24	$17.24
1.5"	$35.69	$24.22	$16.35	$57.45	$57.45
2"	$57.11	$35.91	$26.16	$91.93	$91.93
3"	$124.95	$72.93	$57.23	$201.11	$201.11
4"	$214.19	$121.63	$98.10	$344.75	$344.75
6"	$446.23	$248.27	$204.38	$718.24	$718.24
8"	$642.56	$355.42	$294.31	$1,034.25	$1,034.25
10"	$1,035.24	$569.72	$474.17	$1,666.30	$1,666.30

Rates for Monthly Water Service Charges Effective January 1, 2020 ($/Meter)					
	Residential	Multi-Family	Commercial	Potable Irrigation	Recycled Irrigation
5/8"	$10.22	$10.41	$4.29	$16.46	$16.46
3/4"	$10.22	$10.41	$4.29	$16.46	$16.46
1"	$10.22	$10.41	$4.29	$16.46	$16.46
1.5"	$34.08	$23.30	$14.31	$54.85	$54.85
2"	$54.53	$34.36	$22.90	$87.76	$87.76
3"	$119.29	$69.36	$50.10	$192.00	$192.00
4"	$204.49	$115.42	$85.89	$329.14	$329.14
6"	$426.03	$235.16	$178.94	$685.71	$685.71
8"	$613.47	$336.48	$257.67	$987.42	$987.42
10"	$988.38	$539.13	$415.14	$1,590.84	$1,590.84

Rates for Monthly Water Service Charges Effective January 1, 2021 ($/Meter)					
	Residential	Multi-Family	Commercial	Potable Irrigation	Recycled Irrigation
5/8"	$9.77	$10.26	$3.71	$15.72	$15.72
3/4"	$9.77	$10.26	$3.71	$15.72	$15.72
1"	$9.77	$10.26	$3.71	$15.72	$15.72
1.5"	$32.56	$22.45	$12.36	$52.41	$52.41
2"	$52.10	$32.90	$19.77	$83.86	$83.86
3"	$113.98	$66.00	$43.25	$183.45	$183.45
4"	$195.39	$109.55	$74.14	$314.48	$314.48
6"	$407.06	$222.78	$154.46	$655.16	$655.16
8"	$586.16	$318.59	$222.42	$943.43	$943.43
10"	$944.36	$510.22	$358.35	$1,519.98	$1,519.98

The monthly service charges and volumetric usage charges for Private Fire Protection and Construction Meters. These charges are reflected below in **Error! Reference source not found.** and **Error! Reference source not found.**.

Table 4-16. Proposed Private Fire Protection Service Monthly Service Charge Adjustment Schedule for CY 2018 – CY 2021

Rates for Monthly Fire Protection Service Charges ($/Meter)				
	2018	2019	2020	2021
5/8"	$4.29	$4.42	$4.56	$4.69
3/4"	$4.29	$4.42	$4.56	$4.69
1"	$4.29	$4.42	$4.56	$4.69
1.5"	$14.31	$14.74	$15.18	$15.64
2"	$22.90	$23.59	$24.30	$25.02
2.5"	$36.50	$37.60	$38.72	$39.88
3"	$50.10	$51.60	$53.15	$54.75
4"	$85.88	$88.46	$91.11	$93.85
6"	$178.92	$184.29	$189.82	$195.51
8"	$257.65	$265.38	$273.34	$281.54
10"	$415.10	$427.55	$440.38	$453.59

Table 4-17. Proposed Construction Meter Monthly Service Charge and Volumetric Charges for Potable/Recycled Water

	2018	2019	2020	2021
Meter Charge ($/month)	$60.95	$62.78	$64.66	$66.60
Volumetric Charge ($/ccf)				
Potable Water	$2.61	$2.69	$2.77	$2.85
Recycled Water	$2.15	$2.21	$2.28	$2.35

4.3. Wastewater Rate Design

The Wastewater System is comprised of Residential (single-family detached homes or individually metered townhomes and condos), Multi-Family (master-metered apartments or condos), and Commercial customers. Commercial customers are assigned to one of the four classes described below based on land-use, and the rates for each of the Commercial customer classes are based its strength classifications.

4.3.1. Current Wastewater Rates

The District's existing rate structure for wastewater rates consists of only a single monthly service charge, depending on whether the wastewater service is for a Residential, Multi-Family, or Commercial account. Residential customers are billed a monthly charge of $26.22, while Multi-Family customers are billed according to their meter size, as shown in Table 4-18. Residential customers are billed a flat charge irrespective of meter size, as large meters are typically only installed by developers to meet expanded irrigation needs for properties that do not have dedicated metering for outdoor water use and not to reflect increased indoor demands. Multi-family accounts are charged on the basis of meter size as larger meters are installed to meet the potential indoor demand required by a development's anticipated

tenant population which necessarily require greater system capacity to collect the potentially larger wastewater flow. Commercial customers are assigned to one of the four classes below based on the type of commercial activity. These classifications were chosen due to the available data on the District customers and the availability of industry-standard strength data for such classifications.

- **Commercial Class 1:** Typical users include residential, bank, car washes, churches, department and retail stores, Laundromats, professional offices, schools and colleges.
- **Commercial Class 2:** Typical users include beauty and barber shops, hospital and convalescent facilities, commercial laundry, repair shops, service stations and veterinary hospitals.
- **Commercial Class 3:** Typical users include hotels with dining facilities, markets with garbage disposals, mortuaries and fast-food restaurants.
- **Commercial Class 4:** Typical users include restaurants, auto-steam-cleaning facilities and bakeries.

A summary of current wastewater rates is provided in Table 4-18.

Table 4-18. Existing Wastewater Service Charge for Wastewater Customers

Meter Size	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
5/8"	$26.22	$28.58	$20.66	$44.02	$90.56	$97.70
3/4"	$26.22	$28.58	$20.66	$44.02	$90.56	$97.70
1"	$26.22	$28.58	$20.66	$44.02	$90.56	$97.70
1.5"	$26.22	$87.76	$61.35	$139.21	$294.33	$318.12
2"	$26.22	$138.50	$96.23	$220.81	$469.01	$507.08
3"	$26.22	$299.17	$206.69	$479.25	$1,022.23	$1,105.51
4"	$26.22	$510.54	$352.02	$819.25	$1,750.04	$1,892.81
6"	$26.22	$1,060.15	$729.89	$1,703.30	$3,642.47	$3,939.89
8"	$26.22	$1,525.19	$1,049.61	$2,451.32	$5,243.70	$5,671.99
10"	$26.22	$2,455.30	$1,689.08	$3,947.40	$8,446.24	$9,136.27

4.3.2. Recommended Changes to Wastewater Rate Structure

Per Person Wastewater Charge

As noted in Section 2.6, continued escalation of administration and operating costs from the District's regional wastewater treatment provider is a major reason for the Wastewater System rate increases needed to meet revenue requirements are much higher than the increases needed for the Potable and Recycled Water Systems. Typically, wastewater treatment costs are largely fixed and a common approach to recovering those costs from customers is to develop service charges based on meter size to reflect their proportional share of system capacity. As shown in its FY 2017-18 budget, SOCWA has allocated a large percentage of these costs to agencies in proportion to the volume of flow and solids loadings they send to the respective treatment plants. In order to proportionally recover these costs

from customers the proposed wastewater rate structure decouples the capacity and flow and strength components for Residential and Multi-Family customers. Because the District does not meter household wastewater flows, and because outdoor water use is not separately metered for most residential households, the number of people per household from the water budget data reflects the best available data to calculate each household's relative contribution to the wastewater system. This Report recommends reducing the fixed, per-account monthly service for Residential and Multi-Family customers and adding a per-person component to recover the projected flow and strength costs for each household. Including a per-person component charge will improve equity by ensuring that costs are aligned with users' benefit from the Wastewater System.

Residential and Multi-Family Customer per Person Wastewater Charge Calculation

Based on the best cost data available[6], a percentage of the flow and strength related costs allocated in Section 3.3 were assigned to the variable cost category to be recovered through the proposed per person wastewater charge. In total $8.9 million in costs are to be recovered from Residential and Multi-Family Customers on a variable basis. Consistent with the rationale used to develop indoor water budgets and in assigning strength concentrations in Section 3.3.2, individual residents are assumed to have similar flow and strength characteristics and contribute to the wastewater system equally. As such, the variable costs are distributed equally across the District's service area population. The service area population estimate is based on projections published in the District's 2015 Urban Water Management Plan. The estimates were calculated by The Center for Demographic Research (CDR) at California State University Fullerton based on data published by California Department of Finance. Shown in Table 4-19, the resulting $4.31 per-person charge (column c) is calculated by dividing the total variable costs allocated to Residential and Multi-family customers (column a) over the estimated service area population (column b).

Table 4-19: Per-Person Wastewater Charge Calculation

a	b	c = a / b / 12
Variable Cost	**Population**	**Calculated Rate**
$8,900,763	172000	$4.31/Person/Month

Wastewater Service Charge Calculation

The revenue requirements calculated in Table 3-37 that are not recovered from the per person wastewater charges are recovered on a fixed basis consistent with the District's existing rate structure. For each customer class, billing and other customer service related costs are divided over the number of customer accounts and allocated equally to each

[6]Through a service agreement, Santa Margarita Water District (SMWD) oversees the operation of Plant 3A and invoices the District quarterly for its share of total costs. At the time the rates were developed, the District had not received a budget for FY 2017-18 for the operation and maintenance costs of its Plant 3A from SMWD. The FY 2017-18 costs and allocations included in the wastewater rate calculation are based on assumed cost inflation and historical invoices.

account while the remaining revenue requirements are divided over the number of equivalent meters and allocated on the basis of meter size.

4.3.3. Recommended Wastewater Rates

Based on the results of the COS analysis and component rates developed in Section 4.3.2, the District has proposed the following wastewater rate schedule which consists of a wastewater service charge, charged to all customers on the basis of meter size (see Table 4-20), and a per person wastewater charge, charged to Residential and Multi-Family customers on the basis of household size (see Table 4-21).

Table 4-20. Proposed Wastewater Service Charge Effective January 1, 2018 ($/Meter)

Meter Size	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
5/8"	$14.36	$16.94	$20.84	$49.92	$107.85	$117.98
3/4"	$14.36	$16.94	$20.84	$49.92	$107.85	$117.98
1"	$14.36	$16.94	$20.84	$49.92	$107.85	$117.98
1 1/2"	$14.36	$51.38	$64.39	$161.31	$354.40	$388.15
2"	$14.36	$80.91	$101.73	$256.81	$565.75	$619.76
3"	$14.36	$174.42	$219.98	$559.23	$1,235.12	$1,353.26
4"	$14.36	$297.44	$375.55	$957.11	$2,115.74	$2,318.26
6"	$14.36	$617.32	$780.05	$1,991.64	$4,405.47	$4,827.39
8"	$14.36	$887.98	$1,122.30	$2,866.98	$6,342.87	$6,950.43
10"	$14.36	$1,429.31	$1,806.83	$4,617.72	$10,217.77	$11,196.63

Table 4-21. Proposed Wastewater Variable Charges Effective January 1, 2018 ($/Person in Household)

	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
per person	$4.31/Mo.	$4.31/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.

Proposed charges for calendar years 2019 through 2021 are presented similarly in Table 4-22 through Table 4-27.

Table 4-22 Proposed Wastewater Service Charge Effective January 1, 2019 ($/Meter)

Meter Size	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
5/8"	$15.15	$17.87	$21.99	$52.66	$113.78	$124.46
3/4"	$15.15	$17.87	$21.99	$52.66	$113.78	$124.46
1"	$15.15	$17.87	$21.99	$52.66	$113.78	$124.46
1 1/2"	$15.15	$54.20	$67.94	$170.18	$373.89	$409.50
2"	$15.15	$85.35	$107.33	$270.93	$596.87	$653.84
3"	$15.15	$184.01	$232.08	$589.99	$1,303.05	$1,427.69
4"	$15.15	$313.80	$396.20	$1,009.75	$2,232.10	$2,445.76
6"	$15.15	$651.27	$822.95	$2,101.18	$4,647.77	$5,092.90
8"	$15.15	$936.82	$1,184.03	$3,024.67	$6,691.73	$7,332.71
10"	$15.15	$1,507.92	$1,906.21	$4,871.69	$10,779.75	$11,812.45

Table 4-23 Proposed Wastewater Variable Charges Effective January 1, 2019 ($/Person in Household)

	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
per person	$4.55/Mo.	$4.55/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.

Table 4-24 Proposed Wastewater Service Charge Effective January 1, 2020 ($/Meter)

Meter Size	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
5/8"	$15.99	$18.85	$23.20	$55.56	$120.04	$131.31
3/4"	$15.99	$18.85	$23.20	$55.56	$120.04	$131.31
1"	$15.99	$18.85	$23.20	$55.56	$120.04	$131.31
1 1/2"	$15.99	$57.19	$71.67	$179.54	$394.45	$432.02
2"	$15.99	$90.05	$113.23	$285.83	$629.70	$689.80
3"	$15.99	$194.13	$244.84	$622.44	$1,374.72	$1,506.21
4"	$15.99	$331.06	$417.99	$1,065.29	$2,354.87	$2,580.28
6"	$15.99	$687.09	$868.21	$2,216.75	$4,903.40	$5,373.01
8"	$15.99	$988.34	$1,249.15	$3,191.03	$7,059.77	$7,736.01
10"	$15.99	$1,590.86	$2,011.05	$5,139.64	$11,372.64	$12,462.13

Table 4-25 Proposed Wastewater Variable Charges Effective January 1, 2020 ($/Person in Household)

	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
per person	$4.80/Mo.	$4.80/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.

Table 4-26 Proposed Wastewater Service Charge Effective January 1, 2021 ($/Meter)

Meter Size	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
5/8"	$16.86	$19.89	$24.47	$58.62	$126.64	$138.53
3/4"	$16.86	$19.89	$24.47	$58.62	$126.64	$138.53
1"	$16.86	$19.89	$24.47	$58.62	$126.64	$138.53
1 1/2"	$16.86	$60.33	$75.62	$189.42	$416.15	$455.78
2"	$16.86	$95.00	$119.46	$301.55	$664.33	$727.74
3"	$16.86	$204.81	$258.31	$656.68	$1,450.33	$1,589.06
4"	$16.86	$349.27	$440.98	$1,123.88	$2,484.39	$2,722.20
6"	$16.86	$724.88	$915.96	$2,338.67	$5,173.08	$5,668.52
8"	$16.86	$1,042.70	$1,317.85	$3,366.53	$7,448.06	$8,161.49
10"	$16.86	$1,678.35	$2,121.66	$5,422.32	$11,998.13	$13,147.55

Table 4-27 Proposed Wastewater Variable Charges Effective January 1, 2021 ($/Person in Household)

	Residential	Multi-Family	Commercial 1	Commercial 2	Commercial 3	Commercial 4
per person	$5.06/Mo.	$5.06/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.	$0.00/Mo.

5. CONCLUSION

This Report used methodologies aligned with industry-standard practices for rate setting as promoted by the AWWA and WEF and all applicable laws, including Proposition 218. The rate revenue adjustments recommended by the Long Range Financial Plan (LRFP) for FY 2017-18 are included in rate recommendations presented in Chapter 4. As such, those recommended rates will need to be adjusted annually, as described in the LRFP and Section 2.9 of this report.

The District's Water Budget-Based Rate Structure (WBBRS) has proven to be an effective demand-side management tool, allowing the District to equitably achieve target usages while promoting efficient water use. The tiered rate structure creates a strong price signal to customers who may have inadvertently exceeded their budgets, and any revenues collected beyond their allocations are immediately reinvested in programs and rebates to help those same customers stay within budget.

On July 28, 2014, the State of California (State) adopted drought emergency water conservation regulations in response to the Governor's call for action to address the severe statewide drought. Although the drought conditions have since eased, the District's WBBRS plays a key role in the District's ability to achieve a level of conservation that is superior to other approaches, such as implementing limitations on outdoor irrigation of ornamental landscapes or turf with potable water. The District's WBBRS and accompanying conservation and rebate programs have helped the District reduce its potable water purchases by over 36 percent since its peak use in 2007, during a period of economic recovery and population growth. This long-term sustained reduction in demand demonstrates the effectiveness of the WBBRS. Moreover, WBBRS has allowed the District to avoid imposing water day restrictions on its customers. We believe that WBBRS will continue to be an important demand-side management tool for the District as it continues to monitor water use behaviors and manage the District's limited water resources.

The adjustments to the Wastewater rates will provide revenue stability and continue to equitably and proportionately recover costs from the appropriate customers.

APPENDIX A

moulton niguel water district

LONG RANGE FINANCIAL PLAN REPORT 2017

Long Range Financial Plan Report

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EXECUTIVE SUMMARY

The objective of the Long-Range Financial Plan ("LRFP") is to identify strategies and actions to ensure sufficient financial resources to enable the Moulton Niguel Water District ("MNWD" or "District") to achieve its mission and to utilize those financial resources effectively. The plan forecasts the operating budget and incorporates the capital improvement program in order to determine the financial impact of future operating and capital needs and develops strategies to address those needs.

The LRFP projects financial and operational data of key aspects of the District such as: rate revenue, property tax revenue, property leases, water purchases, utility costs, salaries and benefits, other revenues and expenses, capital expense cash flows, long-term investments, and debt service. This detailed information is linked to a summarized pro-forma income statement and balance sheet to enable the District to review the impact of ongoing and future changes to MNWD's operating cash, assets, liabilities, and fund balances. The long-range financial planning model also monitors the impacts of changes in future financial plans on the key financial ratios that the District is required to maintain for debt covenants and credit-rating purposes.

District staff, in consultation with the Board of Directors and the District's Financial Advisor, inputs the broad-based planning parameters for the Long-Range Financial Planning model. The proprietary long-range financial planning model (also known as the "Ten-Year Cash Flow Model") is District built, owned, and operated. Updates are regularly made to the model to reflect changes in existing assumptions and future outlooks to create adaptive financial management strategies. The long-range planning and annual operating and capital budgeting processes are interrelated and form a single planning and budgeting system.

The availability of funds required to finance the capital construction and operations of the District is tracked through the model. Capital typically spans across a long time horizon; hence, a ten-year plan enables the District to project the financing needs for future capital expenditures and determine the ability of the District to fund them through available cash balances, grants, state loans, revenues or the issuance of debt. The key output of the long range financial plan is the identification of projected rate revenue adjustments to maintain the long term financial health of the District. The report includes the detailed assumptions, analyses and plans driving these results.

The District has historically maintained a strong financial position based upon conservative planning and budgeting, maintenance of adequate unrestricted cash balances, reserves, and a solid debt service coverage ratio. A major objective of the LRFP is to ensure that this strong performance continues into the future through timely and thoughtful financial analysis, budgeting, and planning. As a result of the sound financial planning and Board implemented policies made possible by the LRFP, the District's debt obligations were reaffirmed at "AAA" by Fitch Ratings in 2017 and has maintained a Stable Rating Outlook and a "AA+" rating by S&P from 2015.

1 INTRODUCTION

The Moulton Niguel Water District (MNWD) was formed on November 16, 1960, under the provisions of the California Water District Law, Division 13, of the Water Code of the State of California, commencing with Section 34000. Prior to the formation of the water district, the lands within the service area were primarily utilized for livestock grazing, with a small area devoted to citrus and field crop production limited by the lack of adequate local water supplies. The District was initially formed by local ranchers in order to secure a reliable water supply for their herds.

