RAFTELIS
FINANCIAL CONSULTANTS, INC.

CASTAIC LAKE WATER AGENCY

FINANCIAL PLAN AND RATE STUDY REPORT

MARCH 16, 2016

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2. EXECUTIVE SUMMARY

Castaic Lake Water Agency (Agency) engaged Raftelis Financial Consultants, Inc. (RFC) to conduct a comprehensive financial plan and rate study to ensure financial sufficiency and stability for the agency and equitability and predictability for its customers. The Agency requested that RFC review and develop wholesale water rates that would meet the Agency's overall objectives. To achieve this, RFC conducted a series of workshop with the retail purveyors to receive inputs on the proposed rate structure.

Castaic Lake Water Agency is a public water wholesaler founded in 1962. It supplements groundwater supply to the Santa Clarita Valley (SCV) with imported water from Northern California sold to the purveyors in SCV. Main water sources include the State Water Project (SWP), the Buena Vista Water Storage District (BVWSD) and Rosedale Rio-Bravo Water Storage District (RRBWSD). The share of imported water in total water consumption of the purveyors is about one half. The Agency serves four retail purveyors: the Los Angeles County Water Works District #36 (LACWWD#36), Newhall County Water District (NCWD), Santa Clarita Water Division (SCWD), and Valencia Water Company (VWC).

Currently, the Agency's wholesale rates consist of two components – fixed and variable charges. The revenue from the fixed charge recovers all of the Agency's operating fixed costs, while the revenue from the variable charge recovers the variable operating costs. The latter charge is defined as unit charge per acre-foot (AF) of water sold to the purveyors during the fiscal year[1] (FY). The allocation of fixed operating costs among purveyors is based on their average total (including groundwater and imported water) water consumption in the previous three years. After numerous discussions with stakeholders, RFC developed several rate frameworks that assign more weight to the imported water consumption in the charge calculation.

The main objectives of the study are:

- to ensure financial sufficiency by meeting the operations and maintenance (O&M) costs, meeting capital replacement and improvement costs, and providing the necessary reserves for the functioning of the Agency.
- to provide a rate design framework consistent with the cost of service guidelines used in the industry that adequately and fairly distributes the full cost of service to clients of the Agency based on the demand they place on the Agency's system.
- to encourage efficient use and conservation of water.

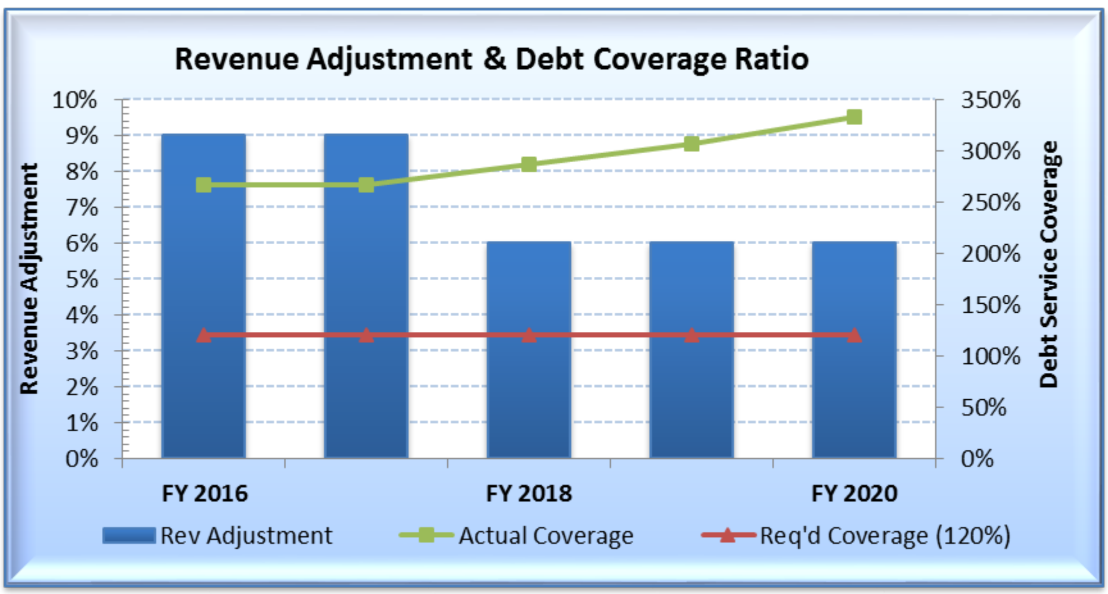
The Agency has a diversified revenue structure; however, each revenue source is dedicated to a specific expense. In order to recover the O&M cost for supplying water, the Agency collects wholesale water rates from purveyors. The expansion of water supply capacity through capital projects for new customers is financed by a facility capacity fee (FCF) levied on new customers only. The main source for imported water for the Agency is the SWP and the funds covering the annual cost related to this project are collected as a specific Agency-Set-Tax (AST). An additional revenue source is the 1 percent ad valorem property tax from the service area of the Agency, used to fund capital replacement and enhancement projects for current customers, as well as for other costs not covered by the above

[1] Fiscal Year: A fiscal year is July 1st through June 30th

mentioned sources. Overall, the Agency's diversified revenue structure mitigates the risk associated with exposure to a particular revenue source; however, since some revenue sources are earmarked for specific expenses, their volatility presents a challenge to securing the financing of specific services provided by the Agency.

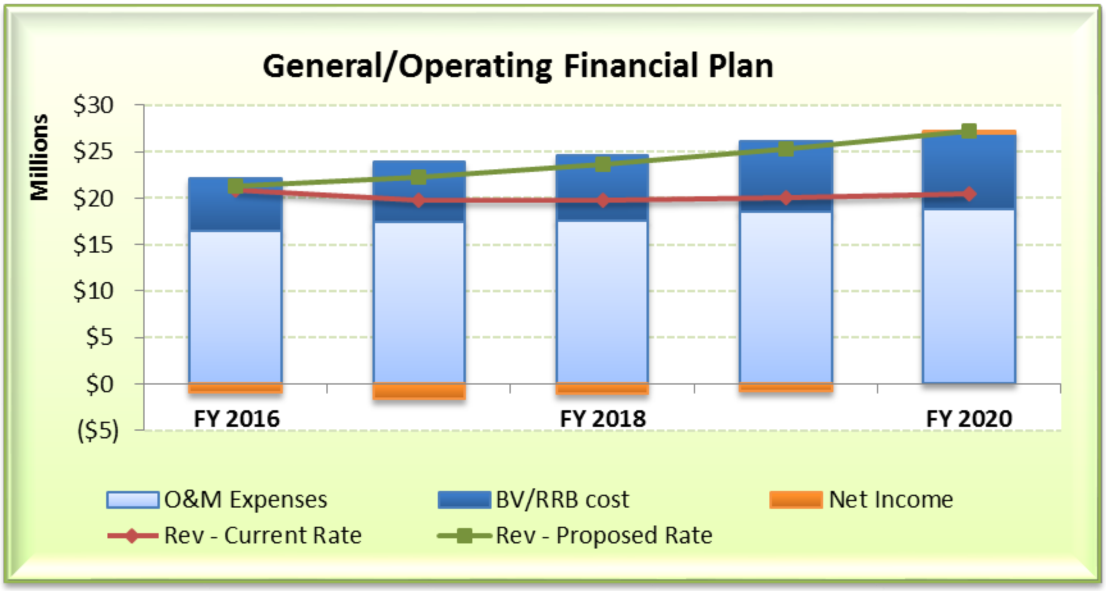
The projections for the Agency's expenditures are based on the numbers in the FY 2016 budget and respective assumptions for growth rates and inflation. The diversified structure of revenue and expenditure of the Agency is reflected in the financial model by relating each specific revenue source to the respective expenditure item. Operating expenditure growth is partly driven by the gradual transition of Buena Vista/Rosedale Rio Bravo (BV/RRB) water costs from the 1 percent tax funding to the wholesale water fund. In Figure 1, the blue bars, corresponding with the left axis, show the proposed revenue adjustments for the wholesale water rates that will cover the increasing revenue requirements. The FY 2016 revenue adjustment will occur in April, all others will occur in January of their respective year. The red line, corresponding with the right axis, stands for the required debt coverage ratio of 120 percent while the green line is for the debt coverage ratio after revenue adjustments and assumptions for FCF and 1 percent property tax increase.

Figure 1: *Revenue Adjustment and Debt Coverage Ratio*



A comparison between the revenue from current rates and revenue requirements to recover the cost of operation, which corresponds to the O&M General Fund of the Agency, shows a significant gap which expands during the projection period. This suggests that the Agency has to increase its rates in order to meet the requirements. On **Figure 2**, the light blue bars represent the current budgeted and forecasted expenditures and the dark blue parts are the BV/RRB costs. The red line, which shows revenues under the current rates, demonstrates that they will not be sufficient to recover the cost throughout the projection period; the green line represents the proposed revenue adjustments. According to the projections, there will be some years with negative net income (as illustrated by the orange bars) but overall, the fund will be at a surplus at the end of the projection period.

Figure 2: *General/Operating Financial Plan*



Funding of the large capital improvement plan (CIP) is secured by both property tax and FCF revenue since capital projects benefit both current and new customers. The majority of CIP funding comes from debt proceeds as represented by the blue bars on **Figure 3;** the smaller orange bars show funding from the FCF and property tax revenue. The debt exposure of the Agency is relatively high as evidenced by the annual debt service payments which are equal or higher than the expenditure needed for the O&M General Fund during most of the projection period.

