



Executive Summary

Executive Summary

MISSION

The Massachusetts Water Resources Authority (MWRA) is an independent public authority of the Commonwealth of Massachusetts that provides wholesale water and sewer services to its member communities and funds its operations primarily through member community assessments and charges. MWRA's mission is to provide reliable, cost-effective, high-quality water and sewer services that protect public health, promote environmental stewardship, maintain customer confidence, and support a prosperous economy.

HISTORY

Created by the Massachusetts legislature in 1985 (Chapter 372 of the Acts of 1984), MWRA assumed possession and control of the water and sewer systems, including facilities, properties, and the right to utilize water withdrawn from system reservoirs that had formerly been the Sewerage and Waterworks Divisions of the Commonwealth of Massachusetts Metropolitan District Commission (MDC). The Commonwealth, under the management of the MDC Watershed Management Division (now the Department of Conservation and Recreation – Division of Watershed Management), retained ownership of real property, including the reservoirs and watersheds, the maintenance of which are included in MWRA's operating budget.

In 1985, responsibility for water distribution for 46 municipalities and sewage collection and treatment for 43 municipalities was transferred to the MWRA. In 1987, the legislature also transferred responsibility to operate and maintain the Clinton Wastewater Treatment Plant from the Commonwealth to the MWRA. New communities have the opportunity to join the MWRA water and sewer systems, and, over the years, the number of member communities has increased. Since 1985, the MWRA has invested over \$8.2 billion to modernize and improve the wastewater and waterworks systems serving its 61 member communities. MWRA's facilities span from the Quabbin Reservoir in western Massachusetts to the Deer Island Treatment Plant in Boston Harbor. In Fiscal Year 2018, the system serves approximately 3.0 million people and more than 5,500 businesses.

The Enabling Act also established the MWRA Advisory Board to represent the cities and towns in the service area. The Advisory Board appoints three members of the MWRA Board of Directors, approves the extension of water and sewer services to additional communities, and reviews and makes recommendations on MWRA's annual Current Expense Budget and Capital Improvement Program.

MWRA ORGANIZATION

The MWRA has five separate divisions and the Affirmative Action and Compliance Unit Department (AACU). Each division provides operations or support services to carry out MWRA's activities under the direction of the Executive Office. MWRA's organizational structure is included in the document immediately preceding this page.

The **Executive Office** provides centralized MWRA management, direction, and policy development. The budget includes funds for the Office of the Executive Director, the Board of Directors, the Advisory Board, and other advisory committees. It includes the following departments: Office of Emergency Preparedness; Public Affairs; and Internal Audit. The Tunnel Redundancy Program Management department was created in FY18 to manage the Metropolitan Tunnels Redundancy Projects. The Director of the Tunnel Redundancy Program Management department reports to the Executive Director.

The **Operations Division** operates the water and wastewater treatment systems; the water transmission and distribution system; the wastewater collection, transport, and combined sewer overflow (CSO) systems; and the residuals processing facility. It also provides laboratory and engineering and construction services; enforces sewer use regulations and seeks to limit the discharges of toxic materials; manages environmental studies of Boston Harbor and Massachusetts Bay and monitors water quality. The Operations Division funds the budget for the Water Redundancy Program Management department and includes the following departments: Operations Administration, Wastewater Treatment, Field Operations, Engineering and Construction, Laboratory Services, Toxic Reduction and Control, Environmental Quality, and Planning.

The **Administration Division** is responsible for managing the support services functions of the Authority. The Administration Division is comprised of seven departments: Director's Office; Facilities; Fleet Services; Human Resources; Management Information Systems (MIS); Procurement; and Real Property and Environmental Management. The Administration Division performs a multitude of functions that support the daily operations and ensure the implementation of the Authority's long term goals and strategies.

The **Finance Division** is responsible for managing the finance functions of the Authority. Finance Division is comprised of five departments: Director's Office; Rates and Budget; Treasury; Controller; and Risk Management. The Finance Division ensures that a variety of fiscal management systems are in place to monitor and control the Current Expense Budget (CEB) and Capital Improvement Program (CIP).

The **Law Division** provides legal counsel to all divisions on compliance with federal and state law, real estate matters, labor and employment law, litigation, and construction issues. Division attorneys provide or supervise through outside counsel the representation of MWRA in all litigation.

The **Affirmative Action and Compliance Unit (AACU) Department** develops, administers and monitors compliance of Affirmative Action Plan programs and policies by ensuring equal opportunity and non-discrimination in employment and equitable access of Minority/Women Business Enterprises (MBE/WBE) in Authority procurement activities.