In 1961, the District entered into several agreements with surrounding water agencies to bring reliable supplies of water to the area including an agreement to bring treated water to the District from East Orange County Feeder Number 2 through the Tri-Cities Transmission Main. The District sold its first waterworks bond for $6,700,000 to fund construction of the imported water pipelines. The construction of the transmission main was a joint project between the District, Tri-Cities Municipal Water District (dissolved in 2000 at which point South Coast Water District assumed operation of the pipelines and infrastructure on a contract basis for what is now identified as the Joint Regional Water Supply System), Irvine Ranch Water District (IRWD), and Orange County Water Works #4 (now the City of San Juan Capistrano). This transmission line was the District's only source of water for many years.

In 1964, an amendment to the California Water District Act was passed which granted water districts the power to enter into sewage treatment and water reclamation activities. As early as 1968, studies were authorized to consider the use of treated secondary wastewater effluent for use as irrigation for the El Niguel Golf Course. In 1976, the District's 3A treatment plant was the site for the pilot "Bullrush Project" undertaken in conjunction with the Biological Water Purification Company to do advanced "tertiary" treatment of wastewater for use on landscapes. Water demands increased as the population continued to grow throughout the 1970s and 1980s.

The District has grown tremendously since its formation. Providing water service to a mere eight accounts when initially formed, the District now provides water, recycled water, and wastewater service to more than 170,000 people within a 37 square mile service area covering portions of six cities in southern Orange County.

As of July 2017, the District service area is largely built-out and includes portions of the cities of Aliso Viejo, Laguna Niguel, Laguna Hills, Mission Viejo, San Juan Capistrano, and Dana Point. Though its operations have evolved along with the growth of its service area, the District's primary focus has remained largely unchanged: ensuring ratepayers have a reliable, sustainable, and affordable water supply for the future, while ensuring the collection, treatment, and disposal of wastewater in an environmentally responsible manner.

The District's current water needs are met by a combination of imported potable water and recycled water. The District's potable supply is provided by Metropolitan Water District of Southern California (MWDSC) from two principal sources – the Colorado River via the Colorado Aqueduct and the Feather River Watershed/Lake Oroville in Northern California through the State Water Project (SWP). The recycled water supply is locally sourced and has steadily increased to account for almost 25 percent of the overall water supply in the District. In an average year, approximately 43 percent of the District's imported water

supply is delivered via the State Water Project and the remaining 57 percent is delivered via the Colorado River Aqueduct.

As part of the Board policy to improve water supply reliability for the service area, the District jointly participated in the construction of the Baker Water Treatment Plant (Baker), a 28.1 million gallon per day (MGD) potable water treatment facility that receives raw water from MWD via the Baker pipeline. The plant began operating in January 2017 and now provides a reliable local potable water supply in the event of emergency conditions or scheduled maintenance on the MWDSC treated water delivery system (Diemer Filtration Plant, Lower Feeder Pipeline, or Allen-McCullough Pipeline). The District owns 13 cubic feet per second of capacity in the plant, representing approximately 9,400 AF, annually. Water from the Baker Water Treatment Plant is delivered through the South County Pipeline.

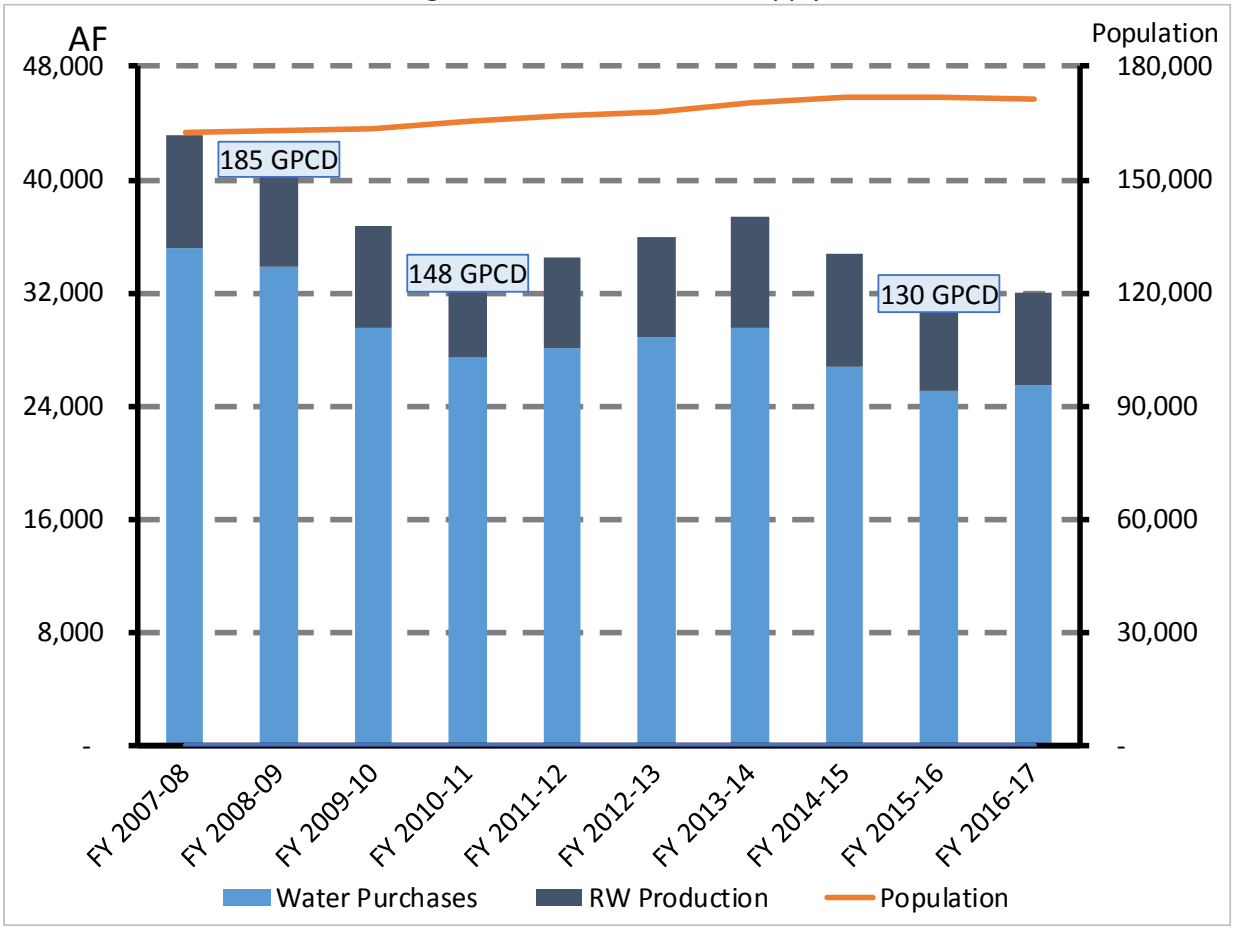
The District serves areas ranging in elevation from approximately 140 feet above mean sea level (ASL) to approximately 930 feet ASL through pressure zones. The District has 35 pump stations to pump water from the lower pressure zones to the higher-pressure zones.

The District operates and maintains approximately 663 miles of potable water distribution pipelines. In addition, the District has 26 steel and 2 pre-stressed concrete operational storage reservoirs for a total potable water storage capacity within the District of approximately 70 million gallons. The District owns capacity rights in several adjoining water agencies' reservoirs and pipelines, such as: El Toro Water District R-6 Reservoir, Santa Margarita Water District (SMWD) Upper Chiquita Reservoir, Joint Transmission Main (a joint powers agreement between the District and other water agencies), Eastern Transmission Main (jointly owned by the District and the City of San Juan Capistrano) and the South County Pipeline, which conveys water from the AMP to several south county water agencies. The District also operates 25 pump stations to pump potable water from lower pressure zones to the higher pressure zones and 20 pressure reducing stations and flow control facilities to convey water from high to low zones.

The District maintains approximately 504 miles of wastewater collection pipelines. The District's wastewater system has 16 lift stations that pump wastewater over the ridge lines to the various treatment plants for treatment and recycling. The District is a member in the South Orange County Wastewater Authority (SOCWA), a joint powers agency comprised of ten governmental agencies, which operates three regional treatment plants which the District owns capacity in and two ocean outfalls. The District also owns a fourth wastewater treatment plant, Plant 3A. MNWD has title to the 3A facilities and Santa Margarita Water District (SMWD) is the contract operator that runs and manages the facilities by agreement.

In 1974, the District became one of the first water providers in Orange County to deliver recycled water for irrigation use. Today, the District owns two Advanced Wastewater Treatment (AWT) facilities which provide expansive recycled water service for landscaping. The District has constructed approximately 140 miles of recycled water distribution pipelines with five pre-stressed concrete and six steel storage reservoirs to service the recycled water system. The District operates 10 recycled-water pump stations. In addition, the District owns 1,000 acre-feet of capacity rights in the Upper Oso recycled water reservoir, owned by Santa Margarita Water District. The projected annual demand of the recycled water system will increase over the next ten years at 50 acre feet per year from 6,113 acre feet in FY 2017-18. As a result, about three-fourths of all dedicated irrigation water use is estimated to be met with recycled water over the next ten years. The District plans to continue to target cost effective recycled water conversions consistent with the findings of Recycled Water Master Plan.

Figure 1: Historical Water Supply



Since FY 2007-08, MNWD potable water sales have averaged approximately 28,948 AF and recycled water sales have averaged approximately 7,187 AF. The current five year average potable sales are at 27,136 AF with each of the last three years below the five year average due to aggressive water efficiency programs and the water budget based rate structure. The current five year average (FY 2012-13 to FY 2016-17) recycled water sales are 7,281 AF which is a 3% increase from the previous five year average (FY 2007-08 to FY 2011-12).

As stewards of the water, wastewater, and recycled water systems and supplies our ratepayers have invested in over the last 57 years, it is our responsibility to ensure the continued reliability of those investments. Ensuring continued system reliability through reinvestment in the District's two billion dollar critical infrastructure has remained a priority: nearly 59% of the $49 million in capital expenses budgeted for FY 2017-18 and 75% of the $295 million ten-year CIP can be attributed to the replacement or refurbishment of existing infrastructure. In addition to the ongoing reservoir maintenance, and valve replacement programs that have been outlined in the past budgets, the 10-year CIP includes improvements to the District's recycled water pump stations per the recently completed Recycled Water Master Plan and investment in future water reliability projects.

2 DISTRICT STRATEGIC GOALS & POLICIES

Moulton Niguel Water District's vision is to "lead the way, work together, and provide excellence in service". The District is a community oriented, performance driven agency dedicated to serving its customers and the environment with reliable, affordable, and high quality water and wastewater service. The LRFP furthers these goals by developing a financial strategy to implement needed capital investments while meeting the District's financial goals and policies, detailed in this section.

2.1 CAPITAL FINANCING POLICY

The District shall utilize financing to achieve the following goals:

- Achieve an equitable allocation of operating and capital costs between current and future system users
- Continue to provide manageable rates in the near and medium term
- Minimize rate volatility
- Expedite critical infrastructure projects when needed

Capital financing shall include funding from the following revenues: capital reserves, grants, general obligation bonds, revenue bonds, certificates of participation, lease/purchase agreements, and other financing obligations permitted to be issued or incurred under California law.

Revenues net of all non-capital expenses should be maintained at a minimum 175 percent (%) of the maximum annual debt service for financial planning purposes. Annual adjustments to the District's rates are proposed as necessary to maintain a minimum 175% debt service coverage ratio. Setting the coverage ratio at this level is central to the District maintaining a very strong credit rating, which in turn allows the District easy access to capital markets and to borrow at low interest rates. Historically the District has maintained debt service coverages in excess of 200%. Moulton Niguel Water District is currently rated AA+ by Standard and Poor's and AAA by Fitch Ratings.

2.2 RESERVE POLICIES

The District has created reserves in order to mitigate potential revenue and expense volatility and reduce the risk of requiring unplanned, large rate adjustments. The reserve policies help to maintain the District's credit-worthiness by adequately providing for:

- Economic uncertainties, extraordinary costs, and other financial impacts;
- Revenue uncertainties, such as loss of property tax receipts and connection fees or water sales;
- Disasters or catastrophic events;
- Losses not covered by insurance;
- Compliance with debt obligations; and
- Funding designated infrastructure replacement and refurbishment.

2.3 RESERVES

The District currently maintains the following reserves: a General Operating Reserve, a Self-Insurance Reserve, a Rate Stabilization Reserve, an Emergency Reserve, a Replacement and Refurbishment Reserve, a Water Supply Reliability Reserve, a Planning and Construction Reserve, a Capital Facilities Restricted Reserve, and Debt Service Reserves.

General Reserves:

General Operating Reserve - The District maintains a General Operating Reserve in order to provide sufficient liquidity for funding the day - to - day operating expenses and District cashflow needs during normal operations due to normal delays between the payment of expenses and the receipt of revenues. The target balance in the General Operating Reserve is equal to three months of operating expenses, consistent with best practices in the industry for agencies with monthly rate revenue. Sufficient funding for General Operating Reserve is identified at the beginning of each fiscal year and maintained within Fund 1.

Self - Insurance Reserve - The District maintains a Self-Insurance Reserve to provide for expenses incurred to the District for the deductible amounts on insurance claims for repairs to facilities by outside contractors and expenses related to the State Unemployment Insurance for unemployment claims made against the District. The target level of the Self - Insurance Reserve is equal to five times the current Joint Powers Insurance Authority (JPIA) property insurance deductible (the current deductible is up to $50,000). The Self - Insurance Reserve is maintained in the Self-Insurance Fund (Fund 4).

Rate Stabilization Reserve - Since one of the biggest risks and impacts on rates would be a loss of property tax revenues and due to the timing in the receipt of property tax, to avoid large fluctuations in customer water and sewer rates, the District will fund a Rate Stabilization Reserve to provide for losses of revenue, significant increases in water purchase costs, and other extraordinary financial impacts to revenues and expenses. The target balance of the Rate Stabilization Reserve will be set equal to fifty percent of the District's budgeted ad valorem property tax revenue. The Rate Stabilization Reserve is maintained in the Rate Stabilization Fund (Fund 52).

Capital Improvement Reserves:

Emergency Reserve - The Emergency Reserve was created to provide funds to enable the District to quickly repair critical assets in the event of a natural disaster or facility failure. The target balance of the Emergency Reserve is equal to 2% of the replacement costs of the District's assets as outlined in current guidelines from the Federal Emergency Management Agency (FEMA). The Emergency Reserve is maintained within the General Fund (Fund1).

Replacement and Refurbishment Reserve - The R&R Reserve was created to fund the ongoing costs related to the replacement and refurbishment of existing assets in conjunction with the District's Capital Improvement Plan. All amounts are maintained in a separate R&R Fund (Fund 7). Funding for the R&R Reserve will be from new debt issuances or fund transfers as part of the annual budget process.

Water Supply Reliability Reserve - The Water Supply Reliability Reserve fund is used for the development of new water or recycled water supplies as identified in the District Capital Improvement Plan. All amounts are maintained in a separate Water Supply Reliability Fund (Fund 12). Funding for the Water

Supply Reliability Reserve is from new debt issuances or fund transfers as part of the annual budget process.

Planning and Construction Reserve - The Planning and Construction Reserve was created to fund the development of new capital facilities that do not result in new water or recycled water supplies as identified in the District Capital Improvement Plan. All amounts are maintained in a separate Planning and Construction Fund (Fund 14). Funding for the Planning and Construction Reserve will be from new debt issuances or fund transfers as part of the annual budget process.

Capital Facilities Restricted Reserve - The Capital Facilities Restricted Reserve was created to fund the development of new district-wide capital facilities or replacement or refurbishment. All amounts are maintained in a separate Capital Facilities Restricted Reserve Fund (Fund 15) and transferred to Funds 7, 12, or 14 as part of the annual budget process. Funding for the Capital Facilities Restricted Reserve will be from capacity fees charged to new developments or redevelopments to buy into existing assets or expansion of existing sites.

Debt Service Reserves:

Debt Service Reserve - The District maintains Debt Service Reserves which are held in trust with a third party trustee as provided for in bond covenants. Increases and decreases to these reserves will be consistent with bond covenants. The District's accounting records show these amounts in various debt funds.

Table 1 presents FY 2017-18 MNWD reserve targets.

Table 1. MNWD FY 2017-18 Reserve Targets

Type		Target
General Operating	$	16,883,932
Self-Insurance	$	250,000
Rate Stabilization	$	14,500,430
Emergency	$	35,300,000
Total Reserves	$	66,934,362

Note: Reserve Targets are based on the District's FY 2017-18 budget. The Capital Improvement Reserves do not have targets, but are instead funded annually based on budgeted project expenses.

2.4 FINANCIAL POLICIES

The General Manager is authorized to implement the following Financial Policies to ensure the financial goals are being achieved in the District's day-to-day operations. Financial Policies are reviewed annually and updated as needed to provide timely updates as public agency laws or external conditions change.

2.4.1 Financial Reporting

All District's accounting and financial reporting systems will be maintained in conformance with all state and federal laws, Generally Accepted Accounting Principles (GAAP), standards of the Governmental Account Standards Board (GASB), and strives to meet the stringent requirements of the Government Finance Officers Association (GFOA) Award for Excellence in Financial Reporting requirements.

An Annual Audit will be performed by an independent public accounting firm; with an Audit Opinion to be included with the District's published Comprehensive Annual Financial Report (CAFR).

2.4.2 Financial Plans

The District will continue to utilize internally developed short-term financial planning tools, while continuing to emphasize long-range planning and ongoing effective District management.

District Staff maintains a monthly cashflow model to forecast temporal distributions of cash inflows and outflows and ensure that there are sufficient liquid funds available for anticipated expenses as they are needed throughout the year. District finance staff receive monthly capital expense projections from the engineering department and update the monthly cashflow model to identify anticipated cashflow shortfalls and coordinate portfolio restructurings with the District's asset management group as needed. This regular and proactive communication between departments has allowed the District to maximize its investment earnings as cash reserves are drawn down between planned bond issuances.

The objective of the LRFP is to identify strategies and actions to ensure sufficient financial resources to enable the District to achieve its mission and to utilize those financial resources effectively. The plan projects the operating budget and incorporates the capital improvement program in order to determine the financial impact of future operating and capital needs and develops strategies to address those needs. Hence, the District's operating budget serves as a key input into the long range financial outlook for the District. Additionally, the District's ten-year cashflow summary serves as key contextual information to aid in making near-term financial decisions.

The long-range financial planning model (also known as the "Ten-Year Cash Flow Model" or "Model") is a working model that is regularly updated to reflect changes in existing assumptions and future outlooks to create adaptive financial management strategies. The long-range planning and annual operating and capital budgeting processes are interrelated and form a single planning and budgeting system.

2.4.3 Budget Appropriations

The District maintains a balanced operating budget for all funds, with total ongoing revenues equal to or greater than total ongoing expenditures, so that at year-end, all these funds have a positive fund balance and the General Fund reserve balance is maintain as required.