Figure 3: *CIP Funding Plan*

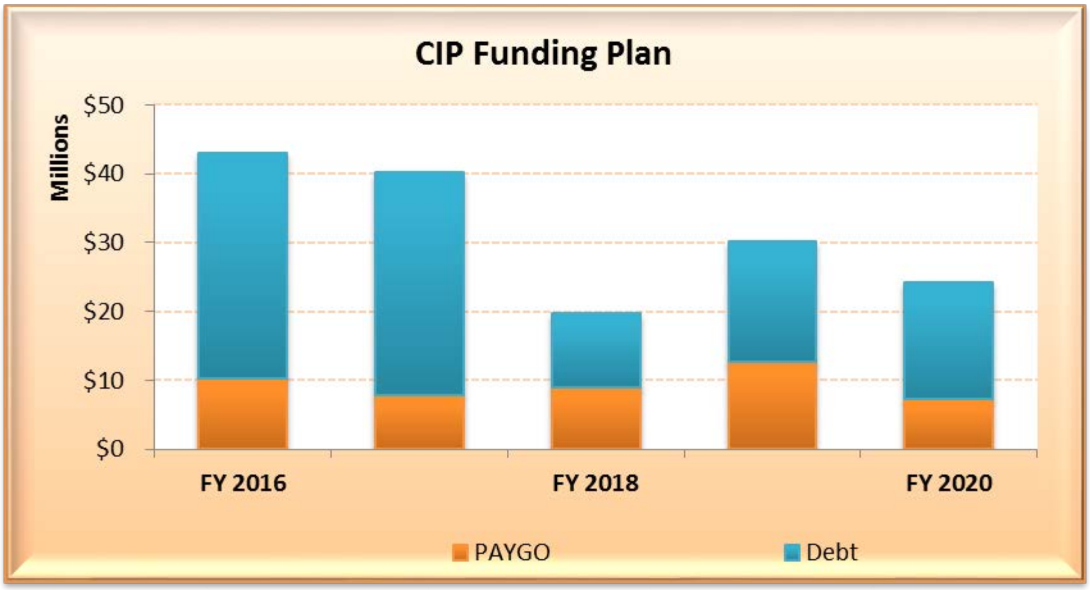
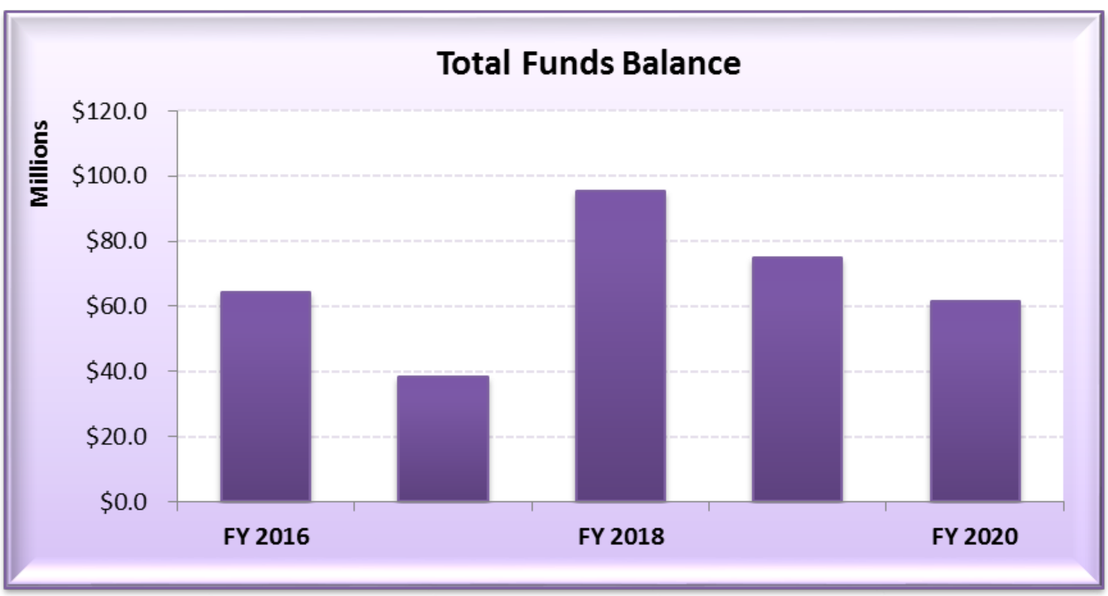


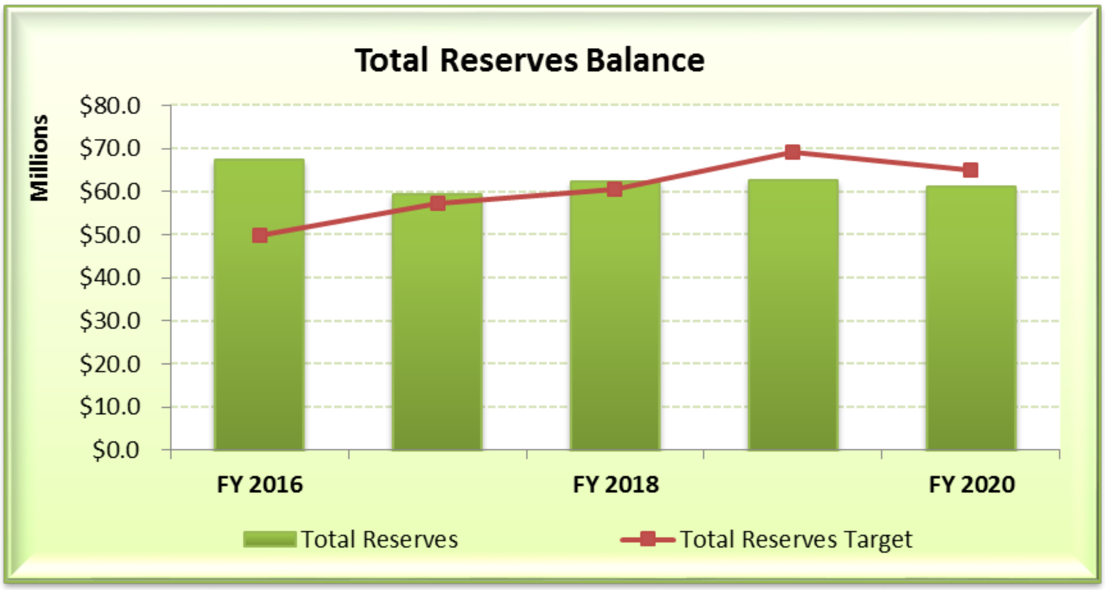
Figure 4 shows the total ending fund balances for all of the Agency's funds including operating, capital improvement, replacement and refurbishment (R&R) and SWP funds. The decline in FY 2017 is mostly driven by the aggressive capital improvement plan and large debt service payments. The large fund increase in FY 2018 is due to a $70.4 million debt issuance to pay for debt funded capital projects.

Figure 4: *Total Funds Balance*



The Agency's current reserves policy requires an operating reserve, a capital reserve, a debt service reserve, a general reserve and an R&R reserve. All reserve funds meet the respective targets during the study period, with the exception of FY 2019, which has higher O&M expenses due to it being an election year, and has 40% higher CIP needs than the previous year. These factors lead to a sudden increase in fund targets. In the subsequent year the CIP and O&M needs are projected to recede, and the fund targets will again be made. The fund targets are shown in **Figure 5.**

Figure 5: *Total Reserves Balance*



The proposed rate structure consists of two components: an imported demand fixed charge, and a variable charge. The first charge is set to recover the fixed costs incurred by the Agency, but, in contrast with the current fixed charge, it will recover only 80 percent instead of 100 percent.

(i) The imported demand fixed charge is set to recover 80 percent of the Agency's fixed costs. The allocation of the charge among the retail purveyors is based on the share of each purveyor in the consumption of imported water during the past ten years. This approach ensures a direct link between the consumption of imported water and the amount of costs covered.

(ii) The second component in the rates framework is the variable charge. Unlike the existing variable charge, the new rate is designed to recover not only the variable costs related to water consumption but also 20 percent of the fixed costs incurred by the Agency.

The rationale for such a rate structure is to ensure better allocation of the cost of service based on imported water demand by purveyors. It recognizes that imported water is an important stand-by supply source available to all purveyors to meet future water demand in the region. In addition, the fixed charges recover a large share of the fixed cost, thus providing some stability in revenue. All of the charges are related to the water consumption of the retail purveyors and provide incentives for conservation and efficient water use since charges are likely to decline if a purveyor puts more effort in conserving compared to other purveyors.

Table 1 shows the proposed rates for FY 2016 to FY 2020.

Table 1: *Proposed Rates FY 2016-FY 2020*

Proposed Rate Structure	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Fixed Charge ($/AF)*	$355.05	$397.78	$436.07	$484.54	$538.00
Variable Rate ($/AF)	$204.80	$218.18	$223.18	$234.38	$244.46

*charges are assessed based on a 10 year rolling average of imported demand

3. INTRODUCTION

Castaic Lake Water Agency (Agency) engaged Raftelis Financial Consultants (RFC) to conduct a comprehensive financial plan and rate study to ensure financial sufficiency and stability for the agency and equitability and predictability for its customers. The Agency requested that RFC review and develop wholesale water rates that would meet the Agency's overall objectives. To achieve this, RFC conducted a series of workshop with the retail purveyors to receive inputs on the proposed rate structure.

3.1. BACKGROUND INFORMATION

Castaic Lake Water Agency is a public water wholesaler founded in 1962. It supplements groundwater supply to the Santa Clarita Valley (SCV) with imported water from Northern California sold to the purveyors in SCV. Main water sources include the State Water Project (SWP), the Buena Vista Water Storage District (BVWSD) and Rosedale Rio-Bravo Water Storage District (RRBWSD). The share of imported water in total water consumption of the purveyors is about one half. The Agency serves four retail purveyors: the Los Angeles County Water Works District #36 (LACWWD#36), Newhall County Water District (NCWD), Santa Clarita Water Division (SCWD), and Valencia Water Company (VWC). The area served by the retail providers is approximately 195 square miles and the population is approximately 287,000. The diversity of water supply in the area is preserved by conjunctive use of both groundwater and imported water by purveyors, thus optimizing the supply from both sources.

Currently, the Agency's wholesale rates consist of two components – fixed and variable charges. The revenue from the fixed charge recovers all of the Agency's operating fixed costs, while the revenue from the variable charge recovers the variable operating costs. The latter charge is defined as unit charge per acre-foot of water sold to the purveyors during the fiscal year. The allocation of fixed operating costs among purveyors is based on their average total (including groundwater and imported water) water consumption in the previous three years. This cost allocation mechanism ensures both financial sufficiency and stability for the Agency. The Agency engaged RFC to hold a series of workshops with retail purveyors to develop a rate structure that reflects their needs.

3.2. PURPOSE OF THE STUDY

The main objectives of the study are:

- to ensure financial sufficiency by meeting the operations and maintenance (O&M) costs, capital replacement and improvement cost and to provide the necessary reserves for the functioning of the Agency.
- to provide a rate design framework consistent with the cost of service guidelines used in the industry that adequately and fairly distributes the full cost of service to the retail purveyors of the Agency based on the demand they place on the Agency's system.
- to encourage efficient use and conservation of water.

The study uses the industry standards for development of the new rate structure by applying the revenue requirement method for rate calculation. A financial plan is developed to determine and compare the generated revenue with the O&M, debt service, capital replacement and reconstruction costs in order to evaluate the need for rate adjustments. With the extensive input from the purveyors and Agency staff, RFC proposes a rate structure which aims to achieve sufficient revenue and relative stability of Agency operation, provides an equitable cost allocation among all retail purveyors, and creates incentives for water conservation and efficient use.