GOALS AND PERFORMANCE MEASURES

The MWRA Business Plan was first implemented in 1997 as a strategic road map to present specific steps for the organization to undertake to improve customer service, upgrade operations and maintenance and pursue aggressive rates management. In 2000, MWRA adopted a five-year Strategic Business Plan. Since then, some of the goals have been completed, and new ones have been added. MWRA's five-year Strategic Business Plan FY2016-2020 emphasizes improvements in service and systems and includes performance targets for operating the water and wastewater systems and maintaining new and existing

facilities. MWRA's Water System Master Plan and Wastewater System Master Plan present to long-term vision of the capital development needs of the water and wastewater systems and the actions planned to meet those needs. Parallel to MWRA's goal of carrying out its operating programs and capital projects is its goal of providing sustainable, predictable and reasonable assessments to its customer communities. To that end, the MWRA applies a multi-year rates management strategy to provide sustainable and predictable assessment increases to its member communities. The need to achieve and maintain a balance between these two goals is a critical issue in the development of both MWRA's operating and capital budgets.

During the year, MWRA measures actual performance on a monthly basis using various reporting tools. The monthly Financial Staff Summary reports on actual spending versus both the operating and capital budgets and provides summary explanations of the variances at the line item level. At least twice a year staff prepares projections for the fiscal year-end with a similar level of explanations. The performance indicator reports (published by MWRA as the Orange and Yellow Notebooks) capture a variety of parameters regarding performance of each major functional area of the Authority, on a monthly and quarterly basis.

BUDGET PROCESS OVERVIEW

Each year, MWRA prepares a Current Expense Budget (CEB) that reflects the best available information for anticipated expenditures and revenues. In parallel, MWRA prepares a Capital Improvement Program (CIP) Budget.

The MWRA operates on a fiscal year that runs from July 1 through June 30. The budget process for both budgets begins in the fall with formal kick-off meetings in September where MWRA staff are given guidelines and targets for their budget requests. After review by the Budget Department and MWRA senior staff, a Proposed CIP Budget is presented to the Board of Directors in December. The Capital Financing portion of the Current Expense Budget is determined based on the CIP Budget. In February, after further review with MWRA senior staff, the Budget Department presents the Proposed CEB to the Board of Directors, which is, in turn, transmitted to the Advisory Board, including the anticipated assessment increase Authority-wide and for each customer community. The Advisory Board has sixty days to review, comment, and provide recommendations on both budgets. MWRA also hosts a public hearing to solicit comments on the budgets and community assessments from citizens in its service area. In May, the Advisory Board transmits its comments to the MWRA to which written response are provided.

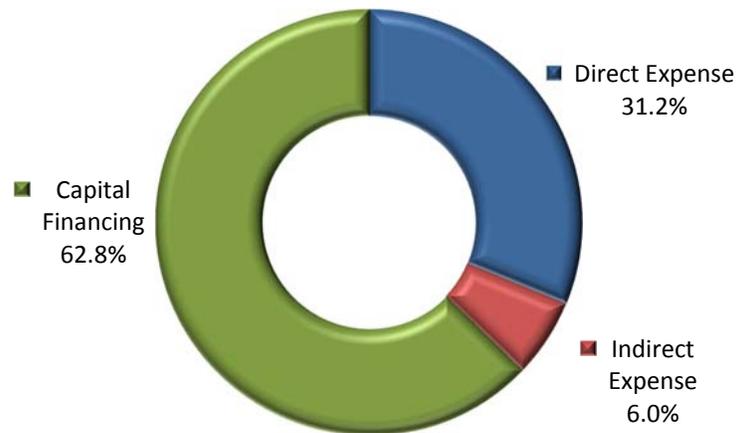
At its May meeting, MWRA's Board of Directors holds a hearing on the budget to review recommendations by the Advisory Board and new information available since the budget was developed. Staff incorporates Board decisions from the hearings and presents a final budget and final assessments for approval at the June Board of Directors meeting.

FY19 BUDGET SUMMARY

Total Expenses in the Final FY19 Current Expense Budget (Budget) are \$767.9 million, an increase of \$24.3 million or 3.3% over the FY18 Budget. The Final FY19 Budget assumes an offset of \$944,726 for the Debt Service Assistance (DSA) awarded in May 2018.