2.4.4 Enterprise Funds - Rates

The District will set water, recycled water, and wastewater rates at levels which, in addition to other revenues and available cash balances, fully cover the total direct and indirect costs – including operations and maintenance, capital outlay, reserve requirements, and cash flow and debt service requirements.

The District will review and adjust enterprise fees and rate structures as required to ensure that they remain appropriate, equitable and reflect the cost of service.

Article XIII D of Proposition 218 requires that fees for water and wastewater services meet strict cost of service requirements including:

1. Revenues for the fee cannot exceed the cost to provide the service
2. Revenues for the fee cannot be used for something other than what the fee was imposed for
3. Property owner must be able to use or have service immediately available to them

In addition to meeting the requirements of Prop. 218, the District's water budget-based rate structure will be designed to encourage the beneficial uses of water and prevent the unreasonable use of water, consistent with California Constitution Article X Section 2.

California Constitution Article X Section 2: *"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. […]."*

2.4.5 Capital Management – Infrastructure

The District will maintain a long-range fiscal perspective through the use of Capital Improvement Plan (CIP) to maintain the quality of District water and wastewater infrastructure. The purpose of a long-term CIP is to systematically plan, schedule, and finance capital projects to ensure cost-effectiveness, as well as conformance to established District policies. The Plan will be updated annually in conjunction with the District's budget preparation, including anticipated funding sources.

2.4.6 Risk Management

The District will identify and quantify all areas of financial and operating risk, and prepare contingencies for those risks, including legal liabilities, infrastructure maintenance, refurbishment and replacement, emergency response, contract and employee obligations.

2.4.7 Investments

Investments and cash management are the responsibility of the District Treasurer or designee. The District's primary investment objective is to achieve a reasonable rate of return while minimizing the potential for capital losses arising from market changes or issuer default. Accordingly, the following factors will be considered in determining individual investment placements: 1.) Safety, 2.) Liquidity, and 3.) Yield. The priorities of these factors are further established by the adopted Statement of Investment Policy.

2.4.8 Procurement

The purchasing and procurement system will encourage transparency and sufficient fiscal controls on all purchases and sales to the extent required by law for Special Districts or by District policy competition. The District's Purchasing Policy was last updated in June of 2017.

3 MODELING ASSUMPTIONS

The District's 10 Year Cash Flow Model ("Model") uses the most recent audited financial information, contract terms and Board adopted budgets for the applicable years in the Model. The District's fiscal year (FY) starts July 1 of each year. For example, Fiscal Year 2017-18 runs from July 1, 2017 to June 30, 2018.

The Model employs assumptions to calculate future year revenues, expenses, and cash balances. Model assumptions are reviewed as necessary and each time the Model is significantly updated. Unless more appropriate sources exist, the District utilizes inflation projections by the California Department of Finance for the Los Angeles region.

Staff and consultants reviewed and revised the Model assumptions for the July 2017 Long Range Financial Plan.

3.1 Inflation Assumptions – Expenses

- General - Expenses: general inflation factors used in the Model are shown in Table 2. Updated CPI factors used are from data provided by the California Department of Finance with most recent update on May 11, 2017.
- Salaries & Benefits
    - Salaries: costs are assumed to vary by year in the Model consistent with the salary adjustments terms of the four year Memorandum of Understanding with the Moulton Niguel Water District Employee Association ("MOU"), which became effective June 24, 2017 and based on historical employee performance. Salaries related costs are expected to increase 13.6% for FY 2017-18, 6.0% for FY 2018-19, 8.1% for FY 2019-20, 5.2% for FY 2020-21, and 4.5% thereafter. The percent increase for FY 2017-18 reflects performance based salary increases as well as implementation of the new MOU terms, which include: an increase in the rate for standby pay, a 3% compensation structure adjustment and a 2% Cost of Living Adjustment (COLA). FY 2018-19 percent increase assumes a 2% COLA as well as performance based salary increases. FY 2019-20 percent increase assumes a 3% compensation structure adjustment, 2% COLA, and performance based salary increases. FY 2019-20 percent increase assumes a 2% COLA as well as performance based salary increases. FY 2020-21 percent increase assumes a 3% compensation structure adjustment, 2% COLA, and performance based salary increases. The remaining six years reflect the average annual increases for performance based salary increases. The District has been very proactive throughout the years to ensure that costs associated with salaries are appropriate to retain a quality work force while being fiscally prudent.
    - Benefits: there are four benefits cost categories in the Model, each with its own assumed rate of inflation. Benefits costs for FY 2017-18 have been updated based on actual plan elections by staff who were hired during FY 2016-17. Inflation rates for FY 2017-18 are shown to illustrate the recalibration of forecasting assumptions in the Model.
        - Benefits – Medical represents the District's share of employee health care plan premiums. The first four years of the Model percentages represent staff's estimate at this time of what health and retirement increases could be over the term of the four year MOU. Per the terms of the MOU, employees and the District share future total plan cost increases for the HMO and PPO health plans on a 50/50 basis. Baseline medical cost assumptions for FY 2017-18 have been adjusted downward to reflect the plan elections by staff that were hired in FY 2016-17. An inflation rate of 5.5% has been assumed for all years beyond FY 2017-18: staff considers this to be a conservative estimate based on historical rate trends for District premiums, continued cost sharing of plan premium rate increases, uncertainty regarding future healthcare reform and legislation.

        - Benefits – Dental represents the costs associated with dental plan premiums the District pays on behalf of its employees. All plan costs are paid entirely by the District. Baseline dental plan cost assumptions for FY 2017-18 have been adjusted upward to reflect current rates. An inflation rate of 5.5% has been assumed for all years beyond FY 2017-18: staff considers this to be a conservative estimate based on historical rate trends for District premiums, continued cost sharing of plan premium rate increases, uncertainty regarding future healthcare reform and legislation.
        - Benefits – CalPERS represents the District's contribution to employee retirement plans, both the unfunded liability payment and normal cost payments are included. Inflation assumptions have been updated to reflect the December 2016 decision by the CalPERS Board of Administration to reduce the discount rate used by CalPERS actuaries from 7.5 percent to 7 percent over the next three years. Historically, and incorporated into the current MOU, the District has been industry leading in apportioning the pension liabilities between the employee and the employer. Currently, all District employees contribute their full share of pension liability. Inflation assumptions for FY 2017-18 through FY 2020-21 are based on the terms of the MOU and future years are based on actuarial forecasts of annual contribution requirements over the next 30 years.
        - Benefits – Other represents the benefits costs that do not fall into the other three categories or which may not require more specific assumptions.
- Insurance: inflation assumptions related to insurance have been grouped into two distinct categories to reflect the different nature of the underlying costs.
    - Insurance – District: represents the premiums the District pays to insure its facilities and assets against damage or other loss. The District maintains several broad insurance policies through its membership with Association of California Water Agencies Joint Powers Insurance Authority (ACWA/JPIA). To reflect the large risk-sharing pool and premiums based incentives for reducing claims, inflation assumptions for all future years have been set equal to General – Expenses as any future rate increases would likely be tied to new asset purchases.
    - Insurance – Personnel: represents the District's contribution to employee welfare and safety-net programs, such as: Workers' Compensation, Medicare, Federal Insurance Contributions Act (FICA), short and long-term disability, and State Unemployment Insurance. Insurance - Personnel related costs are expected to decrease 16.0% for FY 2017-18, increase by 7.24% for FY 2018-19, 9.86% for FY 2019-20, 7.2% for FY 2020-21, and 5.5% thereafter. The percent decrease for FY 2017-18 reflects decreased premiums for Workers' Compensation. Workers Comp premiums for District employees are based on a formula that accounts for a number of operational factors that are intended to capture the relative claim risk among the ACWA/JPIA member agencies and allocates the total pool premium accordingly. The "Experience Modification Factor" or "E-Mod" reflects an agencies overall level of safety and is adjusted up or down annually based on the number and severity of claims. As the District has increased its emphasis on worksite

safety and training for field staff, the number of claims the District has made have gone down and as a result the District's E-Mod has been reduced from 1.03 to 0.6 (i.e. from paying three percent more than the standard premium to paying only 60 percent of the standard premium). The fluctuating increases in FY 2018-19 through FY 2020-21 reflect the changes in the underlying compensation structure per the terms of the MOU discussed in the Salaries section. Years four through ten assume a 5.5% annual increase to maintain consistency with healthcare cost inflation assumptions.

- Operations
    - Operations – Utilities: utilities use the same factor as general inflation (based on Los Angeles-area CPI data). Electricity dominates the District's utility expenditures. Over the past few years, recent electricity prices statewide and in southern California have remained stable or grown slower than overall inflation. Escalating utilities at the rate of general inflation is therefore a conservative estimate for electricity.
    - Operations – SOCWA: inflation factor assumptions related to South Orange County Wastewater Authority (SOCWA) operations are based on annual cost estimates provided by SOCWA finance staff. Annual operating expense projections vary significantly from year to year, which greatly impairs the development of robust inflation assumptions for this major cost component. Due to the variety of expenses bundled into SOCWA's operating costs and method of allocating those costs to its member agencies, more consistent projections of annual costs for the FY 2017-18 through FY 2020-21 period are not available and inflation assumptions based on California Department of Finance estimates have not been sufficient to capture the substantial and frequent revisions that have been made to operating cost projections over the rate study period. Despite the significant probability of future revisions to annual SOCWA-related operating costs, staff does not recommend utilizing finance industry-standard assumptions as an alternative to SOCWA projections as there is no historical precedent which would warrant such a large assumption.
- Capital: The Capital Improvement Plan inflation rate is assumed to be 0% in order to reflect both the uncertainty in future capital expenses and potential project cost savings.

Table 2: Inflation Factors - Expenses

Inflation Factors	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
General - Expenses	2.5%	2.5%	2.5%	2.5%	2.0%
Salaries & Benefits					
Salaries	13.6%	6.0%	8.1%	5.2%	4.5%
Benefits - Medical	-5.7%	5.5%	5.5%	5.5%	5.5%
Benefits - Dental	6.6%	5.5%	5.5%	5.5%	5.5%
Benefits - CalPERS	11.0%	6.8%	24.6%	14.7%	5.5%
Benefits - Other	-13.1%	5.5%	5.6%	5.5%	5.5%
Insurance					
Insurance - District	2.5%	2.5%	2.5%	2.5%	2.0%
Insurance - Personnel	-16.0%	7.2%	9.9%	7.2%	5.5%
Operating Costs					
Operations - Utilities	2.5%	2.5%	2.5%	2.5%	2.0%
Operations - SOCWA	12.5%	2.3%	0.7%	1.5%	3.3%
Capital Costs					
Capital - District	0.0%	0.0%	0.0%	0.0%	0.0%

Inflation Factors	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
General - Expenses	2.0%	2.0%	2.0%	2.0%	2.0%
Salaries & Benefits					
Salaries	4.5%	4.5%	4.5%	4.5%	4.5%
Benefits - Medical	5.5%	5.5%	5.5%	5.5%	5.5%
Benefits - Dental	5.5%	5.5%	5.5%	5.5%	5.5%
Benefits - CalPERS	3.0%	3.0%	3.0%	3.0%	3.0%
Benefits - Other	5.5%	5.5%	5.5%	5.5%	5.5%
Insurance					
Insurance - District	2.0%	2.0%	2.0%	2.0%	2.0%
Insurance - Personnel	5.5%	5.5%	5.5%	5.5%	5.5%
Operating Costs					
Operations - Utilities	2.0%	2.0%	2.0%	2.0%	2.0%
Operations - SOCWA	1.6%	1.6%	1.6%	1.6%	1.6%
Capital Costs					
Capital - District	0.0%	0.0%	0.0%	0.0%	0.0%

3.2 Inflation Assumptions - Revenues

- General - Revenue: non-rate related operating revenues are assumed not to increase above present values over the planning horizon of the Model. Staff considers this assumption both appropriate and conservative as the majority of these revenue sources are related to either: daily operations activity (e.g. sale of scrap metal or other materials), for which increases in revenue would likely be offset by increased cost of the underlying activity; or user fees related to customer service, which would only increase as a result of customer base growth or an active policy decision to increase the dollar amount of user fees.
- Property Tax: revenues from property tax are assumed to increase annually over the planning horizon of the Model. As the global economy has recovered, property tax revenue for the District has steadily increased more than 25% over the past four years. This has been a key component

of the District's revenue base and has provided customers with some of the lowest water rates in South Orange County. Local South Orange County property tax forecasts suggest about a four percent increase year over year; however, a more conservative estimate of future growth is assumed in the Model to reflect the use of property tax revenues in the development of the District's tiered rate structure. Also, the District maintains a Rate Stabilization Reserve which reduces the financial exposure resulting from a sudden reduction in property tax revenue that would otherwise warrant an even more conservative estimate of future revenue.

- Investment Income: a 1.75% factor is used for all years in the Model. The District has adhered to the financial plan outlined in the 2015 Long Range Financial Plan and has effectively leveraged its available unrestricted cash balances to minimize rate impacts to customers during the transition from infrequent to regular rate revenue adjustments. The planned spenddown of unrestricted cash balances has necessarily reduced the District's investment income; however, due to increased coordination between the District's Finance, Accounting, and Engineering departments has increased the accuracy of short-term and long-term cashflow forecasts, which has allowed the District's Investment Advisor to confidently restructure its investment portfolio to meet short term liquidity needs and mid-term cash funded Capital Improvement Program costs, while maintaining long-term earnings. The assumed 1.75% factor was developed in coordination with the District's Investment Advisor and reflects realistic expectations of portfolio performance over the planning horizon.
- Capacity Fees: annual capacity fee inflation assumptions are based on development forecasts maintained by the District's private development group and reflect anticipated development within the service area over a ten-year period. The District's private development group actively works with the District's local cities to develop its ten-year forecast.
- Property Lease Revenue: the main source of revenue for the Property Lease Revenue is from leasing District facilities to cell site carriers to place antennae's and equipment on reservoirs and other District locations. These communications facilities are distributed among 17 District sites. Many cell carriers are merging such as Sprint and Nextel, and no long need duplicative sites. However, due to the changes to the license fees, revenues are projected above historical levels at $1.7 million through FY 2019-20. The Model accounts for the contracted amounts from retained sites and the decommissioning of sites as the lease contracts expire. As a conservative estimate revenues are assumed not to increase beyond FY 2019-20 levels in future years.

Table 3: Inflation Factors - Revenues

Inflation Factors	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Revenue Assumptions					
General - Revenue	0.00%	0.00%	0.00%	0.00%	0.00%
Property Tax	3.50%	3.50%	3.50%	3.50%	3.50%
Investment Returns	1.75%	1.75%	1.75%	1.75%	1.75%

Inflation Factors	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Revenue Assumptions					
General - Revenue	0.00%	0.00%	0.00%	0.00%	0.00%
Property Tax	3.50%	3.50%	3.50%	3.50%	3.50%
Investment Returns	1.75%	1.75%	1.75%	1.75%	1.75%

3.3 WATER SUPPLY ASSUMPTIONS

The water supply portfolio used as a base case to project the cost of the water the District purchases is based on available water deliveries from Baker Water Treatment Plant (Baker) and Diemer Treatment Plant from Metropolitan Water District of Southern California (MWD). In addition, as a part of its Long Range Water Reliability Plan, the District has evaluated other long term projects to further reduce District demand of imported supplies. Currently, the District imports all of its potable water supplies from MWD via MWDOC. In FY 2016-17, Baker started operations and ramped up to full capacity in FY 2017-18. The Baker Water Treatment plant provides the District approximately 9,400 acre feet annually from treating raw MWD water. The District projects continued reduction in water losses (Non-revenue water) from 7.50% of purchased water in FY 2017-18 to 7.40%in FY 2020-21. Non-revenue water may consist of water used on District properties, water used for operational purposes such as hydrant flushing, or water loss due to leaks or meter inaccuracies. Currently, the District is evaluating water loss control programs to lower this value, but to maintain a conservative estimate, the District is projecting water loss as shown in Table *4*. The Water Supply Portfolio is consistent with UWMP projections as a result of

- Regular meter testing
- Pressure reduction studies
- AMI deployment

Table 4: Water Supply Portfolio

Water Supply Usage	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Usage (AF)	22,118	22,068	22,018	21,968
Non-Revenue Water	7.50%	7.46%	7.43%	7.40%
Total Demand w/Water Loss (AF)	23,911	23,846	23,784	23,722
Supply Portfolio				
Diemer Treatment Plant (AF)	14,511	14,446	14,384	14,322
Baker Treatment Plant (AF)	9,400	9,400	9,400	9,400

Note: For Fiscal Years 2017-18 and beyond, the base case for the Financial Plan assumes the same supply portfolio and usage as in FY 2016-17. The decrease in usage every year in Table 4 is attributed to the assumption that Recycled Water demand increases at a rate of 50 AF every year due to recycled water account conversions.

Below are the projected supply cost escalation rates in *Table* 5. In Section 6 of this document, the Model evaluates an additional scenario at twice the baseline cost increases. These scenarios provide bounds on how volatile cost trends could impact District operation, absent policy tools.

Table 5: Projected Rates and Charges

Projected Rates and Charges	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
MWD Treated Variable Rate ($/AF)	$995.24	$1,033.13	$1,071.60	$1,106.79	$1,142.56
MWD Untreated Variable Rate ($/AF)	$679.83	$715.51	$759.47	$807.81	$854.56
Baker Variable Costs ($/AF)	$91.21	$93.49	$95.83	$97.75	$99.70
Baker Fixed Costs	$754,353.00	$773,211.83	$792,542.12	$808,392.96	$824,560.82
MWD Readiness-to-Serve Charge	$1,342,027.00	$1,370,784.72	$1,418,714.26	$1,495,401.51	$1,610,432.40
MWD Capacity Charge	$493,384.50	$510,397.76	$527,411.02	$550,095.36	$567,108.62
MWDOC Annual Connection Charge	$626,999.10	$642,966.88	$659,097.54	$675,383.14	$691,815.11

Projected Rates and Charges	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
MWD Treated Variable Rate ($/AF)	$1,183.56	$1,225.99	$1,271.42	$1,318.90	$1,370.08
MWD Untreated Variable Rate ($/AF)	$895.56	$937.99	$983.42	$1,030.90	$1,076.15
Baker Variable Costs ($/AF)	$101.70	$103.73	$105.80	$107.92	$110.08
Baker Fixed Costs	$841,052.04	$857,873.08	$875,030.54	$892,531.15	$910,381.77
MWD Readiness-to-Serve Charge	$1,744,635.10	$1,878,837.80	$2,022,626.41	$2,185,586.83	$2,273,010.30
MWD Capacity Charge	$595,464.05	$629,490.57	$629,490.57	$640,832.74	$666,466.05
MWDOC Annual Connection Charge	$708,384.19	$725,349.33	$742,720.00	$760,505.86	$778,716.80

Utilizing all the factors detailed above results in the annual operating revenue requirement projections shown in Table 6. FY 2018-19 and beyond are projected based on the costs in FY 2017-18.