Projections presented in the study are based on historic data, existing legislation, and reasonable assumptions regarding Agency operations and economic developments. Any significant changes in legal environment or assumptions would require additional analysis and adjustments to the proposed rates structure. The proposed rates also satisfy the rate setting guidelines detailed in the American Water Work association's (AWWA) Manual M-1 "*Principles of Water Rates Fees and Charges*" that "the cost of service should take into consideration the specific conditions of service, specific type and level of service provided, and consideration of the way in which the utility actually provides service to its customers".[2]

[2] American Water Works Association, *Principles of Water Rates, Fees, and Charges*, 2012, p. 162

4. FINANCIAL PLAN

This section reviews the revenue forecasts, O&M expenses, capital improvement, debt service and reserve requirements for the period FY (Fiscal Year) 2016 to FY 2020. Projected revenues are compared to costs in order to assess potential revenue shortages and the need for rates adjustments over the planning horizon.

4.1. ASSUMPTIONS

The projections contained in this report are based on assumptions regarding economic developments, financial indicators, and water demand. The report includes FY 2016 as a budget year and projections for the period FY 2016 to FY 2020. **Table 2** presents the summary of assumptions. The main economic assumptions include inflation factors for labor, utilities, and supply prices, as well as overall inflation rates, and are mainly used in forecasting the expenses of the Agency. The financial assumptions are applied to obtain the interest revenue and to escalate operating expenses. Demand projections by categories of water are based on extrapolation of current data and assumed growth factors. Consequently, the imported water demand is expected to gradually increase by 1.8 percent per year in line with total demand, while recycled water demand is projected to remain the same.

4.2. REVENUE SOURCES

The Agency has a diversified revenue structure; however, each revenue source is dedicated to a specific expense. In order to recover the O&M cost for supplying water, the Agency collects wholesale water rates from purveyors. The expansion of water supply capacity through capital projects for new customers is financed by a facility capacity fee (FCF) levied on new customers only. The main source for imported water for the Agency is the SWP and the funds covering the annual cost related to this project are collected as a specific Agency-Set-Tax (AST). An additional revenue source is the 1 percent ad valorem property tax from the service area of the Agency, used to fund capital replacement and enhancement projects for current customers, as well as for other costs not covered by the above mentioned sources. In addition, there are other revenues, not related to the water sales, such as accumulated interest, laboratory fees, etc. which represent less than 5 percent of total revenue.

Table 2: *Key Assumptions*

	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Inflation Factors					
General	3.0%	3.0%	3.0%	3.0%	3.0%
Personnel	3.0%	3.0%	3.0%	3.0%	3.0%
Utilities	5.0%	5.0%	5.0%	5.0%	5.0%
Supplies	3.0%	3.0%	3.0%	3.0%	3.0%
Capital Projects	0.0%	2.5%	2.5%	2.5%	2.5%
Financing Assumptions					
Reserves Interest Rate	0.8%	1.0%	1.5%	2.0%	2.5%
Debt Interest Rate	5.0%	5.0%	5.0%	5.0%	5.0%
Debt Term (years)	30	30	30	30	30
Issuance Cost	2.0%	2.0%	2.0%	2.0%	2.0%
Miscellaneous Revenue Growth Rate	3.0%	3.0%	3.0%	3.0%	3.0%
Imported Water Growth Rate					
Valencia Water Company	1.8%	1.8%	1.8%	1.8%	1.8%
Newhall County Water District	1.8%	1.8%	1.8%	1.8%	1.8%
L.A. County Waterworks District #36	1.8%	1.8%	1.8%	1.8%	1.8%
CLWA Santa Clarita Water Division	1.8%	1.8%	1.8%	1.8%	1.8%
Saugus Well Growth Rate					
Valencia Water Company	0.0%	0.0%	0.0%	0.0%	0.0%
Newhall County Water District	0.0%	0.0%	0.0%	0.0%	0.0%
L.A. County Waterworks District #36	0.0%	0.0%	0.0%	0.0%	0.0%
CLWA Santa Clarita Water Division	0.0%	0.0%	0.0%	0.0%	0.0%
Recycled Water Growth Rate					
Valencia Water Company	0.0%	0.0%	0.0%	0.0%	0.0%
Newhall County Water District	0.0%	0.0%	0.0%	0.0%	0.0%
L.A. County Waterworks District #36	0.0%	0.0%	0.0%	0.0%	0.0%
CLWA Santa Clarita Water Division	0.0%	0.0%	0.0%	0.0%	0.0%
Total Water Demand Growth Rate					
Valencia Water Company	1.8%	1.8%	1.8%	1.8%	1.8%
Newhall County Water District	1.8%	1.8%	1.8%	1.8%	1.8%
L.A. County Waterworks District #36	1.8%	1.8%	1.8%	1.8%	1.8%
CLWA Santa Clarita Water Division	1.8%	1.8%	1.8%	1.8%	1.8%
Water Accounts Growth Rate					
Valencia Water Company	1.8%	1.8%	1.8%	1.8%	1.8%
Newhall County Water District	1.8%	1.8%	1.8%	1.8%	1.8%
L.A. County Waterworks District #36	1.8%	1.8%	1.8%	1.8%	1.8%
CLWA Santa Clarita Water Division	1.8%	1.8%	1.8%	1.8%	1.8%

4.2.1. Revenue from current wholesale water rates

Since FY 2013, the wholesale water rates consist of two components – fixed and variable rates. As with most water supply utilities, fixed operation costs represent the larger part of their expenses and to ensure financial sufficiency and stability, the Agency has adopted a rate structure which is consistent with the cost structure they face. In FY 2016, the Agency is expected to have 90 percent fixed and 10 percent variable operating cost. Currently, the fixed wholesale water charge is set to recover all of the fixed operating costs of the Agency. The allocation of the fixed costs among the purveyors is based on the share of each purveyor in the average total water consumption during the last three years.

The annual changes of the Agency's water sales have varied significantly in the last five years, ranging from an increase of 16 percent to a decline of 28.5 percent, mainly driven by climatic factors and respective measures for efficient water use and conservation. For the projection period, the Agency expects, on average, 1.8 percent annual increase in total water demand, which is likely to translate in the same growth of imported water demand. Water sales from Saugus 1 and 2 wells are expected to remain at the current level. **Table 3** presents the budgeted and projected water sales in AF by source and purveyor. The overall amount of water sales in FY 2016 is expected to be slightly less than 35,000 AF.

Table 3: *Budgeted and Projected Water Sales*

Wholesale Water Sales (AF)	*Budgeted* FY 2016	*Projected* FY 2017	*Projected* FY 2018	*Projected* FY 2019	*Projected* FY 2020
Valencia Water Company					
Imported	9,990	10,170	10,353	10,539	10,729
Saugus 1 and 2 Well	0	0	0	0	0
Recycled	450	450	450	450	450
Subtotal Valencia Water Company	11,265	11,445	10,803	10,989	11,179
Newhall County Water District					
Imported	1,934	1,969	2,004	2,040	2,077
Saugus 1 and 2 Well	1,100	1,100	1,100	1,100	1,100
Recycled	0	0	0	0	0
Subtotal Newhall County Water District	3,034	3,069	3,104	3,140	3,177
L.A. County Waterworks District #36					
Imported	0	0	0	0	0
Saugus 1 and 2 Well	0	0	0	0	0
Recycled	0	0	0	0	0
Subtotal L.A. County Waterworks District #36	0	0	0	0	0
CLWA Santa Clarita Water Division					
Imported	18,031	18,356	18,686	19,022	19,364
Saugus 1 and 2 Well	3,000	3,000	3,000	3,000	3,000
Recycled	0	0	0	0	0
Subtotal CLWA Santa Clarita Water Division	20,620	20,937	21,260	21,589	21,924
TOTAL WHOLESALE WATER SALES	**34,505**	**35,045**	**35,593**	**36,151**	**36,720**
Imported	29,955	30,495	31,043	31,601	32,170
Saugus 1 and 2 Well	4,100	4,100	4,100	4,100	4,100
Recycled	450	450	450	450	450

Water sales are the third largest revenue source in the budget. In FY 2016, water sales are expected to account for about 22 percent of total revenue, with fixed and variable charge revenues accounting for 16 and 6 percent, respectively. **Table 4** shows the budgeted and forecast revenue sources over the projected period assuming no change in rates.

Table 4: *Budgeted and Projected Revenues*

Description	Budgeted FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Property Taxes	$23,058,300	$23,708,083	$24,376,177	$25,063,097	$25,769,375
Agency-Set Tax Revenues	$27,809,800	$30,783,500	$32,372,675	$34,041,309	$35,793,374
Facility Capacity Fee Revenue	$8,500,000	$9,100,000	$12,748,816	$13,969,900	$12,752,600
Water Sales - Agency	$4,657,764	$4,773,804	$4,891,241	$5,012,389	$5,137,497
Water Sales - Fixed Charge Revenue	$13,855,402	$13,754,838	$13,489,019	$13,651,370	$13,897,094
Laboratory Revenues	$106,000	$109,180	$112,455	$115,829	$119,304
Communications Revenues	$170,000	$175,100	$180,353	$185,764	$191,336
Interest Income - Operating	$91,200	$91,194	$120,508	$147,427	$184,110
Interest Income - Facility Fee Fund	$302,400	$302,400	$302,400	$302,400	$302,400
Interest Income - Property Tax	$1,246,600	$650,407	$901,113	$1,069,361	$1,333,867
Interest Income - SWCF	$234,300	$312,306	$473,143	$640,320	$816,408
Interest Income - Capital Project (COP)	$5,000	$87,451	$377,773	$963,438	$835,234
Interest Income - Debt Reserves (Trustee)	$246,000	$149,788	$149,788	$149,788	$149,788
Settlement Agreement (CIP)	$700,000	$0	$0	$0	$0
Settlement Agreement (O&M)	$1,200,000	$1,236,000	$1,273,080	$1,311,272	$1,350,611
Grants and Reimbursements (Capital)	$1,372,111	$303,042	$318,194	$334,103	$350,809
Grants and Reimbursements (O&M)	$1,050,200				
Other	$19,100	$19,100			
TOTAL REVENUES	**$84,624,176**	**$85,556,192**	**$92,086,733**	**$96,957,767**	**$98,983,807**

The main revenue source with 31 percent share in total is the Agency-Set-Tax, a pass-through payment, specifically collected to cover the costs of operating the SWP. The other important financing item is the 1 percent property tax which is used largely to pay existing debt and to generate funds for capital improvement benefitting the current customers of the Agency. It also provides financing for other expenditures that are not covered by specific revenue items. The property tax is collected by the state and there are risks to it, including a reduction of the tax rate by the state or adverse developments in the real estate market that would affect the value of the property and lower the revenues from that tax.

An additional source of revenue is the FCF which accounts for 14 percent of total revenue and is also used to repay part of the existing debt, as well as to fund investments for new customers. Its contribution to the budget depends on economic developments and it is likely to increase if the economy continues to recover in the coming years.

Overall, the Agency's diversified revenue structure mitigates the risk associated with a particular revenue source. However, since some revenue sources are earmarked for specific expenses, their volatility presents a challenge to securing the financing of specific services provided by the Agency.