Total expenses include \$482.4 million for Capital Financing costs and \$285.6 million for operating expenses, of which \$239.6 million is for Direct Expenses and \$46.0 million is for Indirect Expenses. The \$24.3 million increase in total expenses is mainly due to higher Capital Financing costs of \$10.2 million, higher Direct Expenses of \$7.0 million due to contractual salary increases for staff, higher utility costs, higher chemical costs, and higher costs for Other Materials due, in part, to computer hardware replacement throughout the Authority.

Final FY19 Budget



MWRA continues to pursue a rate management strategy which promotes sustainable and predictable assessments. The Final FY19 Budget has a combined utilities assessment increase of 3.07% with Rate Revenues totaling \$739.0 million. Rate Revenues account for 96.2% of projected FY19 revenues.

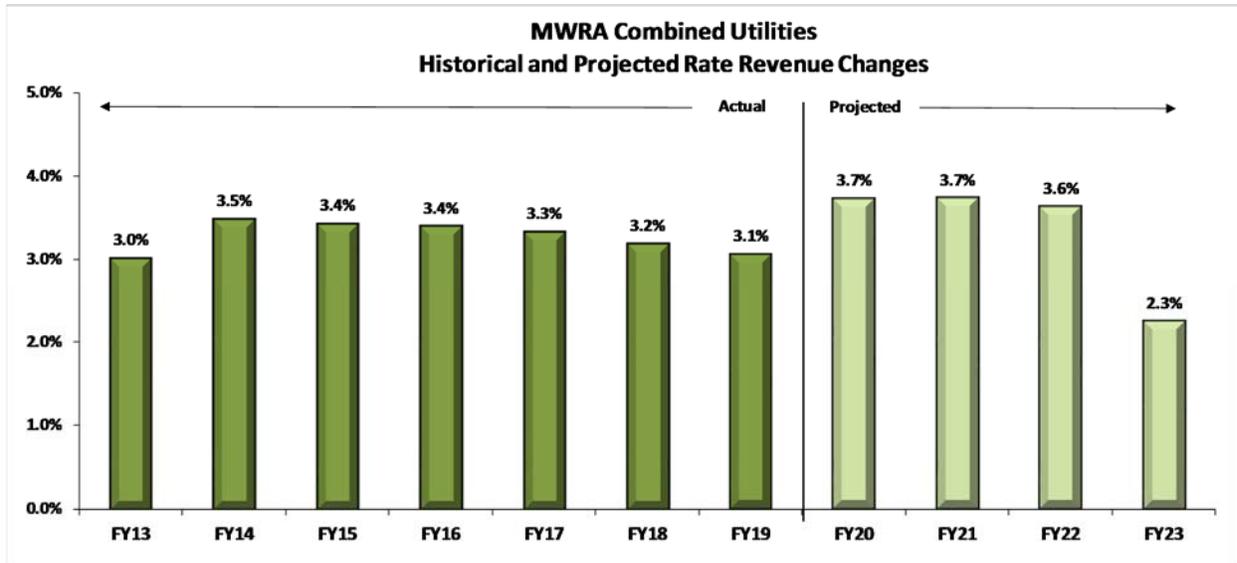
Measures taken by the Authority to achieve the 3.07% rate increase include:

- Continued practice of targeted defeasances;
- Budgeted 1,150 Full-Time Equivalent (FTE's) positions, plus 5 FTE's for supporting the Tunnel Redundancy Program;
- Budgeted a \$7.1 million Debt Prepayment;
- Direct Expenses increased 3.0% versus FY18 budget;
- Capital Financing increased 2.2% versus FY18 budget.

The table on the next page shows MWRA's Final FY19 Budget for revenue and expenses compared with the FY18 Budget and FY17 Actuals. Changes from FY18 to FY19 are described in the Revenue and Expense section of the Executive Summary.