Table 6: Revenue Requirements

Revenue Requirements	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Water - Imports & Production	$ 24,542,742	$ 26,183,642	$ 27,221,934	$ 28,482,410	$ 29,569,334
Water - Storage & Facilities	$ 793,341	$ 623,488	$ 639,076	$ 655,052	$ 671,429
O&M - General	$ 12,411,229	$ 12,494,247	$ 12,795,817	$ 13,104,338	$ 13,420,137
Salaries	$ 12,245,509	$ 12,987,335	$ 14,026,895	$ 14,755,744	$ 15,419,752
Benefits	$ 5,120,879	$ 5,693,884	$ 6,543,602	$ 7,217,672	$ 7,614,644
Waste Water Treatment	$ 10,933,922	$ 11,188,641	$ 11,270,632	$ 11,438,267	$ 11,812,361

Revenue Requirements	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Water - Imports & Production	$ 30,702,511	$ 31,869,137	$ 33,067,187	$ 34,355,567	$ 35,609,327
Water - Storage & Facilities	$ 688,215	$ 705,420	$ 723,055	$ 741,132	$ 759,660
O&M - General	$ 13,743,883	$ 14,075,778	$ 14,416,028	$ 14,764,845	$ 15,122,448
Salaries	$ 16,113,641	$ 16,838,755	$ 17,596,499	$ 18,388,341	$ 19,215,816
Benefits	$ 7,932,438	$ 8,264,683	$ 8,612,080	$ 8,975,365	$ 9,355,325
Waste Water Treatment	$ 12,002,164	$ 12,195,017	$ 12,390,968	$ 12,590,068	$ 12,792,367

3.4 Debt Financing Assumptions

In evaluating future financing needs the Model makes assumptions on the initial and ongoing costs associated with issuing debt. Below in Table 7 are the projected terms for debt issuance mechanisms the District has historically implemented. These are based on conservative estimates of long-term trends. The District will work with its Financial Advisor and financing team to secure the optimum rates and terms at the time of issuance.

Table 7: Debt Mechanism

Debt Mechanism	Interest Rate	Term (Years)	Issuance Cost
Certificates of Participation	3.5%	30	$250,000
General Obligation Bonds	3.5%	30	$250,000
State Revolving Fund Loans	1.7%	30	Staff time

4 REVENUE REQUIREMENTS AND CURRENT REVENUE

4.1 REVENUE REQUIREMENTS

The revenue requirements for the District are composed of three components:

- Annual operating costs that rise in proportion to specific inflators, outlined in Figure 2.
- Capital costs that are one-time expenses, such as new infrastructure, studies or repairs.
- Debt Service Payments

Table *8* below shows the summary of district-wide revenues, new debt issuances and revenue requirements.

Table 8: Current Revenue and Revenue Requirements

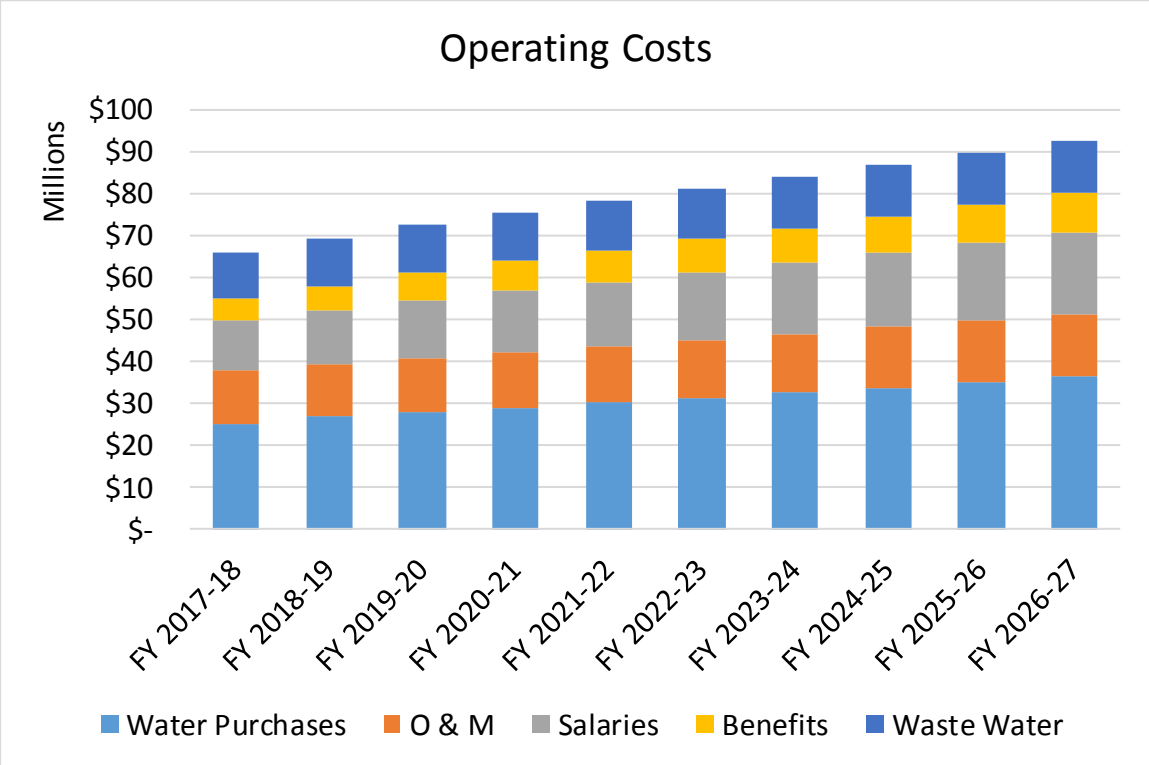
	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Revenue					
Current Rate Revenue	$ 54,632,248	$ 56,873,571	$ 59,216,753	$ 61,666,840	$ 64,229,145
Proposed Adjustments	$ 2,167,116	$ 2,265,076	$ 2,367,874	$ 2,475,764	$ 2,589,014
Non-Rate Revenue	$ 33,665,689	$ 34,804,920	$ 35,351,065	$ 34,543,083	$ 35,689,504
Bond Issuance	$ -	$ 62,000,000	$ -	$ -	$ 42,000,000
Revenue Requirements					
Debt Service	$ 10,293,689	$ 9,622,591	$ 12,711,872	$ 11,218,836	$ 11,211,072
Operating Expenses	$ 66,196,361	$ 69,324,273	$ 72,655,596	$ 75,738,582	$ 78,516,739
Capital Expenses	$ 46,478,591	$ 56,145,082	$ 30,498,774	$ 26,089,449	$ 23,776,792

	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Revenue					
Current Rate Revenue	$ 66,909,260	$ 69,670,912	$ 72,527,925	$ 75,512,782	$ 78,631,632
Proposed Adjustments	$ 2,665,869	$ 2,756,393	$ 2,879,150	$ 3,007,796	$ 3,142,629
Non-Rate Revenue	$ 36,919,585	$ 37,844,394	$ 38,833,149	$ 39,964,580	$ 41,237,564
Bond Issuance	$ -	$ -	$ -	$ -	$ -
Revenue Requirements					
Debt Service	$ 13,297,939	$ 12,111,094	$ 12,319,482	$ 12,260,368	$ 12,204,501
Operating Expenses	$ 81,112,934	$ 83,796,048	$ 86,565,716	$ 89,485,640	$ 92,432,050
Capital Expenses	$ 23,566,270	$ 22,355,653	$ 21,923,996	$ 12,673,894	$ 13,164,923

The following figures and charts will breakdown the overall revenues and revenue requirements into their components and Section 5 will show the plan moving forward. Operations and maintenance expenses in the Long Range Financial Plan use actual FY 2016-17 expenses and budgeted expenses for FY 2017-18. After FY 2017-18, operating expenses are projected based on the inflation factors discussed in Modeling Assumptions.

Figure 2 depicts a breakdown of operating costs over the next 10 years into their major components.

Figure 2: Operating Costs

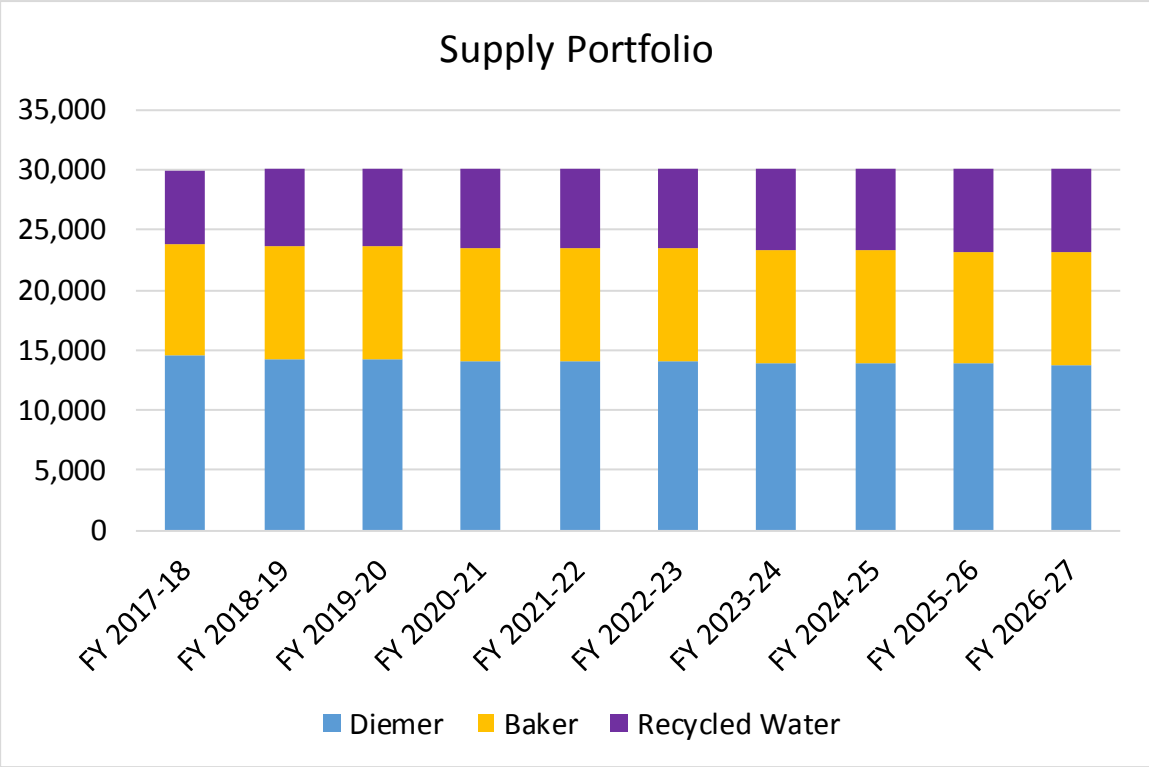


Given the significant annual financial contributions to wastewater treatment (approximately $25M annually for both operating and capital expenses) there is a growing need to ensure the District's ratepayers receive high-quality and cost-effective wastewater treatment services from its contract service providers. It is imperative that the treatment of wastewater be closely monitored to ensure compliance with all regulations, protection of public health and the local environment, and financial accountability and transparency for the benefit of all of the District's ratepayers. As the projected costs for wastewater treatment continue to increase at unprecedented rates, the District intends to review opportunities to identify the most effective ways to treat wastewater and managing costs to do so.

The largest operating expense is water purchases. Currently, the District purchases all of its potable water supply from the MWD via MWDOC. In 2016 the regional Baker Water Treatment Plant came online and met 22% of FY 2016-17 potable water demand. Over the next ten years, Baker is estimated to meet approximately 40% of potable water demand. In FY 2017-18, Recycled water production is estimated to meet 27% of potable water demand and is projected to grow at a rate of 50 AF until FY 2026-27 and remain constant thereafter.

Figure 3 shows the forecast water supply portfolio.

Figure 3: Supply Portfolio

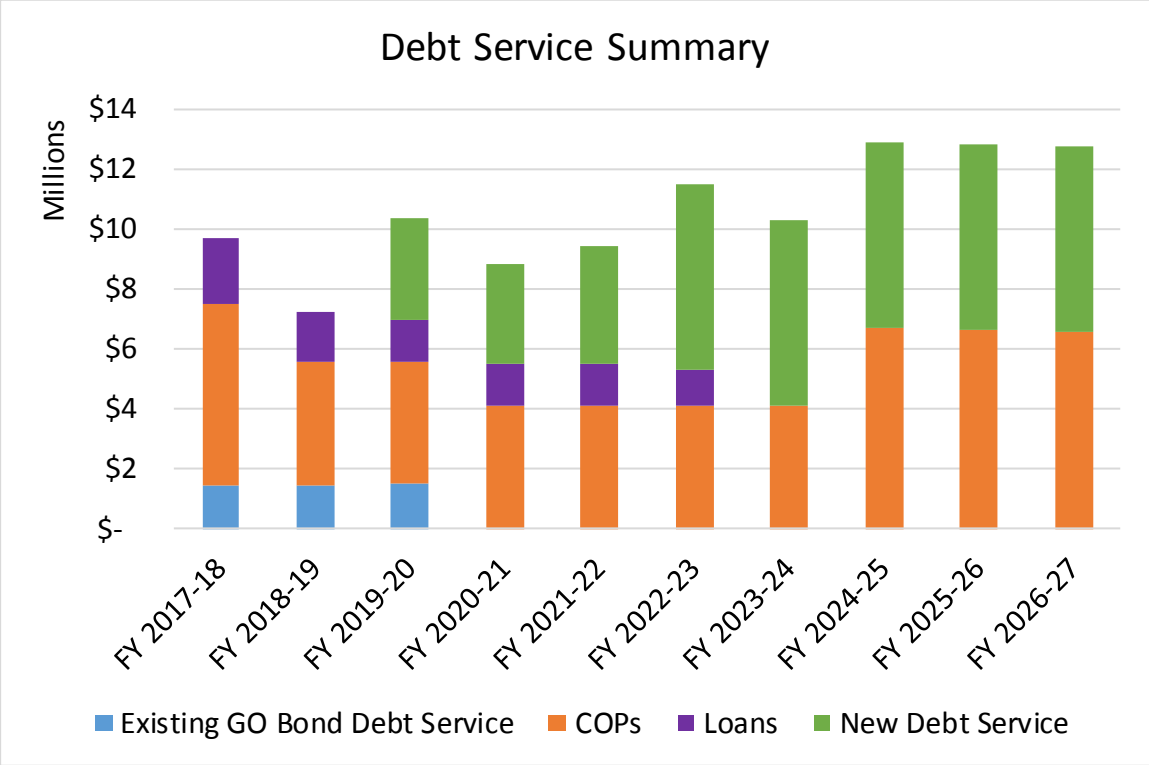


The Model has the capability to analyze the financial impacts of a mixed portfolio with specified supply allocations based on projects currently discussed such as expanded recycled water deliveries, San Juan Basin Groundwater expansion, local surface water in Irvine Lake, and water exchanges or transfers. The supply portfolio presented above is the base case used unless specified in a given scenario.

The financial plan includes the existing debt service schedules and projected issuances intended to smooth out large expected capital project costs over time. The baseline case projects a debt issuance of in FY 2018-19 for $62 million and in FY 2021-22 for $42 million to maintain smooth rate revenue adjustments in the near term.

Figure 4 provides a breakdown of both General Fund existing debt service by issuance type and projected debt issuances in FY 2018-19 and FY 2021-22 to fund capital expenditures and smooth rate adjustments.

Figure 4: Debt Service Summary



Note: Loans include DWR, 3 SRF, and 2 CIEDB Loans. The General Obligation bonds have bi-annual ad valorem property tax revenue equal to its bi-annual debt service payments.

Capital expenses are projected for Fiscal Years 2017-18 through 2026-27 from the District's 10 Year Capital Improvement Plan. Due to a combination of aging infrastructure with forecasted replacement and rehabilitation as well as large regional capital projects, the District has an expected CIP of approximately $295 million over the next 10 years. Currently, the District has budgeted for upgrades to its Operations Center and associated facilities over the next 2 years. For planning purposes only, capital expenses associated with the District's share of capital investments at the South Orange County Wastewater Authority ("SOCWA") over the next ten years have been included in this plan assuming a fully implemented program. While the District reviews its 10 Year CIP annually, on-going operations, maintenance, and regular condition assessments of the District's infrastructure may require updates to the CIP which may necessitate changes in the schedule of investments.

Figure 5 provides a summary of the major capital expenses in the District's 2018 Capital Improvement Plan.

Figure 5: Capital Projects Summary

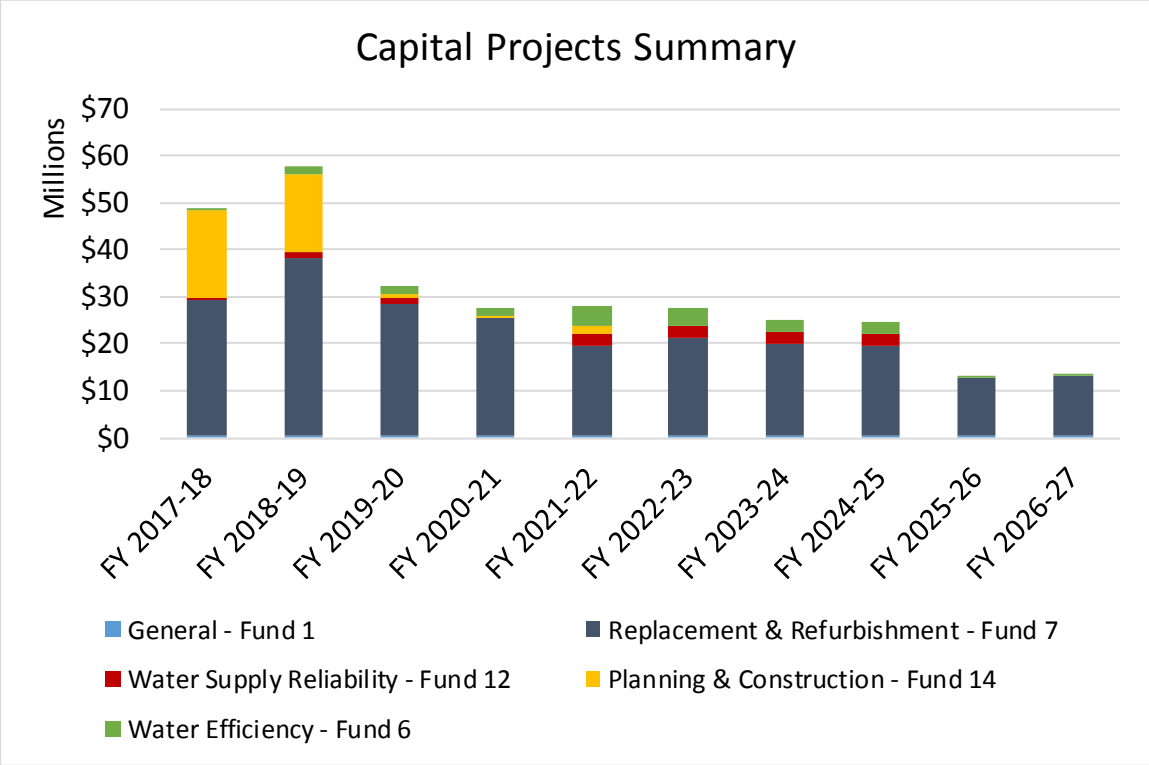
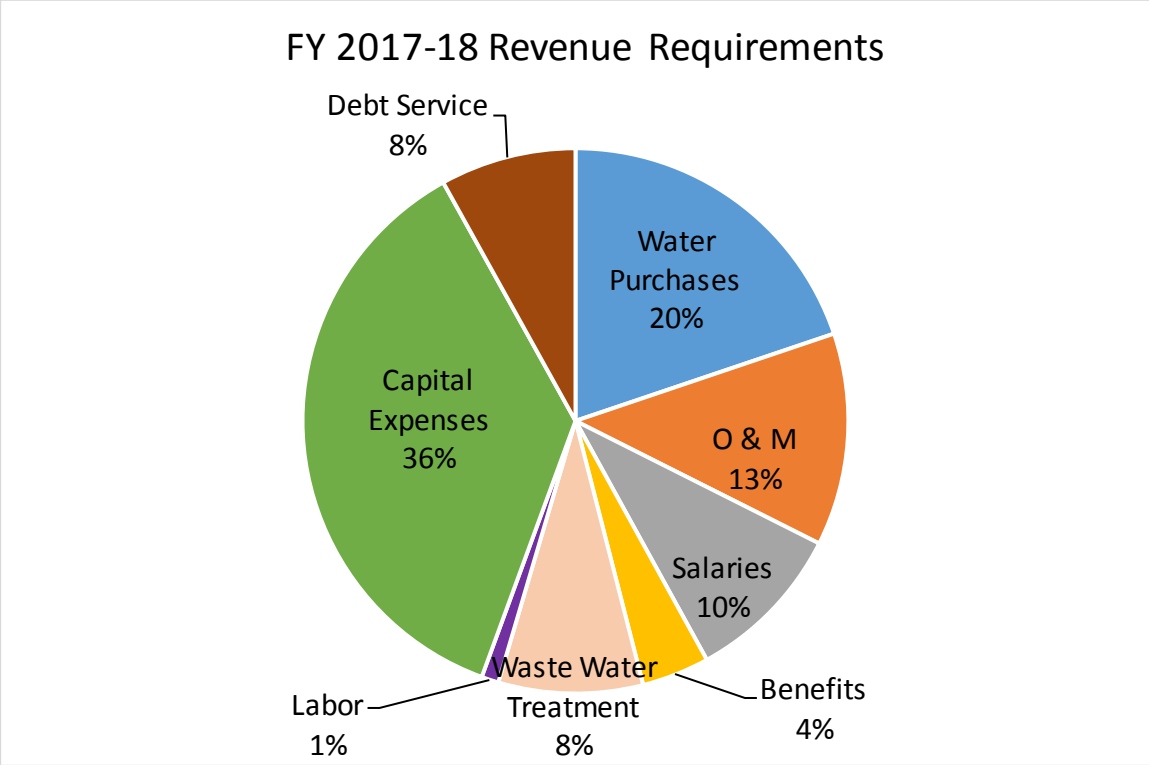


Figure 6 below shows combined operating and capital revenue requirements for FY 2017-18, the first year of the model.