4.3. REVENUE REQUIREMENTS

The study uses a method for rate determination based on the revenue requirements concept which ensures adequate annual revenues for the operation of the Agency. This method is consistent with the industry standards and best practices. It compares the projected revenues from rates with the forecasts for O&M and capital reserve expenses to estimate the potential of the existing rates to cover the expenses. The diversified structure of revenue and expenditure of the Agency is reflected in the financial model by comparing each specific revenue source to the respective expenditure item. If revenues are lower than expenses, a change in rate level is needed to cover the deficit. As revenues were discussed earlier, the next subsections will focus on O&M expenditures, existing debt service, capital expenses, and reserve funding.

4.3.1. *O&M General Fund*

The O&M General Fund includes expenses that are necessary for the operation of the Agency and are funded by the wholesale water rates. **Table 5** shows a summary of O&M expenses by function.

Table 5: *Estimated and Projected O&M Expenses*

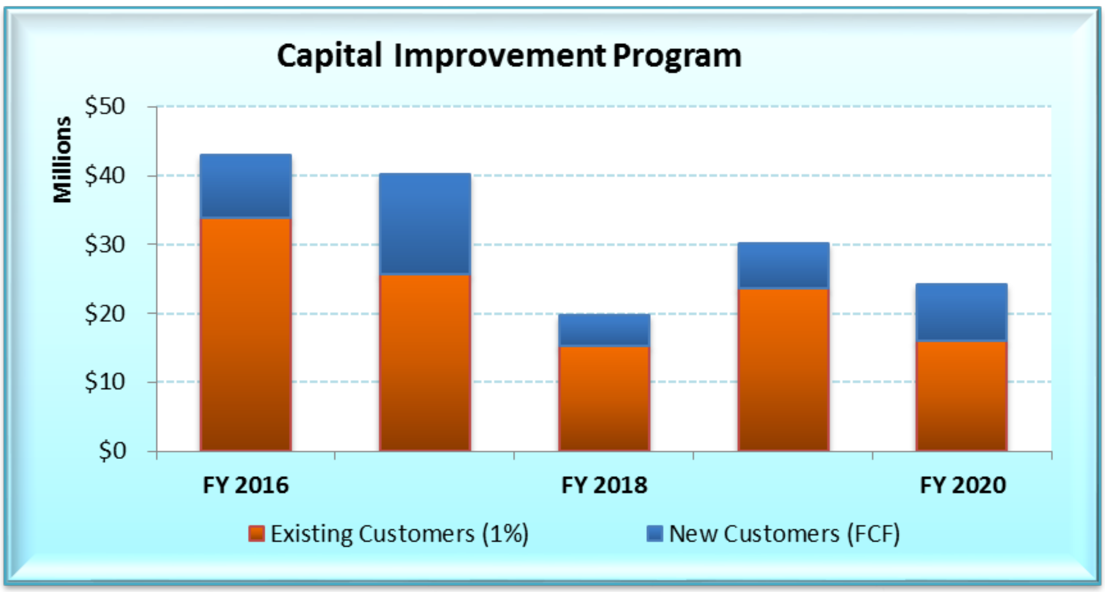
O&M EXPENSES SUMMARY	Budgeted FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Management	$1,901,300	$2,216,500	$1,922,495	$2,340,670	$2,039,575
Administration	$4,729,200	$4,761,300	$4,906,439	$5,056,047	$5,210,264
Engineering	$903,500	$730,400	$752,312	$774,881	$798,128
Maintenance	$2,995,700	$3,302,100	$3,401,163	$3,503,198	$3,608,294
Water Quality Compliance	$926,900	$1,014,700	$1,045,141	$1,076,495	$1,108,790
Water Resources	$5,709,800	$6,524,500	$7,001,049	$7,517,745	$8,077,419
Water Treatment Operations	$5,114,600	$5,479,700	$5,716,596	$5,964,199	$6,223,042
Total Operating Expenditures	**$22,281,000**	**$24,029,200**	**$24,745,195**	**$26,233,236**	**$27,065,512**

The total O&M expenses are expected to be around $22.3 million in FY 2016 and to increase by 18 percent in 5 years. The main drivers for this increase are the assumed inflation factors and water demand growth rates, as well as the transfer of the Buena Vista and Rosedale-Rio Bravo Water Storage (BV/RRB) agreement to the O&M General fund. A large increase in the Water Resources Outside Services budget item also had a substantial impact on the budget increase seen in FY 2016. In FY 2015, the Water Resources Outside Services line item's budgeted expense was less than $2 million; in FY 2016, it increased to nearly $3.3 million and is held constant at $3.2 million for the duration of the study period. These funds are provided for water efficiency programs. The BV/RRB agreement is essentially a water purchase of 11,000 AF annually on take-or-pay basis which used to be funded by the property tax revenue. However, following a recommendation by RFC which established that it is in practice an operational expense and is important element for water pricing; in 2013 the Agency started a gradual transfer of the BV/RRB cost to the O&M General Fund at the rate of 500 AF per year. In **Table 5** the transfer of BV/RRB is included in the Water Resources line item.

4.3.2. Capital Improvement Plan (CIP)

The total CIP costs in FY 2016 are expected to be around $43 million, driven by ongoing major capital projects. Funding of the CIP is secured by both property tax and FCF revenue since capital projects benefit current and new customers. **Figure 6** shows the relative shares funded by the new and existing customers through the FCF and the 1 percent property tax, respectively. The allocation is based on a project-by-project distribution of benefits between the two types of customers.

Figure 6: *Capital Improvement Program*



The Agency divides the CIP into five categories, including major and minor capital projects, new equipment and planning, as well as repair and replacement (R&R). **Table 6** lists the inflation-adjusted projected CIP expenditures by categories. The funding is secured through property tax, FCF, and existing bond proceeds and future debt issuance. Since the equipment of the Agency is relatively new, the R&R costs are expected to be around $350,000 per year, unadjusted for inflation. However, this is likely to change with the aging of the equipment. The Agency started an R&R reserve fund in FY 2014 to support future R&R costs.

Table 6: *Capital Improvement Plan Adjusted for Inflation*

Line No.	Project Description	Budgeted FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
1	Major Capital Projects	$33,822,000	$34,881,160	$13,744,276	$24,470,186	$18,807,868
2	Minor Capital Projects	$3,201,000	$2,042,313	$2,093,370	$2,145,705	$2,199,347
3	Planning, Studies and Administration	$3,672,055	$2,410,577	$3,014,176	$2,712,605	$2,374,754
4	New Capital Equipment	$880,200	$425,375	$436,009	$446,910	$458,082
5	Repair and Replacement Projects	$1,405,000	$363,875	$372,972	$382,296	$391,854
6	**TOTAL CIP**	**$42,980,255**	**$40,123,299**	**$19,660,804**	**$30,157,701**	**$24,231,905**

4.3.3. Debt Service Requirements

Currently, the Agency has outstanding 1999, 2006A, 2008A, 2010A, 2014A and 2015 Certificates of Participation (COPs), with the 2008A and 2014A COPs expiring in FY 2021. Also, the Agency is planning three new bond issuances in FY 2016, FY 2018 and FY 2022.

The cost of debt service is allocated between new and existing customers depending on the capital project as shown in **Table 7**. In FY 2016, the debt service associated with projects for new customers is expected to represent 77 percent of total debt service and FCF revenue will be used to finance it. Existing customers will repay about 23 percent through the one percent property tax. However, due to the slow economic recovery and low growth of the system, the FCF revenues are not likely to be sufficient to finance the new customers' share in debt service. For the next five years, it is projected that a transfer from the 1 percent tax fund will be needed. As growth increases, the FCF fund will generate resources to meets its obligations and return the transfer.

Overall, the debt level is relatively high and it creates risks for the Agency as it has to generate sufficient funds to service the debt and to maintain coverage ratios. The annual debt service payments during most of the projection period are equal or higher than the expenditure needed for the O&M General Fund. Most of the revenue sources are dependent on macroeconomic developments and cannot be controlled by the Agency.

4.3.4. Debt Service Coverage

The Agency must meet debt service coverage requirements on its outstanding bond issues. Coverage requirements typically vary between 100 percent and 160 percent or higher. The Agency's required debt coverage is 120 percent, which means that the Agency's adjusted net income revenues shall amount to at least 120 percent of annual debt service. The system's revenue include funds derived from the ownership and operation of the system, including water sales revenues from the Agency's customers, miscellaneous service charges, property taxes and interest income. Annual Debt Service includes annual principal and interest payments on outstanding debt.

The Agency's debt coverage ratio currently exceeds the required minimum of 120 percent. However, since the revenues from the Agency's operation represent about 30 percent of total revenue used in the calculation of the debt coverage ratio and the rest of the revenues depend on external factors, the ability of the Agency to raise revenue from wholesale rates to meet its debt service is very limited.

Table 7: *Existing Debt Service*

		% New Customers	% Existing Customers	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
2014A COP		(updated)						
	Principal			$2,535,000	$2,595,000	$2,685,000	$2,780,000	$2,920,000
	Interest			$633,975	$557,025	$464,400	$355,100	$226,500
Subtotal		78.4%	21.6%	$3,168,975	$3,152,025	$3,149,400	$3,135,100	$3,146,500
2008A COP								
	Principal			$4,950,000	$5,150,000	$5,375,000	$5,600,000	$5,800,000
	Interest			$296,872	$353,570	$364,958	$345,417	$249,303
Subtotal		78.4%	21.6%	$5,246,872	$5,503,570	$5,739,958	$5,945,417	$6,049,303
2006A COP								
	Principal			$1,610,000	$1,675,000	$1,745,000	$1,830,000	$1,920,000
	Interest			$1,694,776	$1,629,076	$1,551,951	$1,462,576	$1,368,826
Subtotal		77.5%	22.6%	$3,304,776	$3,304,076	$3,296,951	$3,292,576	$3,288,826
2010A COP								
	Principal			$2,620,000	$2,740,000	$2,865,000	$2,995,000	$3,115,000
	Interest			$2,665,781	$2,542,606	$2,413,906	$2,289,056	$2,158,681
Subtotal		87.7%	12.3%	$5,285,781	$5,282,606	$5,278,906	$5,284,056	$5,273,681
2015 COP								
	Principal			$475,000	$2,065,000	$2,105,000	$2,165,000	$2,250,000
	Interest			$2,280,943	$2,983,950	$2,931,725	$2,856,850	$2,768,550
Subtotal		62.7%	37.3%	$2,755,943	$5,048,950	$5,036,725	$5,021,850	$5,018,550
2016 N								
	Principal							
	Interest			$564,063	$2,256,250	$2,256,250	$2,256,250	$2,256,250
Subtotal		39.5%	60.5%	$564,063	$2,256,250	$2,256,250	$2,256,250	$2,256,250
2018 N								
	Principal							
	Interest					$930,891	$3,723,563	$3,723,563
Subtotal		39.5%	60.5%	$0	$0	$930,891	$3,723,563	$3,723,563
TOTAL EXISTING DEBT SERVICE				**$20,326,410**	**$24,547,477**	**$25,689,081**	**$28,658,812**	**$28,756,673**

4.4. CASH FLOW WITHOUT REVENUE ADJUSTMENT

Revenues from current rates are shown against operating expenses in **Table 8** below.

Table 8: *O&M General Fund Cash Flow*

	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Revenue					
Water Sales - Existing Rate	$17,574,015	$17,540,487	$17,342,697	$17,574,318	$17,890,678
Total Additional Revenue	$0	$0	$0	$0	$0
Water Sales - Saugus 1 and 2 Wells	$701,100	$736,155	$772,963	$811,611	$852,191
Laboratory Revenues	$106,000	$109,180	$112,455	$115,829	$119,304
Communications Revenues	$170,000	$175,100	$180,353	$185,764	$191,336
Settlement Agreement (O&M)	$1,200,000	$1,236,000	$1,273,080	$1,311,272	$1,350,611
Interest Income	$70,919	$75,030	$48,625	$0	$0
Grants and Reimbursements (O&M)	$1,050,200	$0	$0	$0	$0
Other	$19,100	$19,100	$0	$0	$0
Total Revenue	**$20,891,334**	**$19,891,052**	**$19,730,172**	**$19,998,794**	**$20,404,120**
O&M Expenses					
Management	$1,901,300	$2,216,500	$1,922,495	$2,340,670	$2,039,575
Administration	$4,679,200	$4,711,300	$4,856,439	$5,006,047	$5,160,264
Engineering	$903,500	$730,400	$752,312	$774,881	$798,128
Maintenance	$2,995,700	$3,302,100	$3,401,163	$3,503,198	$3,608,294
Water Quality Compliance	$926,900	$1,014,700	$1,045,141	$1,076,495	$1,108,790
Water Resources	$5,709,800	$6,524,500	$7,001,049	$7,517,745	$8,077,419
Water Treatment Operations	$5,047,600	$5,412,700	$5,649,596	$5,897,199	$6,156,042
Total O&M Expenses	**$22,164,000**	**$23,912,200**	**$24,628,195**	**$26,116,236**	**$26,948,512**
Net Cash Flow	**($1,272,666)**	**($4,021,148)**	**($4,898,022)**	**($6,117,442)**	**($6,544,392)**
Coverage Ratio	2.38	2.14	2.37	2.40	2.34

Note that the above cash flow has a different Total O&M Expenses total than shown in **Table 5**. This difference is accounted for by the below table. The difference between the Total O&M Expenses line item in **Table 8** and the Total O&M Expenses line item in **Table 5** is the sum of the O&M Expenses RW Purchase and Admin Cost in **Table 9.**

Table 9: *O&M Recycled Water Cash Flow*

	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Recycled Water Sales	$238,050	$252,000	$264,600	$277,830	$291,722
O&M Expenses - RW					
Purchase	$67,000	$67,000	$67,000	$67,000	$67,000
Admin Cost	$50,000	$50,000	$50,000	$50,000	$50,000
Net Cash Flow	**$171,050**	**$185,000**	**$197,600**	**$210,830**	**$224,722**
Cost of RW ($/AF)	$149	$149	$149	$149	$149
Admin Cost ($/AF)	$111	$111	$111	$111	$111
Total RW Rate ($/AF)	**$260**	**$260**	**$260**	**$260**	**$260**
Current RW Demand (AF)	450	450	450	450	450
Projected RW Demand (AF)	450	450	450	450	450

4.5. PROPOSED REVENUE ADJUSTMENT

A comparison between the revenue from current rates and revenue requirements to recover the cost of operation of the Agency shows that there is a significant gap. This revenue shortfall expands during the projection period, implying that the Agency has to increase its rates in order to meet the requirements.

After discussions with the Agency and considering the available information, RFC proposes an increase in wholesale water rates to meet the revenue requirements. The proposed rate increases are summarized below in **Table 10**.

Table 10: *Revenue Adjustment & Adjustment Month*

Fiscal Year	Revenue Adjustment	Month Effective
FY 2016	9.0%	April
FY 2017	9.0%	January
FY 2018	6.0%	January
FY 2019	6.0%	January
FY 2020	6.0%	January

The annual rate increase, are shown in **Table 11**. The ending balances, including the proposed rate increase, of different funds within the Agency are shown in **Table 12.** The Capital Improvement Fund includes revenue from the 1 percent property tax and FCF, as well as debt funding. Expenses include all capital project expenditures and existing debt service payments.

Table 11: *O&M General Fund Cash Flow (including proposed rate increase)*

	Projected FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Revenue					
Water Sales - Existing Rate	$17,574,015	$17,540,487	$17,342,697	$17,574,318	$17,890,678
Total Additional Revenue	$395,415	$2,439,005	$3,880,307	$5,222,517	$6,708,962
Water Sales - Saugus 1 and 2 Wells	$701,100	$736,155	$772,963	$811,611	$852,191
Laboratory Revenues	$106,000	$109,180	$112,455	$115,829	$119,304
Communications Revenues	$170,000	$175,100	$180,353	$185,764	$191,336
Settlement Agreement (O&M)	$1,200,000	$1,236,000	$1,273,080	$1,311,272	$1,350,611
Interest Income	$72,402	$91,194	$120,508	$147,427	$184,110
Grants and Reimbursements (O&M)	$1,050,200	$0	$0	$0	$0
Other	$19,100	$19,100	$0	$0	$0
Total Revenue	**$21,288,232**	**$22,346,221**	**$23,682,363**	**$25,368,738**	**$27,297,193**
O&M Expenses					
Management	$1,901,300	$2,216,500	$1,922,495	$2,340,670	$2,039,575
Administration	$4,679,200	$4,711,300	$4,856,439	$5,006,047	$5,160,264
Engineering	$903,500	$730,400	$752,312	$774,881	$798,128
Maintenance	$2,995,700	$3,302,100	$3,401,163	$3,503,198	$3,608,294
Water Quality Compliance	$926,900	$1,014,700	$1,045,141	$1,076,495	$1,108,790
Water Resources	$5,709,800	$6,524,500	$7,001,049	$7,517,745	$8,077,419
Water Treatment Operations	$5,047,600	$5,412,700	$5,649,596	$5,897,199	$6,156,042
Total O&M Expenses	**$22,164,000**	**$23,912,200**	**$24,628,195**	**$26,116,236**	**$26,948,512**
Net Cash Flow	**($875,768)**	**($1,565,979)**	**($945,832)**	**($747,498)**	**$348,680**
Coverage Ratio	2.41	2.31	2.64	2.76	2.80

Table 12: *Projected Net Available Funds Balances*

	Budgeted FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
General/O&M					
Beginning Balance	$4,945,725	$4,407,007	$2,588,978	$1,661,747	$753,069
Net Cash Flow	($704,718)	($1,380,979)	($748,232)	($536,668)	$573,402
Transfer to Operating Reserves	$166,000	($437,050)	($178,999)	($372,010)	($208,069)
Transfer from/(to) Other Funds					
Ending Balance	**$4,407,007**	**$2,588,978**	**$1,661,747**	**$753,069**	**$1,118,401**
Interest Income	*$72,402*	*$91,194*	*$120,508*	*$147,427*	*$184,110*
Capital Improvement Project Fund					
Beginning Balance	$11,713,256	$28,560,938	$4,163,491	$61,867,722	$41,419,412
Revenue	$85,258,311	$36,840,383	$111,063,799	$43,363,609	$41,423,592
Expenses	($48,326,900)	($45,456,817)	($24,911,002)	($35,302,895)	($29,248,468)
Transfers to Reserves	$0	$8,616,676	($2,909,272)	$0	$1,817,469
Debt Service Payments	($20,083,729)	($24,397,689)	($25,539,293)	($28,509,024)	($28,606,885)
Ending Balance	**$28,560,938**	**$4,163,491**	**$61,867,722**	**$41,419,412**	**$26,805,120**
State Water Contract Fund					
Beginning Balance	$32,456,455	$31,230,555	$31,542,861	$32,016,003	$32,656,324
Agency-Set Property Tax Revenue	$27,809,800	$30,783,500	$32,372,675	$34,041,309	$35,793,374
Interest Income	$234,300	$312,306	$473,143	$640,320	$816,408
State Water Project Expenses	($29,270,000)	($30,783,500)	($32,372,675)	($34,041,309)	($35,793,374)
Ending Balance	**$31,230,555**	**$31,542,861**	**$32,016,003**	**$32,656,324**	**$33,472,732**
Interest Income	*$237,948*	*$312,306*	*$473,143*	*$640,320*	*$816,408*
TOTAL FUND BALANCE					
Beginning Balance	$49,115,436	$64,198,500	$38,295,329	$95,545,473	$74,828,804
Ending Balance	$64,198,500	$38,295,329	$95,545,473	$74,828,804	$61,396,253

4.6. RESERVES POLICY

The Agency requires adequate cash reserves to meet operating, capital, and debt service requirements. Operating reserves may be used to meet ongoing cash flow requirements. Capital reserves are used to fund unexpected capital expenditures. The Agency's current reserves policy requires an operating reserve, a capital reserve, a debt service reserve, a general reserve, and repair and replacement (R&R) reserve.

Table 13 shows the projected balance in each of the reserve funds. Based on Agency documents, the operating reserves are equal to three months of operating expenditures. This reserve is designated to provide financial flexibility to respond quickly to emergency repairs; unanticipated operations and maintenance activities; local disasters or catastrophic events; costly regulatory requirements; water quality deficiencies; and other operating emergencies. Reserve targets that are not met are shown in red. While the reserve targets are projected to not be met in FY 2019 and FY 2020, it is projected that the Agency will be in attainment of all reserve targets from FY 2022 onwards.