Figure 6: FY 2017-18 Revenue Requirements



4.2 Current Revenue

The two largest sources of revenue derive from rate revenue from the three systems (water, recycled water, and wastewater) and ad valorem property tax revenue collected from taxable property owners within the District's service area.

4.2.1 Water Rates

The current water volumetric rate structure is composed of five tiers with the following tier widths for residential customers:

Tier 1 = Indoor Water Budget

Tier 2 = Outdoor Water Budget

Tier 3 = Usage above 100% of Total water budget up to 125% of the Total water budget

Tier 4 = Usage above 125% of Total water budget up to 150% of the Total water budget

Tier 5 = Usage above 151% of water budget

The indoor water budget, or Tier 1, is determined by first allocating 60 gallons per capita per day (gpcd) for the efficient indoor-use of water, multiplying that allocation by the number of days in the billing cycle and the number of people in the household. Customers are assumed to have four people in the household

for single family residential and two to three people for multi-family housing. If a customer has a different household size, they can submit a variance to adjust the number of people used to calculate their indoor water budget. The equation for Tier 1 is as follows:

Tier 1. Indoor Allocation = (Household Size) x (60 GPCD) x (Conversion Factor) x (Days Billed)

The outdoor water budget, or Tier 2, is determined by irrigable area, crop factor, and local climate conditions, as measured by evapotranspiration. The conversion factor converts from gallons to hundred cubic feet (ccf). The District used a combination of geospatial analysis and in-person site visits to determine the irrigable area associated with each meter. The crop coefficient used is 0.7 which represents a mixed landscape of turf and shrubs, currently the most common landscape feature in the District's service area. The equation for Tier 2 is as follows:

Tier 2. Outdoor Allocation = (ETo) x (Irrigable Area) x (Conversion Factor) x (Crop Coefficient 0.7)

Most commercial customers have two metered connections, a dedicated irrigation meter and a commercial meter. To determine the water budget for commercial meters, the District uses a rolling average of the current month's usage and the respective monthly usage from the past two years to determine the total water budget. This 3-year rolling monthly average accounts for typical monthly usage for commercial customers as well as for potential increases in business activity or recent efficiency improvements that may have occurred within the current month.

For all irrigation meters, water budgets are calculated as follows:

Irrigation in-budget Usage = (ETo) x (Irrigable Area) x (Conversion Factor) x (Crop Coefficient 0.7)

Outdoor water budgets for areas irrigated with recycled water are calculated similarly to potable irrigation meters outdoor water budgets, but with a higher plant factor to account for the additional salinity of recycled water. The same calculation applies to water budgets for potable water and recycled water for areas defined as public spaces which includes public parks.

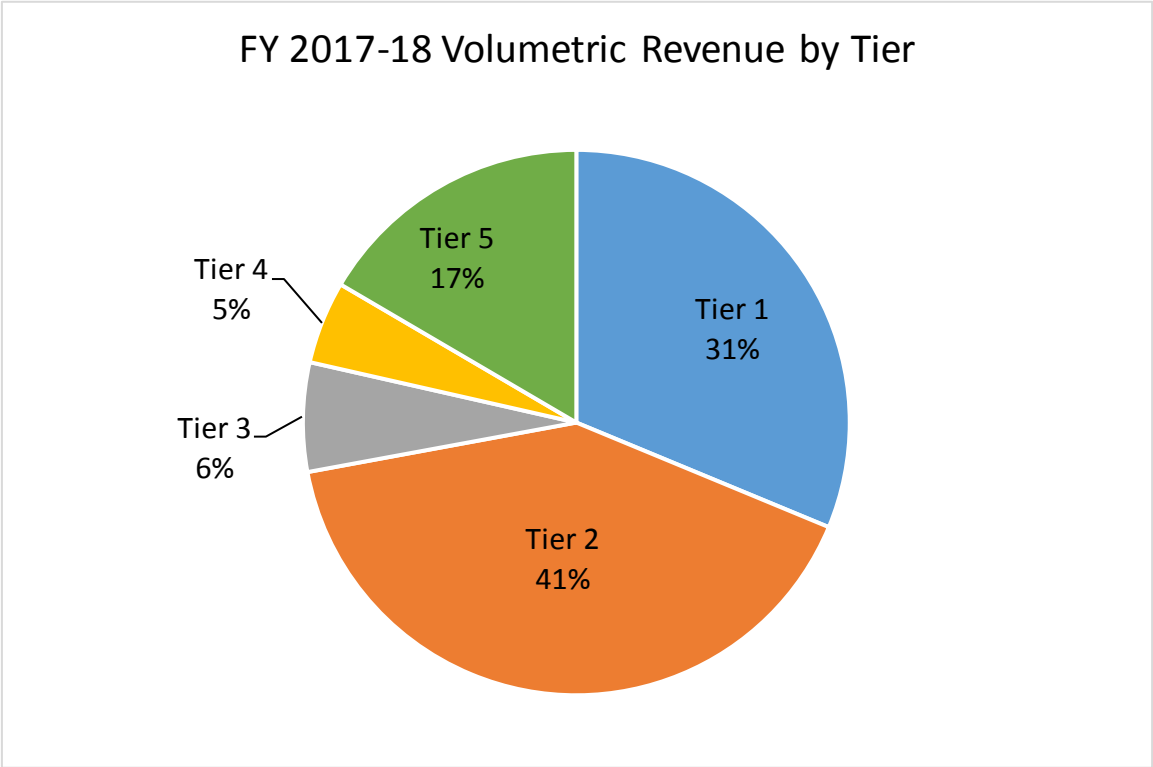
Recycled Water in-budget usage = (ETo) x (Irrigable Area) x (Conversion Factor) x (Crop Coefficient 0.8)

Public spaces in-budget usage = (ETo) x (Irrigable Area) x (Conversion Factor) x (Crop Coefficient 1.0)

Using water in excess of a customer's individually calculated water budget results in payment of higher rates, increasing up to $9.28 per ccf in the highest tier. For Recycled customers, usage above the basic use allocation results in an increase up to $8.36 in the highest tier. The revenue derived from the out-of-budget usage above the marginal cost of water is used to fund conservation and water use efficiency programs, education, outreach, and program administration. In addition, the water use efficiency revenue can be used to study and/or construct new water supply projects.

Figure 7 presents the projected revenue share for FY 2017-18 that will be received from each of the water budget tiers based on FY 2016-17 baseline usage levels and no assumed rate structure changes.

Figure 7: Current Volumetric Revenue by Tier



The District provides potable water and recycled water to customers via volumetric metered rates. Each customer receives a monthly bill. The District's third year of scheduled increases were implemented on Jan 1, 2017, and is shown in Table 9 for residential customers.

Table 9: Residential Tier Widths

Water Budget Based Rate Structure (Residential Tier Widths)		
Tier	**Allocation**	**Rate (per ccf)**
1	Indoor Water Budget	$1.56
2	Outdoor Water Budget	$1.78
3	101% to 125% Total Water Budget	$2.73
4	126% to 150% Total Water Budget	$4.49
5	Over 151% of Water Budget	$9.28

The current rate structure for the commercial and irrigation customers is a four tier allocation-based rate structure with Tier 2 up to 125 percent of the water budget and Tier 3 up to 150 percent of the water budget with the Irrigation rate structure. Non-Residential Water rate structure is shown in Table 10.

Table 10: Non-Residential Tier Widths

Water Budget Based Rate Structure (Non-Residential Tier Widths)		
Tier	**Allocation**	**Rate (per ccf)**
1	Up to Total Water Budget	$1.78
2	101% to 125% Water Budget	$2.73
3	126% to 150% Water Budget	$4.49
4	Over 151% of Water Budget	$9.28

Recycled water rates follow a similar water budget based rate structure and are shown in Table 11.

Table 11: Recycled Tier Widths

Water Budget Based Rate Structure (Recycled Water)		
Tier	**Allocation**	**Rate (per ccf)**
1	Up to Total Water Budget	$1.29
2	101% to 125% Water Budget	$1.81
3	126% to 150% Water Budget	$3.57
4	Over 151% of Water Budget	$8.36

Single family residential water meters are all assumed to be either 5/8", ¾" or 1" and billed at the same current monthly rate of $11.91 per month. The District applies a monthly service charge for each of the customer classes below. These charges are reflected below in Table 12.

Table 12: Monthly Service Charges

Monthly Service Charges						
Connection Size	**Residential**	**Multi-Family**	**Commercial**	**Irrigation**	**Recycled**	**Fire Protection**
5/8"	$11.91	$7.33	$6.55	$18.65	$18.65	$3.95
3/4"	$11.91	$7.33	$6.55	$18.65	$18.65	$3.95
1"	$11.91	$7.33	$6.55	$18.65	$18.65	$3.95
1 1/2"	$39.73	$24.45	$21.84	$62.15	$62.15	$13.19
2"	$63.57	$39.11	$34.94	$99.44	$99.44	$21.11
2 1/2"	$ -	$ -	$ -	$ -	$ -	$33.64
3"	$139.06	$85.57	$76.42	$217.54	$217.54	$46.17
4"	$238.36	$146.69	$131.00	$372.91	$372.91	$79.14
6"	$497.00	$305.85	$273.14	$777.51	$777.51	$164.88
8"	$715.10	$440.06	$393.00	$1,118.72	$1,118.72	$237.43
10"	$1,152.50	$709.24	$633.39	$1,803.00	$1,803.00	$382.52

4.2.2 Wastewater Rates

The wastewater system has two customer groupings: residential customers and non-residential customers. Residential customers are billed at a monthly charge of $26.22 and Multi-Family customers are billedbased on meter size as shown in Table *13*.

Non-residential customers (typically commercial) are assigned to one of the 4 classes below based on land-use; the rates for each of the non-residential customer classes are based on stregnth assumptions for a given land use and the rates are shown in Table *13*:

Class 1: Typical users include residential, bank, car washes, churches, department and retail stores, Laundromats, professional offices, schools and colleges.

Class 2: Typical users include beauty and barber shops, hospital and convalescent facilities, commercial laundry, repair shops, service stations and veterinary hospitals.

Class 3: Typical users include hotels with dining facilities, markets with garbage disposals, mortuaries and fast-food restaurants.

Class 4: Typical users include restaurants, auto-steam-cleaning facilities and bakeries.

Table 13: Wastewater Service Charges

Wastewater Service Charges						
Connection Size	**Residential**	**Multi-Family**	**Class 1**	**Class 2**	**Class 3**	**Class 4**
5/8"	$26.22	$28.58	$20.66	$44.02	$90.56	$97.70
3/4"	$26.22	$28.58	$20.66	$44.02	$90.56	$97.70
1"	$26.22	$28.58	$20.66	$44.02	$90.56	$97.70
1 1/2"	$26.22	$87.76	$61.35	$139.21	$294.33	$318.12
2"	$26.22	$138.50	$96.23	$220.81	$469.01	$507.08
3"	$26.22	$299.17	$206.69	$479.25	$1,022.23	$1,105.51
4"	$26.22	$510.54	$352.02	$819.25	$1,750.04	$1,892.81
6"	$26.22	$1,060.15	$729.89	$1,703.30	$3,642.47	$3,939.89
8"	$26.22	$1,525.19	$1,049.61	$2,451.32	$5,243.70	$5,671.99
10"	$26.22	$2,455.30	$1,689.08	$3,947.40	$8,446.24	$9,136.27

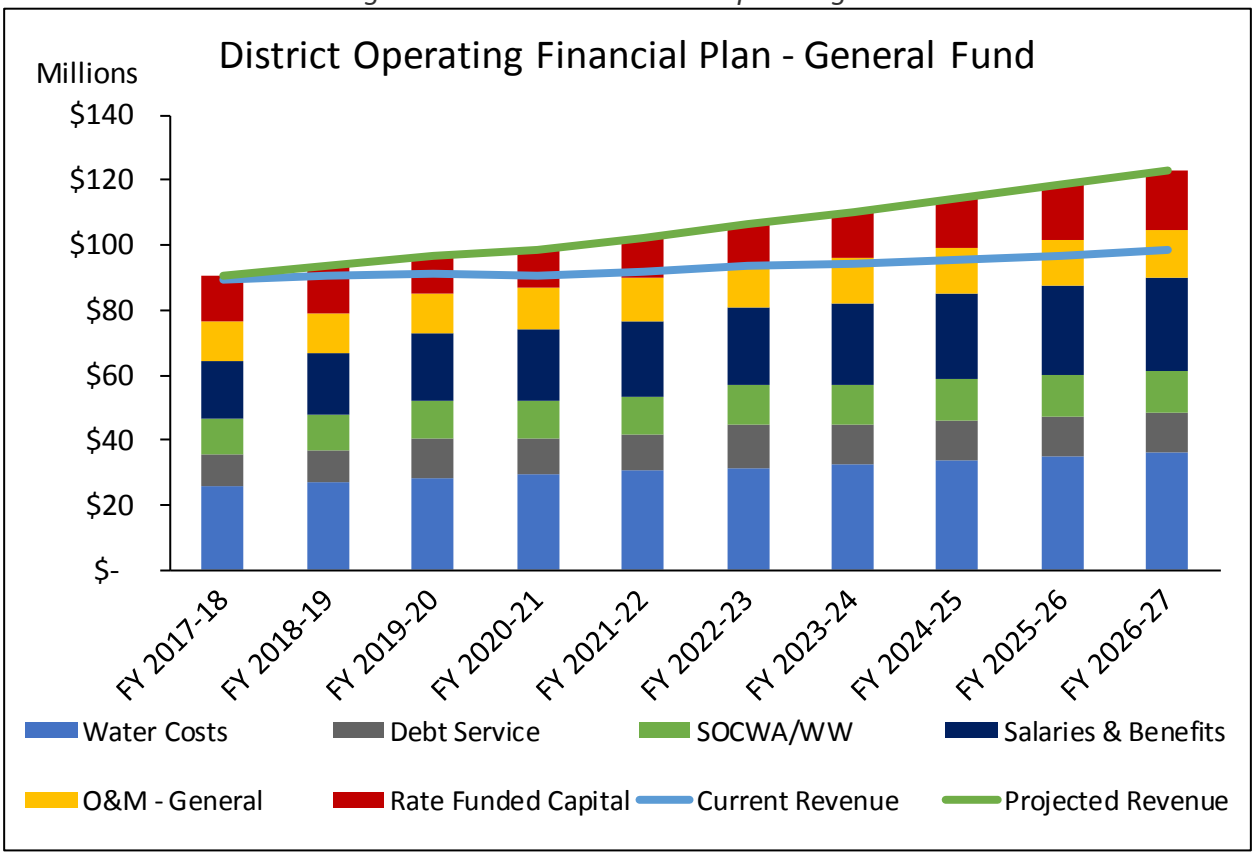
5 PROPOSED FINANCIAL PLAN

The LRFP incorporates both the revenue requirements and assumed inflationary factors for future operating costs. The District is currently planning to draw down cash reserves to target reserve levels adopted in the District's Reserve Policy in order to fund capital improvement projects in the near future while structuring rate adjustments and debt financing to maintain cash balances at targeted reserve levels in the future.

5.1 GENERAL FUND SUMMARY

Figure 8 is the operating financial plan that breaks down the major component costs and compares the proposed revenue stream to the status quo.