Table 13: *Projected Reserves Balances*

		Budgeted FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
Operating Reserves						
Beginning Balance		$5,707,000	$5,541,000	$5,978,050	$6,157,049	$6,529,059
Transfer In		($166,000)	$437,050	$178,999	$372,010	$208,069
Transfer Out						
Ending Balance		**$5,541,000**	**$5,978,050**	**$6,157,049**	**$6,529,059**	**$6,737,128**
	Target	$5,541,000	$5,978,050	$6,157,049	$6,529,059	$6,737,128
R&R Reserve						
Beginning Balance		$1,955,600	$1,955,600	$1,955,600	$1,955,600	$1,955,600
Transfer In		$0	$0	$0	$0	$0
Transfer Out						
Ending Balance		**$1,955,600**	**$1,955,600**	**$1,955,600**	**$1,955,600**	**$1,955,600**
Debt Service Reserves						
Beginning Balance		$11,659,200	$11,659,200	$19,197,921	$20,339,525	$20,339,525
Transfer In (from 1% Property Tax)		$0	$7,538,721	$1,141,604	$0	$0
Transfer Out		$0	$0	$0	$0	$0
Ending Balance		**$11,659,200**	**$19,197,921**	**$20,339,525**	**$20,339,525**	**$20,339,525**
	Target	$11,659,245	$19,197,921	$20,339,525	$23,309,256	$23,407,117
Capital Reserves						
Beginning Balance		$10,231,300	$10,231,300	$5,370,215	$6,336,067	$6,336,067
Transfer In (from 1% Property Tax)		$0	$0	$965,853	$0	$0
Transfer Out			($4,861,085)	$0	$0	($1,817,469)
Ending Balance		**$10,231,300**	**$5,370,215**	**$6,336,067**	**$6,336,067**	**$4,518,598**
	Target	$7,880,211	$5,370,215	$6,336,067	$9,972,177	$4,518,598
Economic Uncertainties /Catastrophic Situations						
Beginning Balance		$38,072,700	$38,072,700	$26,778,388	$27,580,204	$27,580,204
Transfer In (from 1% Property Tax)		$0	$0	$801,816	$0	$0
Transfer Out			($11,294,312)	$0	$0	$0
Ending Balance		**$38,072,700**	**$26,778,388**	**$27,580,204**	**$27,580,204**	**$27,580,204**
	Target	$24,820,644	$26,778,388	$27,580,204	$29,246,607	$30,178,642
TOTAL RESERVES						
Beginning Balance		$67,625,800	$67,459,800	$59,280,174	$62,368,445	$62,740,455
Ending Balance		$67,459,800	$59,280,174	$62,368,445	$62,740,455	$61,131,055
Target Balance		$49,901,099	$57,324,574	$60,412,845	$69,057,098	$64,841,485

Capital reserves are equal to the sum of one year of the current fiscal year pay-as-you-go capital improvement projects, and are designated to fund capital improvement projects such as, but not limited to: minor capital projects; capital planning; studies and administration; new capital equipment. Debt service reserves are equal to annual debt service less restricted debt service reserve funds. They are restricted to helping to maintain debt service coverage and mitigate variability of revenues and expenditures. Reserve for Economic Uncertainties and Catastrophic Situations is the Agency's general reserves, equal to 500 days of operating expenditures less operating reserves. This level of liquidity is designed to maintain and perhaps enhance the Agency's credit rating. These reserves are designated for economic uncertainties and financial hardships; loss of significant revenue sources; local disasters or capital obligations; cash flow requirements; and unfunded mandates, including costly regulatory requirements and other such needs. The R&R reserve was established in 2014 for future capital needs as equipment ages and R&R costs exceed the current expenses of about $350,000 per year. All reserve funds meet their targets through FY 2018, but are not in attainment of reserve targets in FY 2019 and FY 2020. Fund balances show available liquidity, however much of this liquidity is from proposed debt issuances and therefore cannot be applied to meet reserve targets.

Table 14 presents all revenues and expenditures of the agency, including the proposed rate increases, as well as fund balances and reserves.

Table 14: *Pro-forma Statement*

Line No.		Budgeted FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
1	**General Fund/Operating**					
2	Water Sales - Purveyors - Variable	$17,969,431	$19,979,492	$21,223,004	$22,796,835	$24,599,640
3	Water Sales - Recycled	$238,050	$252,000	$264,600	$277,830	$291,722
4	Water Sales - Saugus 1 and 2 Wells	$701,100	$736,155	$772,963	$811,611	$852,191
5	Laboratory Revenues	$106,000	$109,180	$112,455	$115,829	$119,304
6	Communications Revenues	$170,000	$175,100	$180,353	$185,764	$191,336
7	Settlement Agreement (O&M)	$1,200,000	$1,236,000	$1,273,080	$1,311,272	$1,350,611
8	Investment Revenues	$72,402	$91,194	$120,508	$147,427	$184,110
9	Grants and Reimbursements (O&M)	$1,050,200	$0	$0	$0	$0
10	Other	$19,100	$19,100	$0	$0	$0
11	**Total General Fund/Operating**	**$21,526,282**	**$22,598,221**	**$23,946,963**	**$25,646,568**	**$27,588,914**
12	**Capital Improvement Program**					
13	Facility Capacity Fees	$8,500,000	$9,100,000	$12,748,816	$13,969,900	$12,752,600
14	One Percent Property Tax Revenues	$23,058,300	$23,708,083	$24,376,177	$25,063,097	$25,769,375
15	Settlement Agreement	$700,000	$0	$0	$0	$0
16	Investment Revenue	$1,549,000	$952,807	$1,254,040	$1,452,570	$1,715,574
17	Grants and Reimbursements	$11,273,900	$2,689,000	$1,588,800	$1,580,500	$0
18	Other	$1,372,111	$303,042	$318,194	$334,103	$350,809
19	**Total Capital Improvement Program**	**$46,453,311**	**$36,752,932**	**$40,286,026**	**$42,400,170**	**$40,588,358**
20	**State Water Contract Fund**					
21	Agency-Set Tax Revenues	$27,809,800	$30,783,500	$32,372,675	$34,041,309	$35,793,374
22	Investment Revenue	$234,300	$312,306	$473,143	$640,320	$816,408
23	**Total State Water Contract Fund**	**$28,044,100**	**$31,095,806**	**$32,845,818**	**$34,681,629**	**$36,609,782**
24	**Debt Service Fund - COP**					
25	Bond Proceeds	$38,800,000	$0	$70,400,000	$0	$0
26	Investment Revenue	$5,000	$87,451	$377,773	$963,438	$835,234
27	**Total Debt Service Fund**	**$38,805,000**	**$87,451**	**$70,777,773**	**$963,438**	**$835,234**
28	**TOTAL REVENUES**	**$134,828,693**	**$90,534,409**	**$167,856,579**	**$103,691,805**	**$105,622,288**

Table 14: *Pro-forma Statement (continued)*

Line No.		Budgeted FY 2016	Projected FY 2017	Projected FY 2018	Projected FY 2019	Projected FY 2020
31	**Expenditures**					
32	Operating	$22,231,000	$23,979,200	$24,695,195	$26,183,236	$27,015,512
33	Capital Improvement Program	$48,326,900	$45,456,817	$24,911,002	$35,302,895	$29,248,468
34	Department of Water Resources	$29,270,000	$30,783,500	$32,372,675	$34,041,309	$35,793,374
35	Debt Service Principal and Interest Payments	$20,083,729	$24,397,689	$25,539,293	$28,509,024	$28,606,885
36	Other	$0	$0	$0	$0	$0
37	**TOTAL EXPENDITURES**	**$119,911,629**	**$124,617,206**	**$107,518,165**	**$124,036,463**	**$120,664,240**
38	**Fund Balance**					
39	Beginning Fund Balance	$49,115,436	$64,198,500	$38,295,329	$95,545,473	$74,828,804
40	Net Income	$14,917,064	($34,082,797)	$60,338,415	($20,344,658)	($15,041,951)
41	Addition to Reserves	$166,000	$8,179,626	($3,088,271)	($372,010)	$1,609,400
42	Principal from Interfund Loan	$0	$0	$0	$0	$0
43	**Ending Fund Balance**	**$64,198,500**	**$38,295,329**	**$95,545,473**	**$74,828,804**	**$61,396,253**
44	**Reserves - Ending Balance**					
45	Operating Reserve	$5,541,000	$5,978,050	$6,157,049	$6,529,059	$6,737,128
46	Debt Service Reserves	$11,659,200	$19,197,921	$20,339,525	$20,339,525	$20,339,525
47	Capital Reserves	$10,231,300	$5,370,215	$6,336,067	$6,336,067	$4,518,598
48	Economic Uncertainties/ Catastrophic Situations	$38,072,700	$26,778,388	$27,580,204	$27,580,204	$27,580,204
49	Trustee Held	$8,667,165	$5,349,556	$5,349,556	$5,349,556	$5,349,556
50	Coverage Ratio	2.41	2.31	2.64	2.76	2.80

5. RATE DESIGN

This section focuses on the rate design, which includes development of a rate structure that provides sufficient revenue to recover the Agency's operating costs[3] and establishes a relationship between the rate and the retail purveyors' burden on and benefits from the Agency activities. Thus, the study focuses on rate structure design that:

1. provides sufficient revenue to guarantee the proper operation, maintenance and development of the Agency and sustaining its financial stability.
2. is adequate and fair in allocating the Agency's cost of providing service.
3. provides incentives for water conservation and efficient water usage.

RFC conducted several workshops with the retail purveyors to gather input on how the rate structure should be updated. This section presents a rate structure that meets the needs of the retail purveyors and the Agency.

5.1. PROPOSED RATE STRUCTURE

The current rate structure has two components: a fixed charge designed to recover 100 percent of the fixed costs incurred by the Agency and a variable rate designed to cover the agency's variable costs. The allocation of fixed costs among the retail purveyors is based on the share of each purveyor in total water demand during the last three years. The variable charge is based on the water sales to each retail purveyor in the current fiscal year.

Similarly, the proposed rate structure consists of two components: an imported demand fixed charge and a variable charge. The first charge is set to recover the fixed costs incurred by the Agency, but, in contrast with the current fixed charge, it will recover only 80 percent instead of 100 percent.

(i) The imported demand fixed charge is set to recover 80 percent of the Agency's fixed costs. In FY 2016, it is expected to fund about 68 percent[4] of total revenue requirements. The allocation of the charge among the retail purveyors is based on the share of each purveyor in the consumption of imported water during the past ten years. This approach ensures a direct link between the consumption of imported water and the amount of costs covered, thus creating incentives for conservation.

(ii) The second component in the rates framework is the variable charge. Unlike the existing variable charge, the new rate is designed to recover not only the variable costs related to water consumption but also 20 percent of the fixed costs incurred by the Agency. In FY 2016, the charge is likely to recover 32 percent[5] of the revenue requirements. The

[3] The O&M costs to be recovered by these rates exclude costs related to recycled water supply.
[4] These percentages are based on a full fiscal year of adopted rates.
[5] These percentages are based on a full fiscal year of adopted rates.

variable charge will be assessed based on the consumption of imported water during the fiscal year.

The rationale for such a rate structure is to ensure better allocation of the cost of service based on imported water demand by purveyors. It recognizes that imported water is an important stand-by supply source available to all purveyors to meet future water demand in the region. In addition, the fixed charges recover a large share of the fixed cost, thus providing some stability in revenue. All of the charges are related to the water consumption of the retail purveyors and provide incentives for conservation and efficient water use since charges are likely to decline if a purveyor puts more effort in conserving compared to other purveyors.

The next subsection provides details on the calculation of the proposed rates.