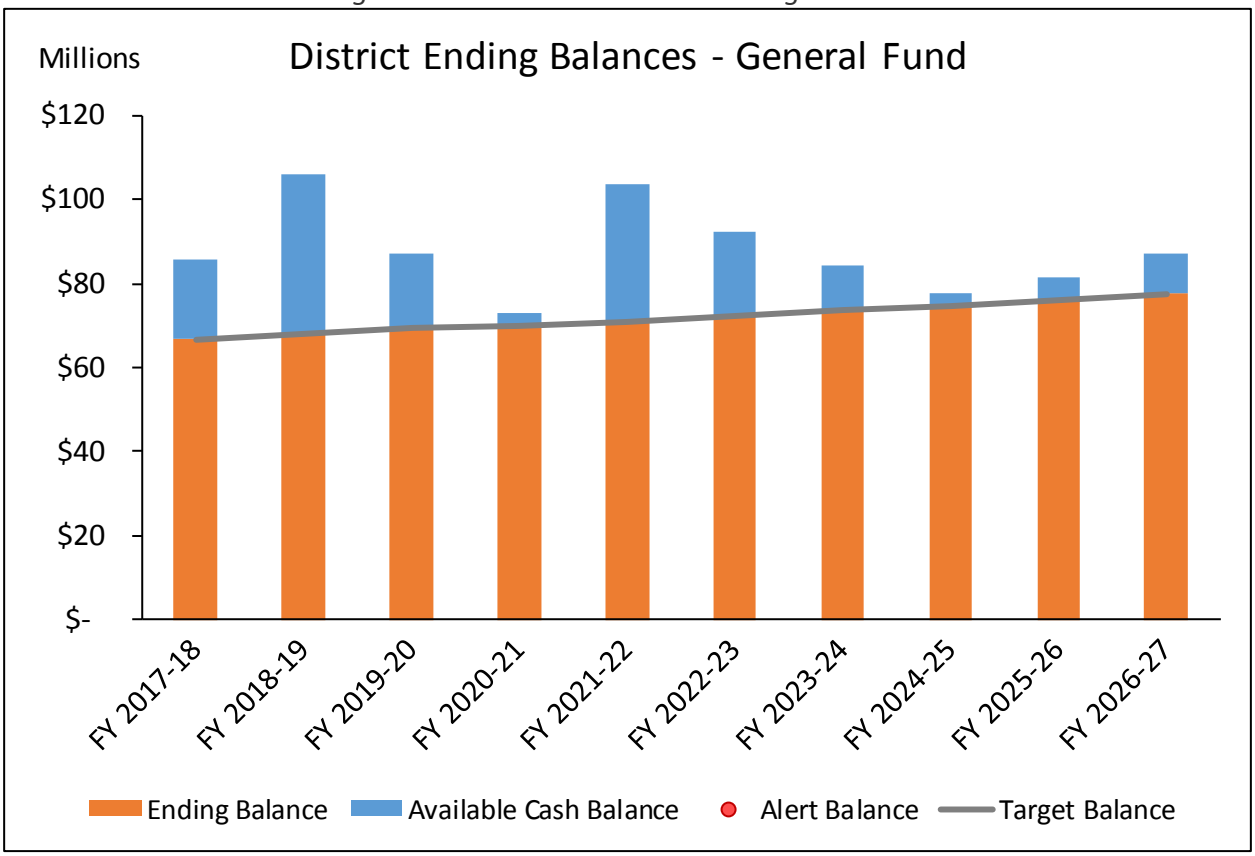
Figure 8:Gen. Fund – District Operating Plan



Rate Funded Capital is total revenue net operating and debt service related expenses that is used to cash fund the most of the Capital Improvement Plan. These funds can also be used to replenish reserve funds if they drop below reserve targets. The proposed revenue requirements equate to a 4% revenue adjustment on January 1 of each year. If the proposed revenue adjustments are not implemented, current revenue would fail to meet operating costs by FY 2022-23 as shown in Figure 8. When structuring future rate adjustments and debt issuance, the District should be cognizant of the impacts to the debt coverage ratio for which the District has a policy minimum of 1.75x.

In addition, the proposed revenue adjustments provide adequate cash balances to meet the current reserve policy cash requirements. Projected available cash balances and reserve cash balances are shown in Figure 9. Available cash balances can be used to cash fund capital projects and provide additional policy options and the ability to meet unforeseen risks.

Figure 9: Gen. Fund – District Ending Balances



The current debt coverage ratio has approached the policy minimum coverage ratio of 1.75 as shown in Figure 10. The proposed revenue adjustments keep the coverage ratio at or above the benchmark coverage ratio of 1.9, based on Moody's four-year average median coverage ratios for all US Water, Sewer and Combined Utilities of 1.9. Shown in Figure 10, the proposed debt issuances are timed to align with the retirement of existing debt. By utilizing the District's strong debt service coverage ratio and timing future issuances as the District's capacity to issue debt increases, the proposed financial plan maintains the 4 percent annual rate adjustments identified in the 2015 Long Range Financial Plan, while providing for inter-generational equity amongst today's customers and the rate payers of tomorrow.

Figure 10: Gen. Fund – District Revenue Adjustments

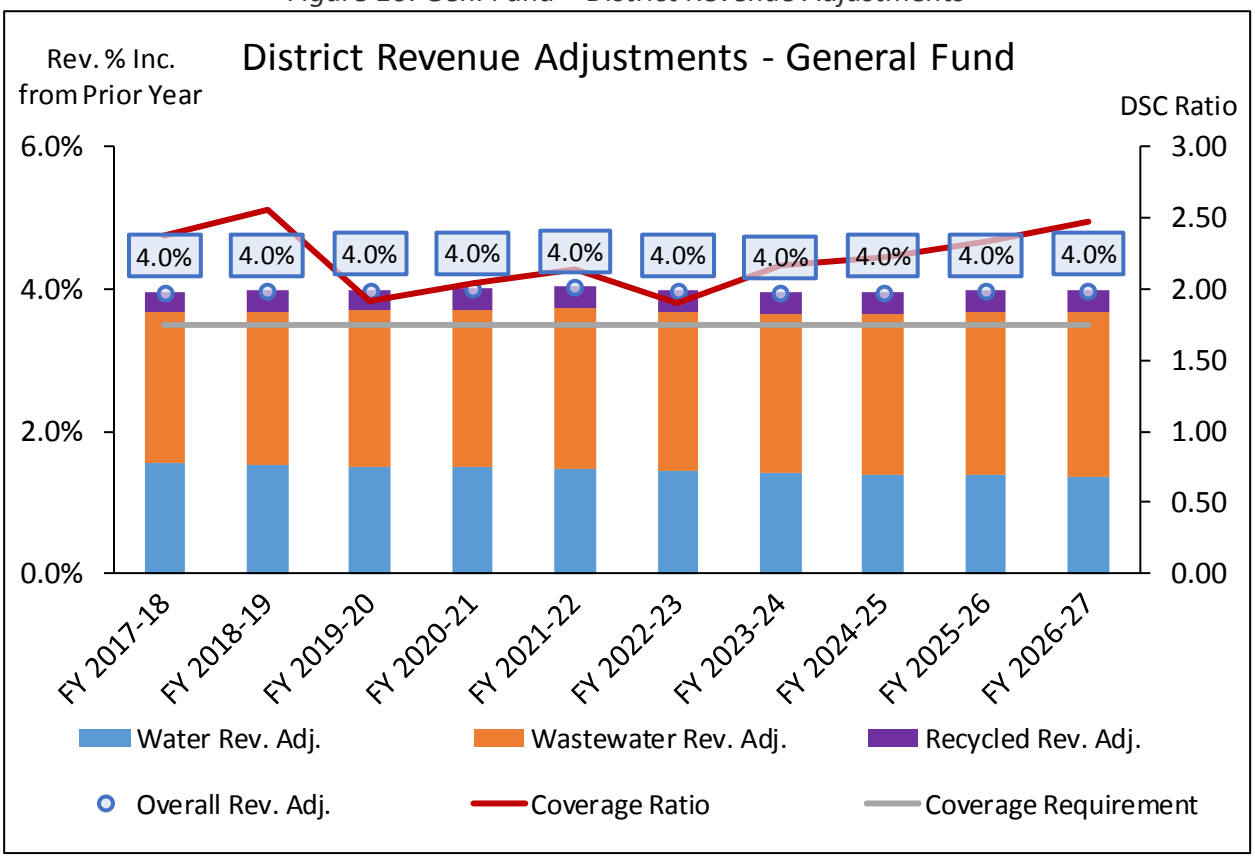


Table 14 below, the Pro-Forma, shows the overall revenues, operating expenses, debt service, capital expenses, and fund balances for the General Fund. Ending cash balances are broken down by funds allocated to meet specific reserve requirements per the District's reserve policy and available cash for capital projects.

Table 14: Proforma

MNWD Overall General Fund Pro-Forma - 2017 LRFP Report

	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
General Fund Revenues - District										
Potable Water Sales	$ 28,539,552	$ 29,348,036	$ 30,153,708	$ 30,954,902	$ 31,749,833	$ 32,536,588	$ 33,341,973	$ 34,166,398	$ 35,010,281	$ 35,874,047
Sewer Sales	$ 21,610,076	$ 22,867,065	$ 24,196,952	$ 25,603,954	$ 27,092,530	$ 28,649,882	$ 30,259,572	$ 31,942,107	$ 33,717,905	$ 35,592,122
Recycled Water Sales	$ 5,385,584	$ 5,602,251	$ 5,852,707	$ 6,139,552	$ 6,465,538	$ 6,833,569	$ 7,217,864	$ 7,619,066	$ 8,037,844	$ 8,474,891
Other Operating Revenue	$ 516,900	$ 643,065	$ 529,464	$ 529,464	$ 529,464	$ 529,464	$ 529,464	$ 529,464	$ 529,464	$ 529,464
Property Tax	$ 29,000,861	$ 29,996,583	$ 31,036,218	$ 30,579,947	$ 31,650,246	$ 32,758,004	$ 33,904,534	$ 35,091,193	$ 36,319,385	$ 37,590,563
Investment Income	$ 1,766,390	$ 1,663,151	$ 1,677,646	$ 1,388,870	$ 1,531,055	$ 1,698,210	$ 1,529,295	$ 1,403,000	$ 1,381,282	$ 1,461,740
Property Lease	$ 1,723,533	$ 1,626,486	$ 1,644,355	$ 1,644,355	$ 1,644,355	$ 1,644,355	$ 1,644,355	$ 1,644,355	$ 1,644,355	$ 1,644,355
Misc. Non-Operating Revenue	$ 1,581,959	$ 1,581,959	$ 1,581,959	$ 1,581,959	$ 1,581,959	$ 1,581,959	$ 1,581,959	$ 1,581,959	$ 1,581,959	$ 1,581,959
Connection Fees	$ 340,198	$ 614,970	$ 262,684	$ 262,684	$ 262,684	$ 262,684	$ 262,684	$ 262,684	$ 262,684	$ 262,684
Total Revenues	**$ 90,465,053**	**$ 93,943,567**	**$ 96,935,692**	**$ 98,685,687**	**$ 102,507,662**	**$ 106,494,715**	**$ 110,271,699**	**$ 114,240,225**	**$ 118,485,158**	**$ 123,011,825**
District General Fund Revenue Requirements										
Operating Expenses										
Water - Imports & Production	$ 24,691,479	$ 26,336,677	$ 27,379,574	$ 28,631,985	$ 29,710,269	$ 30,834,823	$ 31,992,105	$ 33,179,478	$ 34,458,277	$ 35,702,242
Water - Storage & Facilities	$ 793,341	$ 623,488	$ 639,076	$ 651,857	$ 664,894	$ 678,192	$ 691,756	$ 705,591	$ 719,703	$ 734,097
O&M - General	$ 12,411,229	$ 12,494,247	$ 12,795,817	$ 13,043,057	$ 13,294,818	$ 13,551,675	$ 13,813,733	$ 14,081,100	$ 14,353,886	$ 14,632,203
Salaries	$ 12,245,509	$ 12,987,335	$ 14,026,895	$ 14,755,744	$ 15,419,752	$ 16,113,641	$ 16,838,755	$ 17,596,499	$ 18,388,341	$ 19,215,816
Benefits	$ 5,120,879	$ 5,693,884	$ 6,543,602	$ 7,217,672	$ 7,614,644	$ 7,932,438	$ 8,264,683	$ 8,612,080	$ 8,975,365	$ 9,355,325
SOCWA/WW	$ 10,933,922	$ 11,188,641	$ 11,270,632	$ 11,438,267	$ 11,812,361	$ 12,002,164	$ 12,195,017	$ 12,390,968	$ 12,590,068	$ 12,792,367
Subtotal O&M Expense	**$ 66,196,361**	**$ 69,324,273**	**$ 72,655,596**	**$ 75,738,582**	**$ 78,516,739**	**$ 81,112,934**	**$ 83,796,048**	**$ 86,565,716**	**$ 89,485,640**	**$ 92,432,050**
Debt Service										
Existing	$ 10,293,689	$ 9,622,591	$ 9,340,850	$ 7,847,814	$ 7,840,049	$ 7,643,321	$ 6,456,476	$ 6,664,864	$ 6,605,749	$ 6,549,883
Proposed	$ -	$ -	$ 3,371,023	$ 3,371,023	$ 3,371,023	$ 5,654,618	$ 5,654,618	$ 5,654,618	$ 5,654,618	$ 5,654,618
Subtotal Debt Service Expense	**$ 10,293,689**	**$ 9,622,591**	**$ 12,711,872**	**$ 11,218,836**	**$ 11,211,072**	**$ 13,297,939**	**$ 12,111,094**	**$ 12,319,482**	**$ 12,260,368**	**$ 12,204,501**
Total Revenue Requirement (Non-CIP)	**$ 76,490,049**	**$ 78,946,864**	**$ 85,367,468**	**$ 86,957,419**	**$ 89,727,811**	**$ 94,410,873**	**$ 95,907,143**	**$ 98,885,198**	**$ 101,746,008**	**$ 104,636,551**
Net Change in General Fund before CIP	**$ 13,975,003**	**$ 14,996,703**	**$ 11,568,223**	**$ 11,728,268**	**$ 12,779,852**	**$ 12,083,842**	**$ 14,364,556**	**$ 15,355,026**	**$ 16,739,150**	**$ 18,375,274**
Capital and Ending Balances										
Capital Expenses (CIP + Outlays)	$ 46,478,591	$ 56,145,082	$ 30,498,774	$ 26,089,449	$ 23,776,792	$ 23,566,270	$ 22,355,653	$ 21,923,996	$ 12,673,894	$ 13,164,923
Bond Proceeds	$ -	$ 61,750,000	$ -	$ -	$ 41,750,000	$ -	$ -	$ -	$ -	$ -
Beginning Balance	$ 118,071,550	$ 85,567,962	$ 106,169,583	$ 87,239,032	$ 72,877,851	$ 103,630,911	$ 92,148,483	$ 84,157,387	$ 77,588,417	$ 81,653,674
Ending Balance (Includes Interest)	$ 85,567,962	$ 106,169,583	$ 87,239,032	$ 72,877,851	$ 103,630,911	$ 92,148,483	$ 84,157,387	$ 77,588,417	$ 81,653,674	$ 86,864,025
Reserve Balance	$ 66,599,520	$ 67,879,360	$ 69,232,008	$ 69,774,619	$ 71,004,308	$ 72,207,235	$ 73,451,279	$ 74,737,025	$ 76,081,102	$ 77,453,294
Future Capital Improvement Projects	$ 18,968,442	$ 38,290,223	$ 18,007,024	$ 3,103,232	$ 32,626,603	$ 19,941,248	$ 10,706,108	$ 2,851,392	$ 5,572,571	$ 9,410,731
Debt Coverage Ratio	2.36	2.56	1.91	2.05	2.14	1.91	2.19	2.25	2.37	2.51

5.2 WATER USE EFFICIENCY FUND SUMMARY

Since its implementation in 2011, the District's water budget-based rate structure has served as a critical component of its demand management efforts and ultimately its expanded supply reliability. The underlying rationale of any water budget-based rate structure is that customers who use water inefficiently (i.e. in excess of their calculated water budgets) place greater demands on the District's water and recycled water systems and supplies than those customers who continue to use water efficiently (i.e. within their calculated water budgets). Because of the higher demand, and consequently higher cost, that inefficient usage places on the District's water and recycled water systems, water usage in excess of a customer's allocated budget is subject to higher water use rates. The District maintains a strong cost nexus between increasing marginal supply costs and increasing rates by investing the incremental rate difference in alternative water supply programs, rebates, water conservation, and demand management measures to increase efficient uses of water and offset demand from inefficient water use.

By establishing the Water Use Efficiency Fund, the District is able to clearly delineate the costs associated with providing continued service to its customers from those costs that could have otherwise been avoided had all customers "lived within their [water] budget". The resulting tiered rate structure creates a strong price signal to customers who may have inadvertently exceeded their budgets, and any revenues collected are immediately reinvested in programs and rebates to help those same customers get back into budget. Throughout an historic drought, the District has maintained that "it's not about using less water, it's about wasting less water", and customers have responded not only by conserving but also by an unprecedented level of rebate program participation: in FY 2014-15 and FY 2015-16, the District expended over 95 percent of its rebate and water efficiency program budgets. District staff seeks to build upon this historic level of interest in efficiency by expanding rebate program participation beyond early adopters by actively seeking out candidates for its newly launched direct install and commercial site assessment programs.

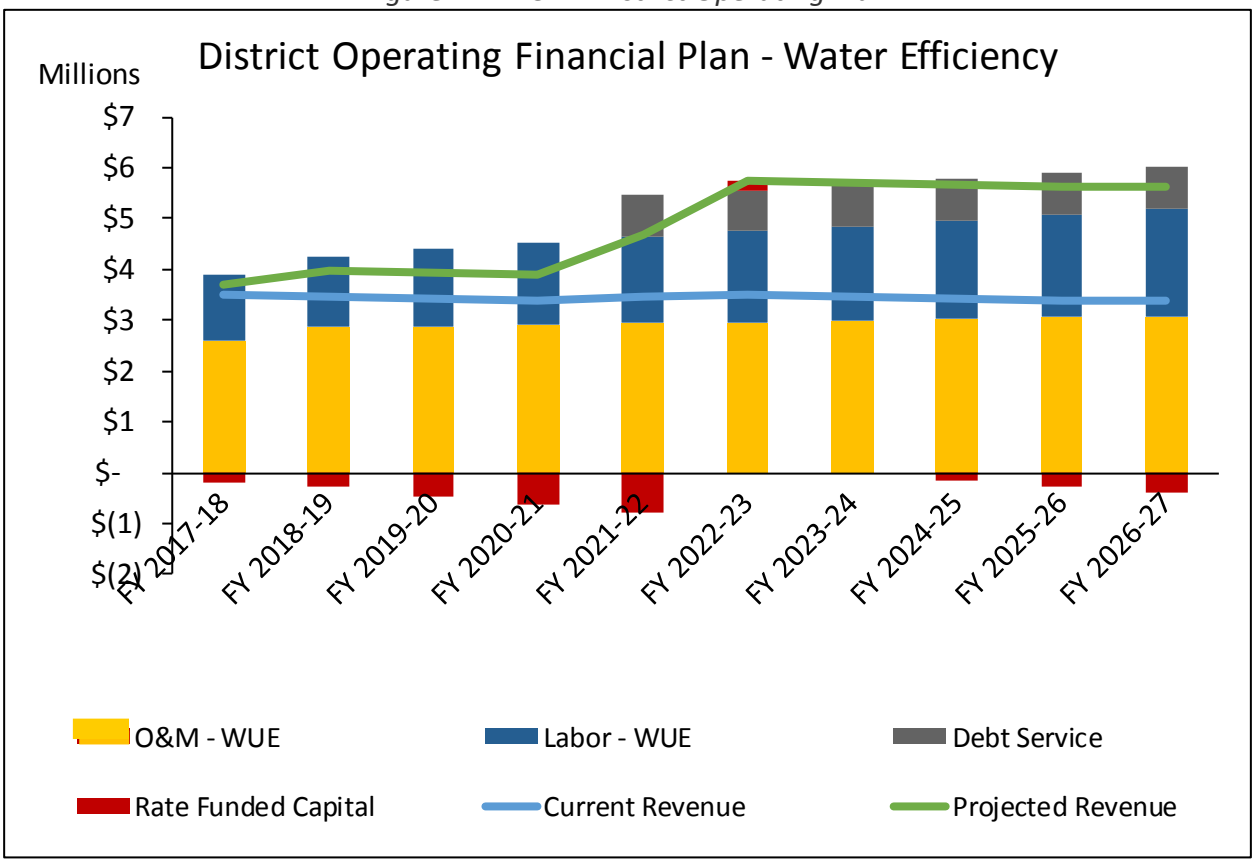
However, District staff is also cognizant of the deluge of conservation messaging from the state that customers received during the height of the drought emergency and its likely contribution to an overall increased awareness of rebate programs and a general concern from customers about their future water supply. As the state has seen wet winters and begins to moves out of the emergency stage of the drought, District staff has seen a reduction in rebate program participation compared to the past two fiscal years. In FY 2016-17 the District expended only 58 percent of its rebate and efficiency program budgets. It is important to note that when the FY 2016-17 budgets were developed there was little to no indication that the emergency stage of the drought would be lifted within the fiscal year, and program funding levels were established to ensure that rebates would continue to be available to customers. Additionally, though rebate program participation was significantly lower in FY 2016-17 than in the previous two years, total rebate payments for FY 2016-17 were approximately double their FY 2013-14 level.