5.2. REVENUE REQUIREMENTS FROM RATES

The first step in calculating the wholesale water rates is to examine the structure of the Agency's operating costs. Variable costs are those that vary with the volume of imported water sales, while fixed costs do not fluctuate with changes in water sales. In FY 2016, it is expected that fixed costs will comprise 87 percent of total operating costs, whereas variable costs will account for only 13 percent. Agency staff provided the total of variable expenses in the FY 2016 budget; these costs all occurred in the Water Treatment Operations portion of the budget. **Table 15** shows the list of O&M expenses by type of cost for the Water Treatment Operations section of the budget, which highlights the items that are considered variable costs.

Table 15: *O&M Itemized Expenses for Water Treatment Operations*

	FY 2016 Budget	Variable
Salary and Benefits		
Salary	$920,100	
Overtime	$115,000	
Burden and Benefits	$451,400	
Materials and Supplies		
Safety Training and Equipment+	$0	
Supplies and Services	$2,300	
Employee Expense	$0	
Employee Travel	$1,000	
Chemicals	$1,182,000	$682,000
Outside Services		
Education/Seminars	$2,500	
Uniforms	$2,300	
Outside Service/Contracting	$3,000	
DDW Large Water System Fee	$65,000	
Utilities		
Electricity - Treatment Plants	$332,500	$332,500
Electricity - Pumping	$1,852,500	$1,852,500
Electricity - Other	$47,500	$12,500
Electricity - Wells	$133,000	
Telemetry	$10,000	
Recycled Water Purchase	$417,100	
Total	**$5,537,200**	**$2,879,500**

The total variable costs shown above is $2,879,500 which will be recovered by Variable Charges. All other FY 2016 costs are Fixed Costs to be recovered by the Fixed Charge (less the 20 percent that will be recovered by the variable rate).

Table 16[6] shows the initial budgeted Revenue Requirements (from **Table 11**) for each fiscal year through FY 2020. Additionally, miscellaneous operating and non-operating revenues included in the O&M Fund are shown as Revenue Offsets in **Table 16**. Net Revenue Requirements to be recovered from rates equal O&M expenses, decreased by the Revenue Offsets. In addition, adjustments are made to account for cash balances and for any increase in rates that does not start at the beginning of the respective fiscal

[6] The figures provided by the Agency staff in **Table 15** represent the original FY 2016 budget and the figures in **Table 16** show the revised budget provided by Agency staff, therefore the Water Treatment Operations budget figures will not match.

year. The total and net revenue requirements are shown in **Table 16**. All offsets and adjustments are allocated to reduce fixed costs.

The "Midyear Rate Increase" line in the Less: Adjustments section is there to show the impact of rate adjustments that don't take place at the beginning of the fiscal year. For example: the FY 2016 adjustment is going to take place in April of FY 2016, and as a result it is expected that this adjustment will take in $1.2 million less than it would have if it had been implemented in July of 2015, at the beginning of the fiscal year. Going forward from FY 2016, all other revenue adjustments are occurring in January of their respective fiscal year, which means that the revenue adjustments will only be in effect for half of that fiscal year.

The "Annual Cash Balance" line in the Less: Adjustment section shows the reserve funding that the proposed rates imply. A positive figure in the Annual Cash Balance Line indicates that the Agency is using reserves to fund operating expenses. The operating revenues and rate increases do not fully meet operating expenses until FY 2020, when the Annual Cash Balance figure becomes negative, indicating that the operating revenues are beginning to fund reserves again.

Table 16: *Revenue Requirements and Offsets*

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Initial Revenue Requirements					
Management	$1,901,300	$2,216,500	$1,922,495	$2,340,670	$2,039,575
Administration	$4,679,200	$4,711,300	$4,856,439	$5,006,047	$5,160,264
Engineering	$903,500	$730,400	$752,312	$774,881	$798,128
Maintenance	$2,995,700	$3,302,100	$3,401,163	$3,503,198	$3,608,294
Water Quality Compliance	$926,900	$1,014,700	$1,045,141	$1,076,495	$1,108,790
Water Resources	$5,709,800	$6,524,500	$7,001,049	$7,517,745	$8,077,419
Water Treatment Operations	$5,047,600	$5,412,700	$5,649,596	$5,897,199	$6,156,042
Initial Revenue Requirements	**$22,164,000**	**$23,912,200**	**$24,628,195**	**$26,116,236**	**$26,948,512**
Less: Revenue Offsets					
Water Sales - Saugus 1 and 2 Wells	$701,100	$736,155	$772,963	$811,611	$852,191
Laboratory Revenues	$106,000	$109,180	$112,455	$115,829	$119,304
Communications Revenues	$170,000	$175,100	$180,353	$185,764	$191,336
Settlement Agreement (O&M)	$1,200,000	$1,236,000	$1,273,080	$1,311,272	$1,350,611
Interest Income	$72,402	$91,194	$120,508	$147,427	$184,110
Grants and Reimbursements (O&M)	$1,050,200	$0	$0	$0	$0
Other	$19,100	$19,100	$0	$0	$0
Total Revenue Offsets	**$3,318,802**	**$2,366,729**	**$2,459,359**	**$2,571,903**	**$2,697,553**
Less: Adjustments					
Midyear Rate Increase	($1,186,246)	($860,361)	($618,146)	($663,985)	($716,494)
Annual Cash Balance	$875,768	$1,565,979	$945,832	$747,498	($348,680)
Total Adjustments	**($310,478)**	**$705,618**	**$327,686**	**$83,513**	**($1,065,175)**
Net Revenue Requirements	**$19,155,677**	**$20,839,852**	**$21,841,149**	**$23,460,821**	**$25,316,134**

5.3. WHOLESALE WATER RATES

The wholesale water rates are calculated by dividing the revenue requirements by the water demand. Since there are two different charges depending on the type of costs to be recovered, the revenue requirement for each charge and the respective water demand have to be determined.

The O&M expenses related to the imported water are divided based on the information provided by the Agency and its financial reports. The Initial Revenue Requirements are further broken down by using fixed and variable costs determined in **Table 15**. $2,879,500 are variable costs, so this amount is subtracted from the initial revenue requirements in order to be recovered by Variable Charges. This calculation is shown for FY 2016 in **Table 17** below**.**

Table 17: *FY 2016 Revenue Requirement Step-by-Step Calculation*

Initial Revenue Requirements	Budgeted Expense
Management	$1,901,300
Administration	$4,679,200
Engineering	$903,500
Maintenance	$2,995,700
Water Quality Compliance	$926,900
Water Resources	$5,709,800
Water Treatment Operations	$5,047,600
Total Before Adjustments	$22,164,000
Less Variable Component	
Variable Component	$2,879,500
Fixed revenue to be recovered before offsets	$19,284,500

After completing this calculation, the percentages of the revenue recovery mechanism are determined. This is done by dividing the total initial revenue requirement by the amount to be recovered from Fixed Charges and Variable Charges. These percentages are shown in **Table 18**. Multiplying future revenue requirements by these percentages shows the revenue to be recovered prior to applying offsets and the additional 20 percent of variable revenue recovery.

Table 18: *FY 2016 Revenue Requirement Percentage Calculation*

Revenue Requirement	FY 2016	Percentage
Fixed	$19,284,500	87%
Variable	$2,879,500	13%
Initial Revenue Requirement	**$22,164,000**	**100%**

Table 19 shows the result of multiplying the initial revenue requirements by the percentages determined in **Table 18**. Next, the revenue offsets and revenue adjustments are subtracted from the fixed costs as indicated in **Table 16** to calculate intermediate revenue requirements, which are the costs to be recovered by each charge before adding the additional 20 percent of fixed expenses to the variable charge, by type of cost. The intermediate revenue requirements are shown at the bottom of **Table 19.**

Table 19: *Intermediate Revenue Requirements by Type of Service*

		Percentage	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Revenue Requirements			**$22,164,000**	**$23,912,200**	**$24,628,195**	**$26,116,236**	**$26,948,512**
1	Fixed	87%	$19,284,500	$20,805,578	$21,428,552	$22,723,270	$23,447,419
2	Variable	13%	$2,879,500	$3,106,622	$3,199,643	$3,392,966	$3,501,094
Less: Revenue Offsets							
3	Fixed		$3,318,802	$2,366,729	$2,459,359	$2,571,903	$2,697,553
Total Revenue Offsets			**$3,318,802**	**$2,366,729**	**$2,459,359**	**$2,571,903**	**$2,697,553**
Less: Adjustments							
4	Fixed		($310,478)	$705,618	$327,686	$83,513	($1,065,175)
Total Adjustments			**($310,478)**	**$705,618**	**$327,686**	**$83,513**	**($1,065,175)**
Intermediate Requirements							
5	Fixed Expenses (Ln 1 – Ln 3 – Ln 4)		$16,276,177	$17,733,230	$18,641,506	$20,067,855	$21,815,041
6	Variable Expenses (Line 2, no change)		$2,879,500	$3,106,622	$3,199,643	$3,392,966	$3,501,094
Net Revenue Requirements			**$19,155,677**	**$20,839,852**	**$21,841,149**	**$23,460,821**	**$25,316,134**

The final revenue requirement is determined by taking the intermediate requirements shown in lines 5 and 6 of **Table 19** and subtracting 20 percent of the intermediate fixed charge, and adding it to the variable revenue to be recovered. Lines 1 and 2 of **Table 20** show the intermediate revenue requirements after subtracting offsets and adjustments from lines 5 and 6 of **Table 19**, while lines 4 and 5 show the total revenues to be recovered by each type of charge.