In the absence of the District's new direct install and efficiency assessment programs, the combined effect of reduced conservation messaging from the state and rescinding the District's Water Shortage Contingency Plan Stages I & II would warrant a reduction in water use efficiency cost projections in future years. However, as the District continues to take a more active role in the administration of its water use efficiency and rebate programs, it is expected that program participation will increase beyond the level seen in FY 2016-17 and has been reflected in the FY 2017-18 budget. From a financial planning perspective, these potentially offsetting impacts warrant a different methodology be used to develop rate revenue

requirements for future years from that which was used to develop the FY 2017-18 budget. Recognizing this, District finance staff has reduced its non-labor related operating expenses to 59 percent of their budgeted values based on the minimum ratio of actuals to budget over the past four years to serve as an estimate of the District's rate revenue requirements for operating costs over the planning horizon. If customers participate below minimal levels, the projected debt issuance could be reduced or eliminated to provide financial resiliency and meet financial expense projections.

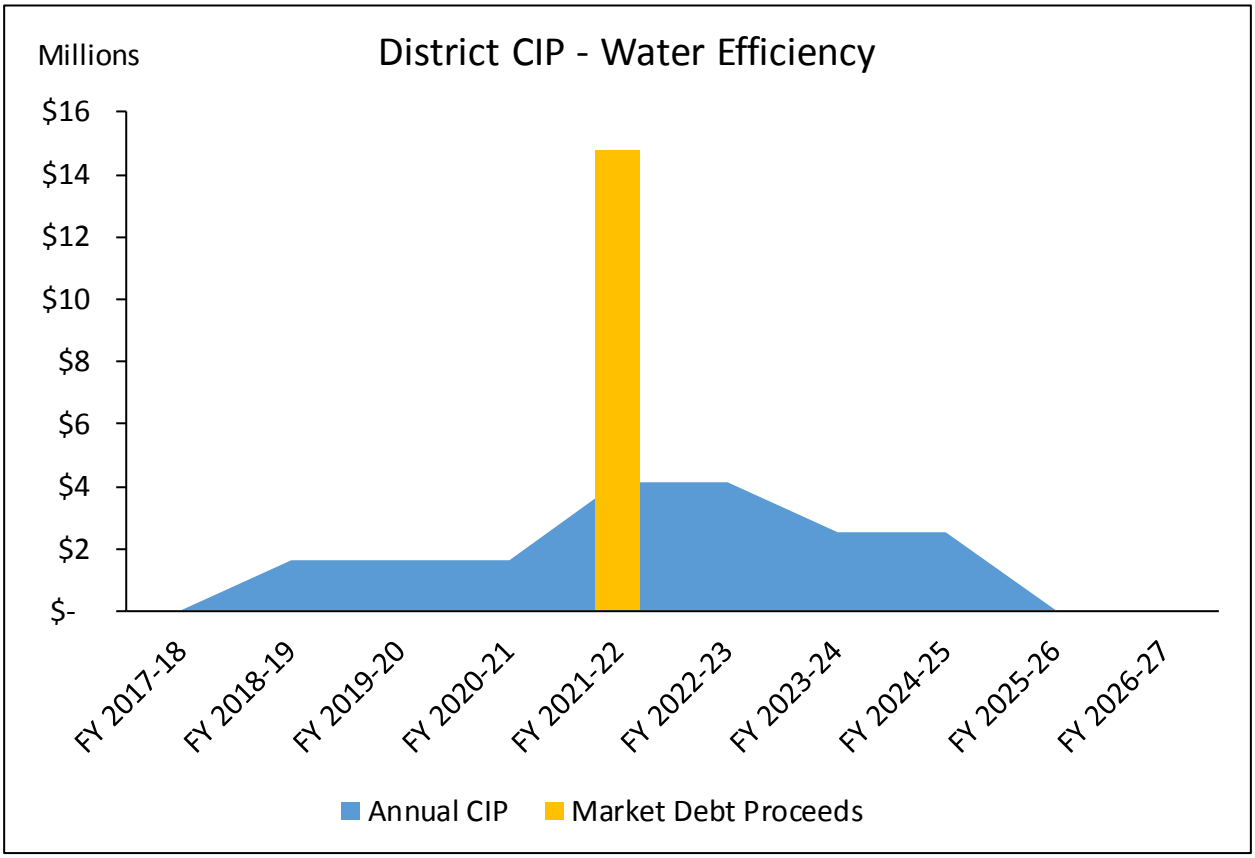
Figure 11 below is the Water Efficiency operating financial plan that breaks down the major component costs and compares the proposed revenue stream to the status quo.

Figure 11: WUE – District Operating Plan



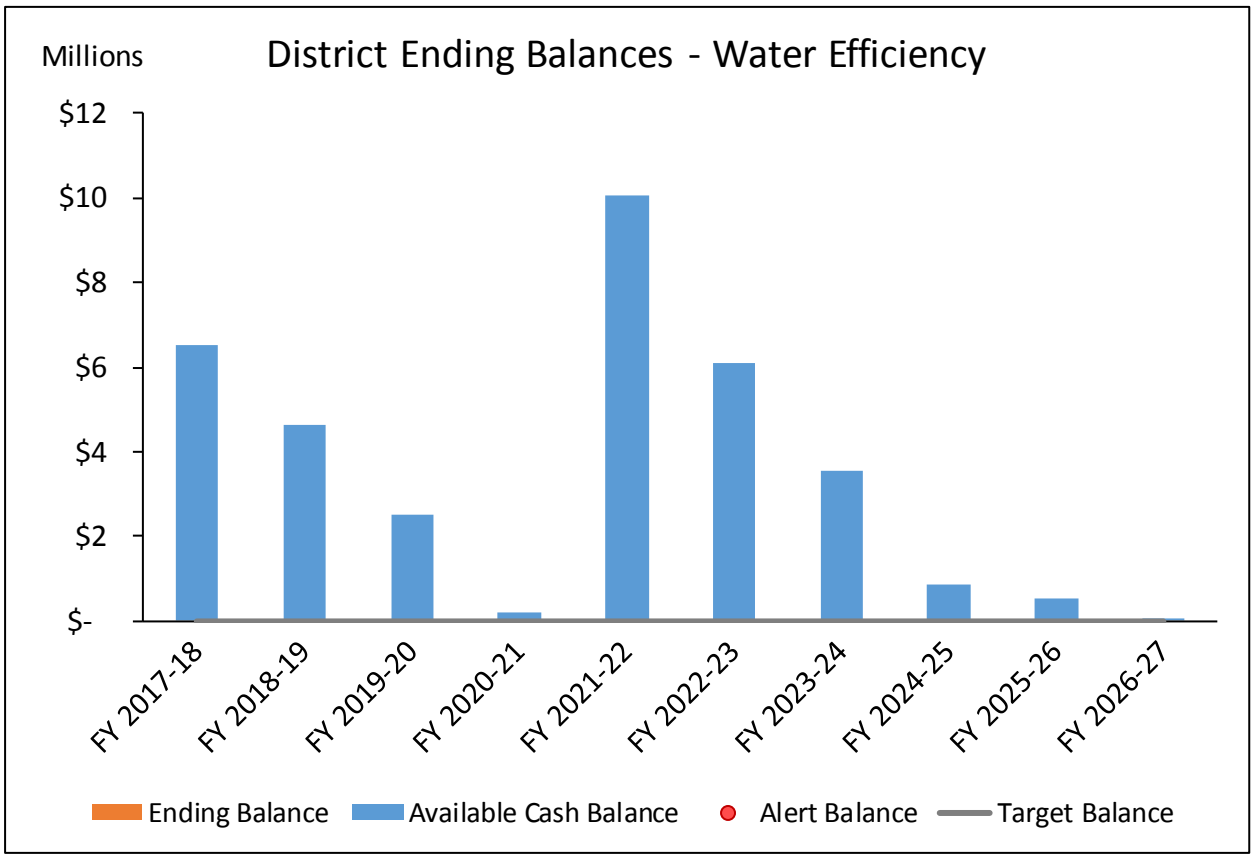
In addition to the costs associated with the ongoing management of the District's water use efficiency and conservation programs, a portion of the capital costs associated with future water supply reliability enhancement projects have been allocated to the Water Use Efficiency Fund. There is a natural nexus between efficient water use and long-term supply reliability, as any reductions in inefficient water use decrease the size, and ultimately cost, or future supply reliability projects. Conversely, continued inefficient water use necessitates more costly reliability projects; the costs of which should be recovered from inefficient usage. Combined with the project costs associated with the District-wide deployment of AMI, the District has identified $18 M in total capital project costs that are allocated to the Water Use Efficiency Fund, as shown in Figure 12.

Figure 12: WUE - 10-Year CIP and Proposed Bond Issuance



The District's continued investment in conservation efforts and rebate programs and its future supply reliability investments will draw down current Water Use Efficiency fund balances within three years without an adjustment in rate revenue or a new bond issuance. Based on the revenue requirements and increased spenddown rate of Water Use Efficiency fund balances, District staff is proposing a one-time adjustment to its Water Use Efficiency surcharges as part of the recommended four year rate structure, specifically a total annual increase of $0.5 million in additional revenue requirements. The District has historically rate-funded all costs associated with the Water Use Efficiency fund; however, staff is cognizant of the significant rate impact that continuing this approach would have on customers as well as the financial volatility in the fund historically. To mitigate the potential impacts to today's customers, District staff is also proposing that $15 M of the projected new money bond issuance in FY 2021-22 be allocated to Fund 6 along with an additional one-time revenue adjustment sufficient to maintain the fund through the remainder of the planning horizon. Staff considers the proposed funding strategy optimal as FY 2021-22 would coincide with the District's 2020 Long Range Financial Plan at which point Fund 6 revenue requirements would be re-evaluated. This one-time adjustment in rates paired with the proposed FY 2021-22 is sufficient to avoid a negative fund balance in any one year of the financial plan. The proposed plan addresses the significant program changes that have occurred since the development of the 2015 Long Range Financial Plan, and should rebate program participation decline significantly from current levels the proposed issuance will not be necessary and the unspent available cash will be used to fund the supply reliability and AMI projects.

Figure 13: WUE – District Ending Balances



6 MANAGEMENT OF FINANCIAL RISK

In evaluating the robustness of the District's proposed financial plan, the Model may be used to test the sensitivity of the key assumptions. Three main assumptions were tested:

Scenario 1: Double the assumption on expected MWD rate increases. (11.3% annual compound rate increase up from a projected approximately 4.8% average compound annual growth rate for Tier 1 Treated Water, and an 18.4% annual compound rate increase up from a projected approximately 7.2% average compound annual growth rate for Tier 1 Untreated Water)

Scenario 2: 4% annual increase of within budget water usage is analyzed from the flat demand shown in the Long Range Financial Plan as the baseline.

Scenario 3: Assume an additional $60 M in overall 10-year total CIP expenditures.

6.1 SCENARIO 1: INCREASED COST OF WATER

Assuming MWD's estimated annual rate increases on the wholesale supply cost double to approximately an 11.3% and an 18.4% increase annually compounded for Tier 1 Treated and Untreated supplies, respectively, supply costs by FY 2026-27 increase to $48.9 million, up from the baseline scenario of FY 2026-27 supply costs at $35.8 million. The net effect is a decrease from a baseline ending balance in FY 2026-27 from $85.7 million to $23.1 million. To account for this increase in supply costs, the District must effectively offset that increase by an increase in revenues. One option that would make the District's LRFP more robust to fluctuations in supply costs, is for the Board of Directors to re-adopt the pass-through provision currently in place to account for any MWD rate increases or newly imposed charges in excess of those currently forecasted. AB 3030 allows for water and wastewater agencies to make adjustments to rates in future years based on changes to wholesale or inflation in future years outside of the Prop. 218 process, subject to 30 days of notice to all customers. A second option, is that the District could simply wait and address the unexpected level of supply cost increases as part of the next rate study. However, it is worth noting a possible shortfall of this strategy: any delay in adjusting rates to meet the increased supply costs would result in an even larger than expected rate adjustments to make up for the difference in revenue and expenses. This shortfall could be offset by the use of the District's rate stabilization reserve, though it would reduce the District's ability to respond to other unexpected crises.

6.2 SCENARIO 2: INCREASED WITHIN BUDGET DEMAND

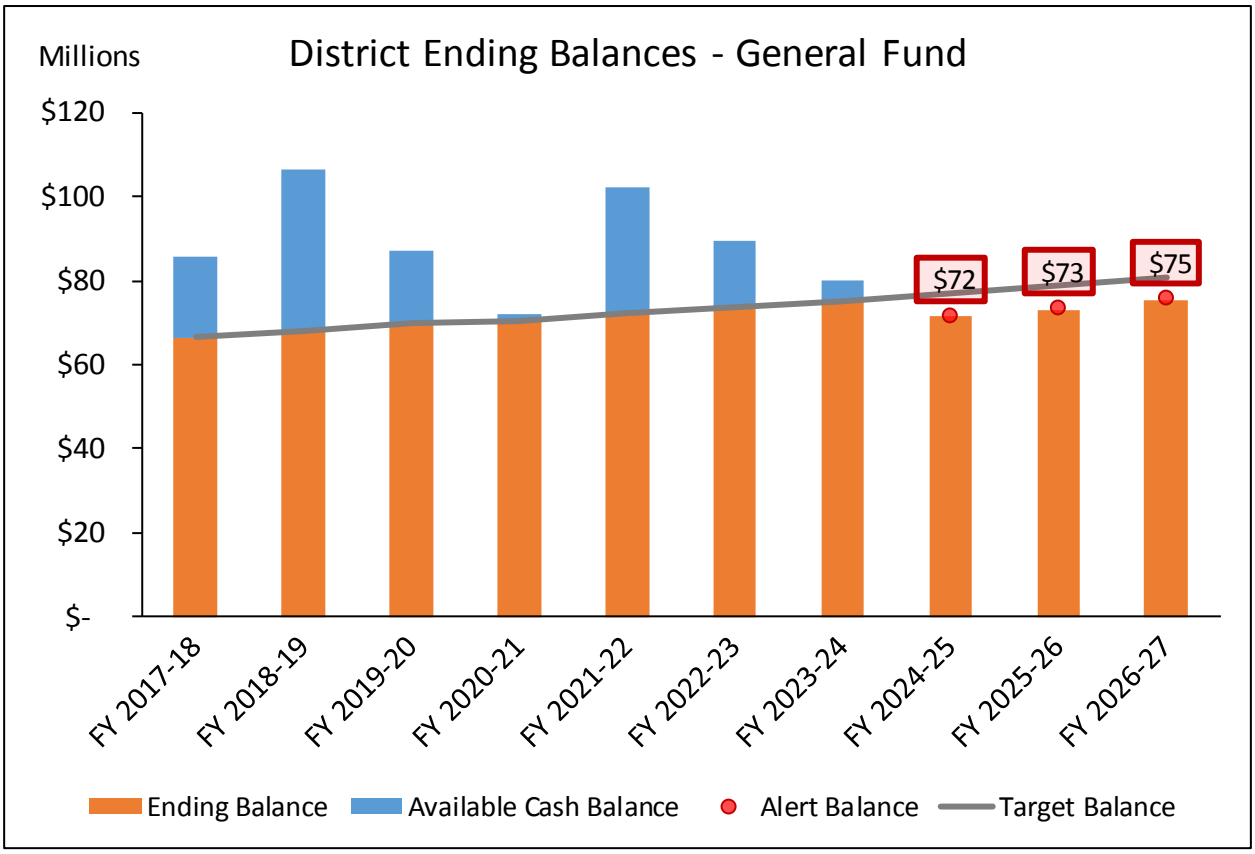
Moulton Niguel Water District has invested heavily since 2011 to instill a water efficiency ethic in its service area through the combination of a water budget based rate structure and aggressive conservation rebate programs. There is a natural concern that as a part of this ethic the District will ultimately reduce water sales, which represent a large share of the District's annual revenue. As part of the 2015 Long Range Financial Plan, an analysis of demand reduction was conducted to determine what financial impact the District could expect from increased conservation and efficiency. The District's rates are structured so that any incremental revenue collected from the higher tiers is allocated to the Water Use Efficiency fund for water efficiency and water reliability expenditures. As a result, the decrease in sales from the higher tiered water does not affect the District's General Fund or daily operating revenues. This result was validated empirically during the last drought, as the District's financial position improved while meeting

the 20 percent reduction target implemented by the State. This flexibility in financial structure allows the District to focus water efficiency efforts without concern for the financial impacts of decreased water sales.

A different analysis is performed here, in which only within budget demand usage is increased to better understand what affect those demands have on the District's financial position. To perform this analysis, a scenario in which within water budget usage (usage in Tier 1 and Tier 2) was increased by 4 percent annually, while usage in the out of budget tiers was held fixed. The baseline financial plan assumed status quo water usage at FY 2016-17 levels.