Table 20: *Revenue Recovery Final Calculation*

		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
1	Fixed Expenses (Table 19, ln 5)	$16,276,177	$17,733,230	$18,641,506	$20,067,855	$21,815,041
2	Variable Expenses (Table 19, ln 6)	$2,879,500	$3,106,622	$3,199,643	$3,392,966	$3,501,094
3	**NET REVENUE REQUIREMENTS**	**$19,155,677**	**$20,839,852**	**$21,841,149**	**$23,460,821**	**$25,316,134**
4	Revenue to be Recovered by Fixed Charges (Line 1 * 80%)	$13,020,941	$14,186,584	$14,913,205	$16,054,284	$17,452,033
5	Variable Revenue to be Collected (Line 3 - Line 4)	$6,134,735	$6,653,268	$6,927,944	$7,406,537	$7,864,102

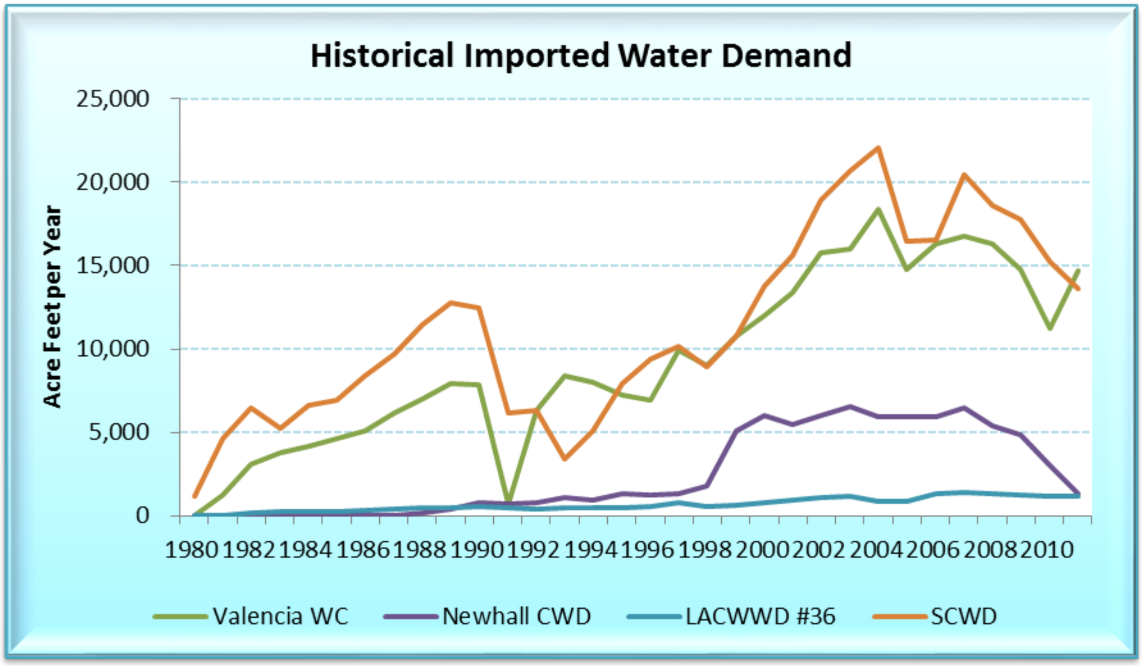
Once the net revenue recovery totals for each proposed charge are determined (from **Table 20**), they have to be divided by the respective water demand. The annual average of total imported water demand of all purveyors for the last ten years is used to calculate the Fixed Charge per AF.

Historical data for water consumption is used for the FY 2016 calculations. The calculations for subsequent years are based partly on projected consumption. The consumption used in determining the share of each purveyor is shown in **Table 21** and the long-term trends of the water consumption by the purveyors can be seen on **Figure 7**.

Table 21: *Historical Imported Water Demand*

Year	Valencia WC	Newhall CWD	LACWWD #36	SCWD
2006	16,313	5,898	1,289	16,548
2007	16,779	6,478	1,406	20,488
2008	16,325	5,428	1,354	18,598
2009	14,732	4,832	1,243	17,739
2010	11,214	3,035	1,141	15,188
2011	14,718	1,331	1,172	13,629
2012	16,522	2,965	471	15,600
2013	18,249	4,488	485	20,059
2014	7,668	3,942	4	21,478
2015	7,887	2,497	3	17,549
Average 10-year Imported Demand (AF) as of 2016				
	14,041	4,089	857	17,688

Figure 7: *Historical Imported Water Demand*



The Fixed Charge is calculated by dividing the 80 percent of the fixed revenue requirements (as derived in **Table 19**) by the sum of the ten-year annual average of imported water demand of all purveyors (**Table 21)** to receive the unit of fixed water charge per AF. Then, it is multiplied by each retail purveyor's ten-year average imported water demand to determine the purveyor's annual fixed imported demand water charge.

The unit Variable Charge per AF is calculated by dividing the residual variable revenue requirement (the difference between the total revenue requirements and the amount recovered by the Fixed Charge) by the total projected imported water sales during the current fiscal year. Further, the variable charge per AF is multiplied by the volume of water received by each purveyor to obtain the annual variable water charge. The charges shown in **Table 22** includes projections and may change when actual data becomes available.

Table 22: *Rate Calculation*

		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
1	Revenue to be recovered by imported fixed charges (**Table 20**, ln 4)	$13,020,941	$14,186,584	$14,913,205	$16,054,284	$17,452,033
	Fixed Charge Calculation					
	Average 10-year Imported Demand (AF) (Table 21)					
2	Valencia Water Company	14,041	13,408	12,748	12,150	11,731
3	Newhall County Water District	4,089	3,693	3,242	2,900	2,621
4	L.A. County Waterworks District #36	857	728	587	452	328
5	CLWA Santa Clarita Water Division	17,688	17,836	17,623	17,632	17,760
6	**Average 10-year Imported Demand (AF)**	**36,675**	**35,665**	**34,200**	**33,133**	**32,439**
7	Proposed Fixed Charge ($/AF) *(line 1 divided by line 6)*	$355.05	$397.78	$436.07	$484.54	$538.00
8	**Variable Rate Calculation**					
9	Variable Revenue to be Collected (**Table 20**, ln 5**)**	$6,134,735	$6,653,268	$6,927,944	$7,406,537	$7,864,102
10	Total Projected Sales (AF)	29,955	30,495	31,043	31,601	32,170
11	Proposed Variable Rate ($/AF) *(line 9 divided by line 10)*	$204.80	$218.18	$223.18	$234.38	$244.46

6. IMPACT ON RETAIL PURVEYORS

The change in rate design is expected to be reflected in the overall annual payments of the retail purveyors. **Figure 8** to **12** below show the expected cumulative charges for each purveyor in the next three years based on the forecasts of the model used. The effects of the new rates in comparison to the current rates on the retail purveyors' annual bill for FY 2017 range from a decrease of 32 percent for Newhall County Water District to an increase of 25 percent for Santa Clarita Water Division. L.A. County Waterworks District #36 and Valencia Water Company are also expected to see a decline of 14 and 13 percent, respectively.

Figure 8: *Valencia Water Company*

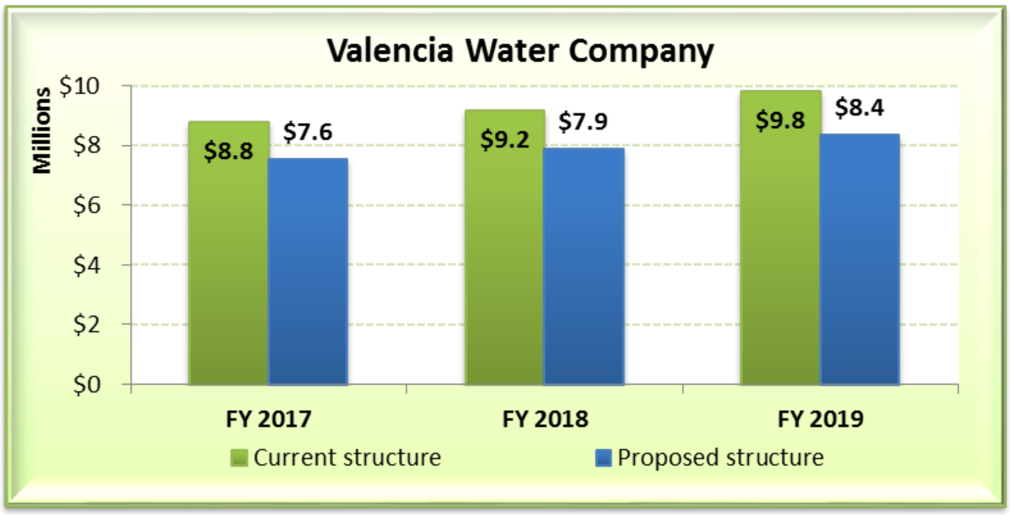


Figure 9: *Newhall County Water District*

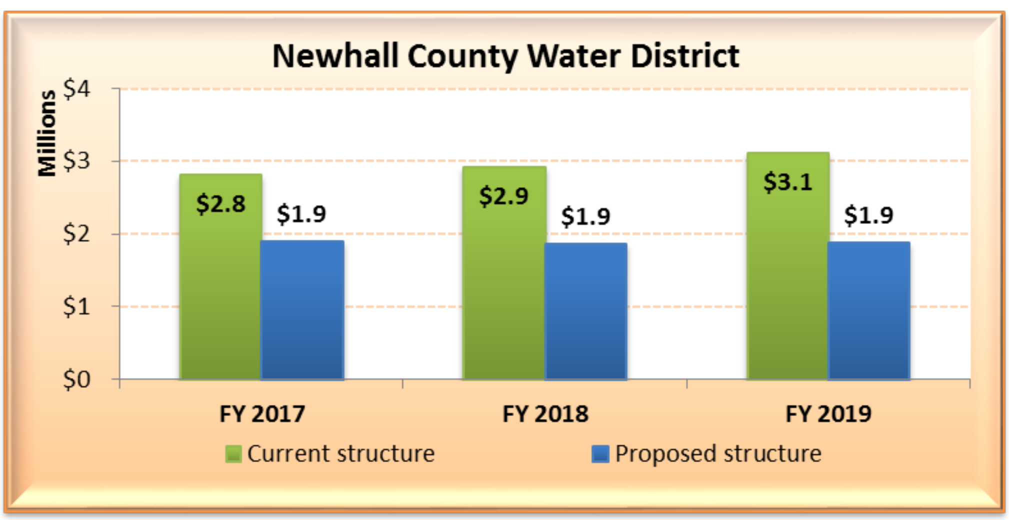


Figure 10: *L.A. County Waterworks District No.36*

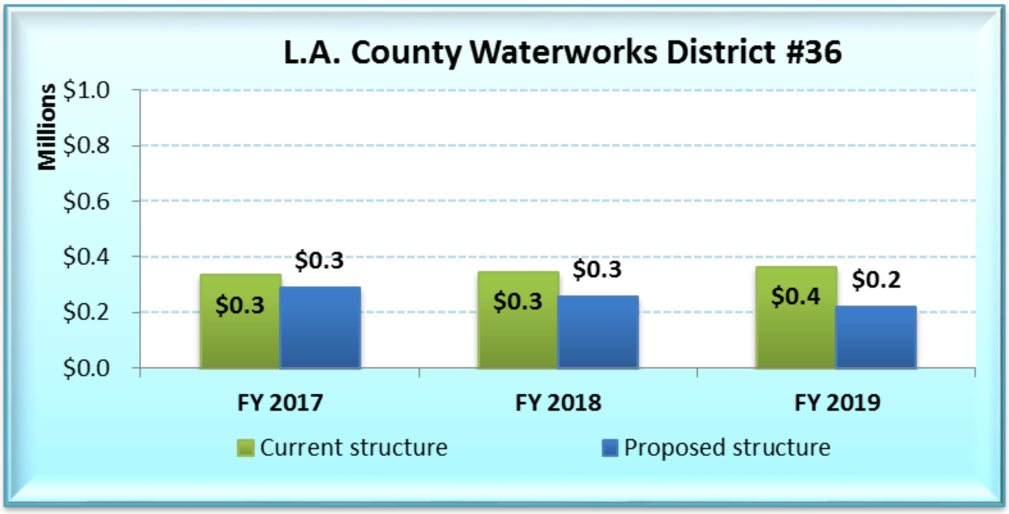


Figure 11: *CLWA Santa Clarita Water Division*