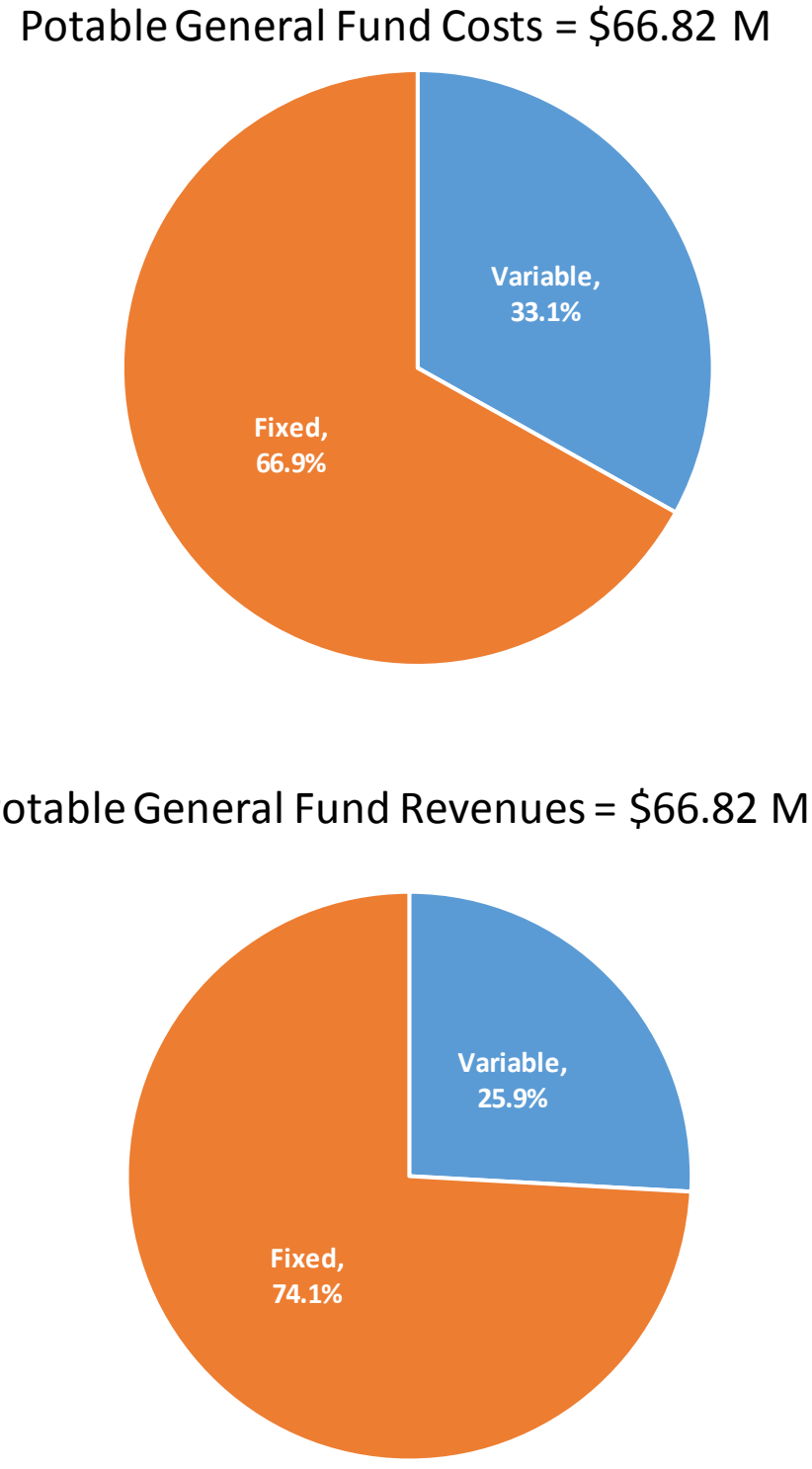
With annual in budget usage increases of 4 percent between FY 2018-19 and FY 2026-27 there is a cumulative decrease in ending balances of $34.1 million in comparison to the proposed financial plan base case, as shown in Figure 14.

Figure 14: Increased In-Budget Usage Impacts to Ending Balances



Currently, the District utilizes revenues from property tax to offset the supply cost of water to its customers for within budget usage as a way to incentivize efficient water use. As a result, the District recovers a portion of its variable costs from fixed revenues. The discrepancy between cost and revenue structures is shown by comparing the two pie charts in Figure 15.

Figure 15: Ratio of Fixed to Variable Costs and Revenues



Because of this relationship between fixed and variable costs and revenues, the District faces a potential risk from increases in water demand for supplies that are sold at a discount. The District could minimize

or eliminate this potential risk by better aligning the ratio of its fixed and variable revenues with its ratio of fixed to variable costs.

6.3 Scenario 3: Increased CIP Spending

Repair and replacement cost contained in the CIP represents $220 million out of the $295 million adopted 10-year CIP budget. The District has been proactive in the maintenance of its infrastructure and developed its 10-year CIP budget to continue that trend; however, given changing customer demands and the additional wear and tear placed on assets during the historic drought and following winter, there may be additional infrastructure costs that were not previously identified. To better understand the District's ability to absorb potential infrastructure repair costs, a scenario was evaluated in which an additional $60 million of project costs were added to the 10-year CIP budget.

The status quo scenario retains the proposed 4 percent annual revenue adjustments and $62 million bond issuance in FY 2018-19 identified in the General Fund Financial Plan, but assumes that no other corrective actions are taken. The additional CIP and impacts to ending fund balances can be seen in Figure 16 and Figure 17, respectively.

Figure 16: Additional General Fund CIP

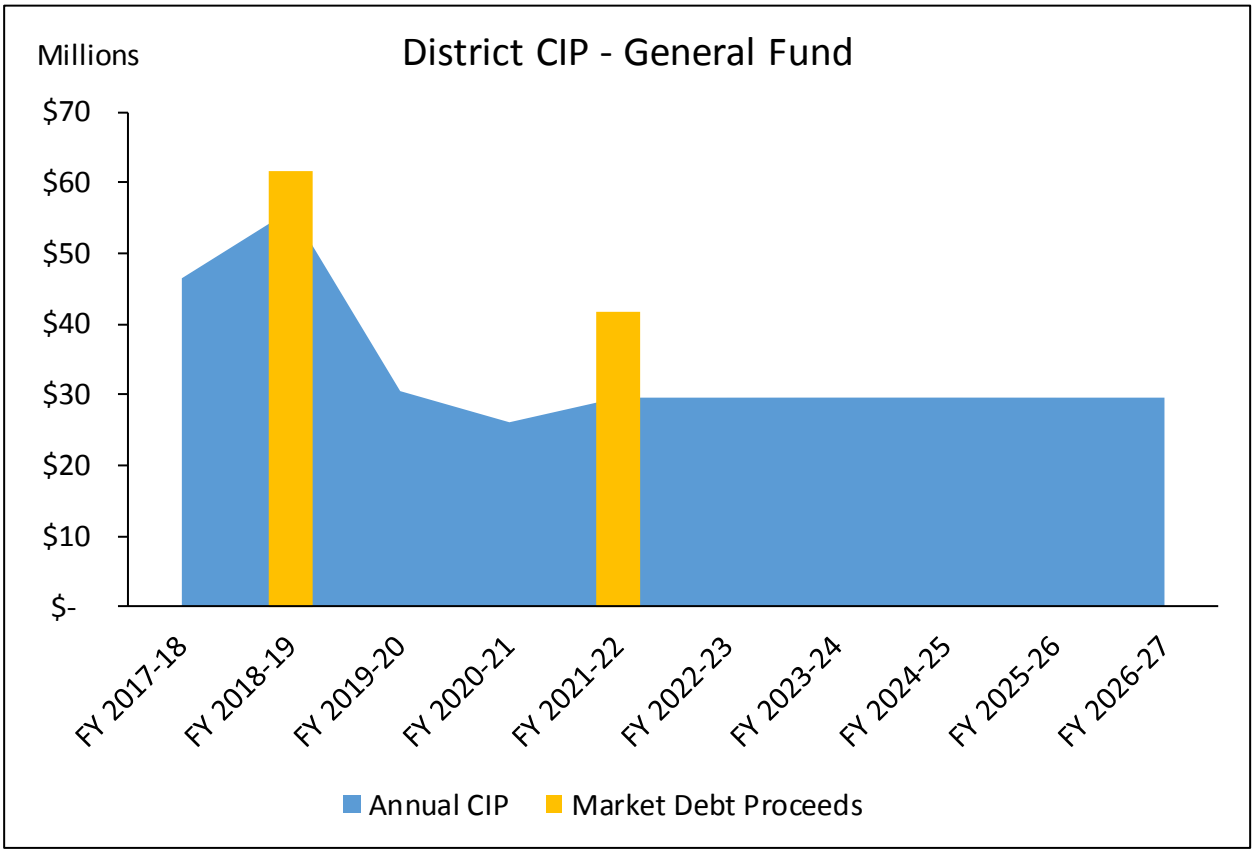
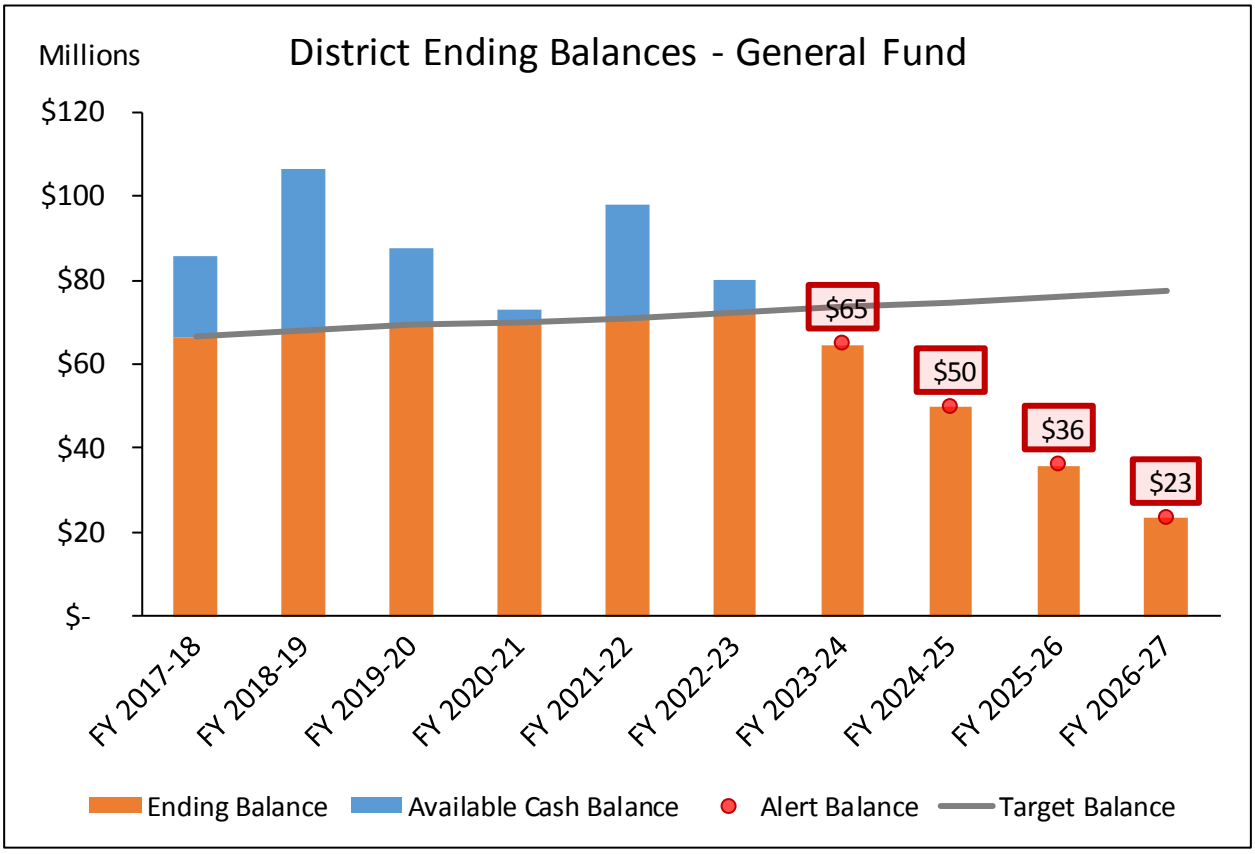
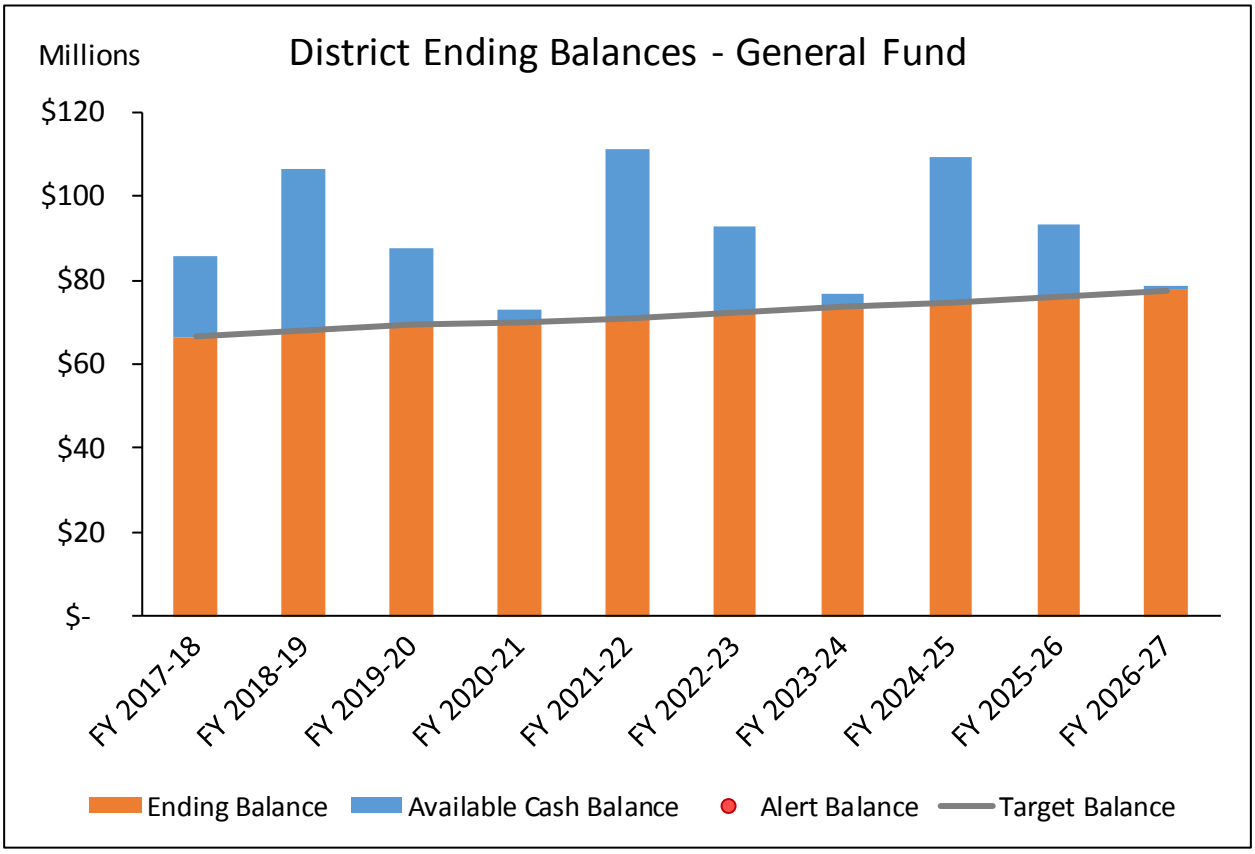


Figure 17: Additional CIP Impacts to Ending Balances



Without corrective action, the District's General Fund ending balances would drop below reserve targets by FY 2023-24. The District could address this potential by issuing additional debt. By increasing the proposed issuance in FY 2021-22 to $106 million and issuing an additional $48 million in debt in FY 2024-25, ending balances will stay above identified reserve targets in all years of the planning horizon, as seen in Figure 18. This response complies with the District's policy of a 1.75 debt service coverage ratio, which is maintained above the 1.25 debt service coverage ratio that is required by existing bond covenants.

Figure 18: Additional Debt Issuance Impact on Ending Balances



7 Financial Management Tools

When considering revenue requirements and the need to periodically adjust revenues the District has a number of tools that may be utilized as outlined in this section.

7.1 Financial Policies

The District proactively manages its financial policies as part of its ongoing fiduciary responsibility. Any revision to current financial policies will change the District's cash and investments portfolios which will result in adjustments to future required revenues.

7.2 Operational Efficiencies

The District is continually looking for ways to create operational efficiencies while maintaining a high level of service. Historically, the District utilized consulting firms to conduct planning and analytical tasks but the District has moved to utilizing more in-house staff to perform these functions with the assistance of outside expertise. Maintenance of in house expertise will enable the District to perform this analysis on a more frequent basis.

Options available to the District continue to include outsourcing or contracting certain services, or continuing to develop more efficient processes to achieve current District operations. As each opportunity is assessed, the District evaluates the cost of internally maintaining the operation compared to outsourcing or contracting out the services. Each evaluation also includes the comparison of quality of work product and service provided in addition to a cost analysis.

7.3 Cooperative Agreements

The District continually looks for ways to save rate payers money in order to mitigate the effects of future cost increases. This can be achieved in part by seeking out cooperative agreement opportunities for both capital and operational needs. The District coordinates with surrounding agencies on capital projects that may bring regional water reliability benefit and costs sharing. They also look to find operational cost savings by participating in shared service opportunities with other local agencies.

7.4 Outside Funding Sources

The District is continually monitoring markets and the industry to identify any applicable outside funding sources that may be relevant to District capital improvements or operations, such as grant funding opportunities or low rate debt. The District is also frequently monitoring economic markets to realize savings on current debt obligations.

7.5 Rates and Fees

The District can use the rate structure to determine revenue generated from each system and recovery of costs from variable or fixed revenue components. In additional to system rate revenue the District will also periodically review its miscellaneous fees and charges to determine applicability and adjustments needed to recover the cost of operation applicable to the fees.

7.6 District Owned Property

The District owns a number of properties that house District facilities as well as multiple vacant properties. The District has the ability to evaluate future projected needs for each property and aspire to achieve the maximum value possible from each asset. Property management options include the expanding operations, leasing land, or exchange or sale of District owned land to maximize potential revenues from that source.

Each of the components in this section are reviewed on a periodic basis and updated if necessary to reflect changes to operations, the economy or the environment.

8 CONCLUSIONS & RECOMMENDATIONS

As the District transitions its focus from developing infrastructure to maintaining and replacing infrastructure, the LRFP in conjunction with other long-term planning efforts provide a roadmap for future needs and actions. Currently, the District is evaluating the rate structures for all three enterprise systems, implementing an aggressive Capital Improvement Plan, evaluating local and regional supply reliability based on projects in the Long Range Water Reliability Plan and Recycled Water Master Plan. The updated Model provides the ability to evaluate the outputs of these planning processes in addition to changes in financial determinants such as usage. With all the future considerations to account for, the Model provides a tool to create adaptive management strategies to be evaluated as major assumptions fluctuate.

In order to maintain District financial stability based on expected future expenditures and revenues, the following overall adjustments to revenue collected are suggested in Table 15:

Table 15: Gen. Fund Revenue Adjustments

General Fund Revenue Adjustments		
Implementation Day & Month	**Implementation Year**	**Revenue Adjustment**
January 1	FY 2017-18	4.0%
January 1	FY 2018-19	4.0%
January 1	FY 2019-20	4.0%
January 1	FY 2020-21	4.0%
January 1	FY 202122 - FY 2026-27	4.0%

The revenue adjustments in Table 15 represent needed additional revenue collected from rates but could be offset from non-rate revenue growth beyond baseline assumptions and achieved utilizing the financial management tools outlined in section 7 of this report. The District will diligently monitor the major variables that impact recommendations such as:

- Capital Improvement Plan budgeting and spending
- Credit markets
- Water usage distribution and conservation
- MWD and MWDOC wholesale rate adjustments

The proposed revenue adjustments maintain the District's debt coverage ratio above the Board adopted policy to maintain a 1.75 coverage ratio. In addition, the revenue generates the needed funds to meet the funding requirements of Ten Year Capital Improvement Plan with the caveat that the Financial Plan assumes a $62 million debt issuance in FY 2018-19 and a $42 million issuance in FY 2021-22. Lastly, the Financial Plan maintains reserve and available cash balances to hedge risk exposure for the agency. The District will provide updated recommendations based on any significant changes to the baseline reflected in this Financial Plan.