TOTAL MWRA	FY17 Actuals	FY18 Approved Budget	FY19 Final Budget	Change	
				FY19 Final Budget vs FY18 Approved Budget	
				\$	%
EXPENSES					
WAGES AND SALARIES	\$ 98,494,291	\$ 104,286,370	\$ 107,032,021	\$ 2,745,651	2.6%
OVERTIME	4,951,621	4,110,637	4,447,554	336,917	8.2%
FRINGE BENEFITS	19,623,635	20,997,975	21,173,571	175,596	0.8%
WORKERS' COMPENSATION	2,565,336	2,322,980	2,422,609	99,629	4.3%
CHEMICALS	9,262,849	9,836,933	10,830,452	993,519	10.1%
ENERGY AND UTILITIES	20,249,594	21,735,222	22,868,633	1,133,411	5.2%
MAINTENANCE	30,798,709	32,200,786	32,258,727	57,941	0.2%
TRAINING AND MEETINGS	360,115	406,269	455,770	49,501	12.2%
PROFESSIONAL SERVICES	6,698,861	7,221,622	7,675,976	454,354	6.3%
OTHER MATERIALS	5,851,449	6,692,659	7,381,098	688,439	10.3%
OTHER SERVICES	21,865,445	22,764,526	23,065,411	300,885	1.3%
TOTAL DIRECT EXPENSES	\$ 220,721,905	\$ 232,575,979	\$ 239,611,821	\$ 7,035,843	3.0%
INSURANCE	\$ 1,739,542	\$ 2,013,452	\$ 2,099,064	\$ 85,612	4.3%
WATERSHED/PILOT/DEBT	23,911,694	25,164,006	26,406,427	1,242,421	4.9%
HEEC PAYMENT	789,258	957,445	1,386,832	429,387	44.8%
MITIGATION	1,542,800	1,596,950	1,614,262	17,312	1.1%
ADDITIONS TO RESERVES	(167,742)	821,116	1,881,798	1,060,682	N/A
RETIREMENT FUND	4,632,624	3,277,369	7,000,000	3,722,631	113.6%
ADDITIONAL PENSION DEPOSIT	-	-	-	-	
POSTEMPLOYMENT BENEFITS	4,876,050	5,035,422	5,574,152	538,730	10.7%
TOTAL INDIRECT EXPENSES	\$ 37,324,226	\$ 38,865,759	\$ 45,962,534	\$ 7,096,775	18.3%
STATE REVOLVING FUND	\$ 80,459,851	\$ 84,931,906	\$ 89,380,358	\$ 4,448,452	5.2%
SENIOR DEBT	287,931,637	264,560,267	272,633,979	8,073,712	3.1%
SUBORDINATE DEBT	69,997,992	85,443,447	92,032,294	6,588,847	7.7%
LOCAL WATER PIPELINE CP	858,685	3,794,944	4,750,393	955,449	25.2%
CURRENT REVENUE/CAPITAL	12,200,000	13,200,000	14,200,000	1,000,000	7.6%
CAPITAL LEASE	3,217,060	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	10,994,960	10,900,000	7,100,000	(3,800,000)	-34.9%
VARIABLE RATE SAVINGS	(11,027,773)	-	-	-	
DEFEASANCE ACCOUNT	-	-	-	-	
DEBT SERVICE ASSISTANCE	(1,265,384)	(391,580)	(944,726)	(553,146)	141.3%
HEEC CABLE CAPACITY RESERVE FUND		6,532,146		(6,532,146)	-100.0%
TOTAL DEBT SERVICE	\$ 453,367,028	\$ 472,188,190	\$ 482,369,358	\$ 10,181,168	2.2%
TOTAL EXPENSES	\$ 711,413,158	\$ 743,629,929	\$ 767,943,713	\$ 24,313,786	3.3%
REVENUE & INCOME					
RATE REVENUE	\$ 694,878,500	\$ 717,054,000	\$ 739,042,200	\$ 21,988,200	3.07%
OTHER USER CHARGES	8,809,434	9,011,070	9,328,768	317,698	3.5%
OTHER REVENUE	13,087,910	7,359,078	6,013,635	(1,345,443)	-18.3%
RATE STABILIZATION	-	-	-	-	
INVESTMENT INCOME	9,758,480	10,205,781	13,559,110	3,353,329	32.9%
TOTAL REVENUE & INCOME	\$ 726,534,324	\$ 743,629,929	\$ 767,943,713	\$ 24,313,784	3.3%

The graph below represents historical and projected assessment changes based on the Final FY19 Budget. The planning estimates project assessment increases at 3.7% or below from FY20 through FY22, the most challenging years facing the Authority. Rates at the combined utilities level are projected to increase at a slower pace beginning in FY23.



The Final FY19 Budget revenues, excluding rate revenue, total \$28.9 million, an increase of \$2.3 million or 8.8% above the FY18 budget. The Final FY19 Budget non-rate revenue budget includes \$15.3 million in Other User Charges and Other Revenue and \$13.6 million for Investment Income.

FY19 GOALS AND MAJOR INITIATIVES

Ensuring a safe and reliable source of drinking water to MWRA customers, and wastewater discharges that meet all applicable regulations drives both capital and current expense budget costs. The MWRA has identified Authority-wide major initiatives to support the five strategic priorities integral to MWRA’s mission that were identified for action in MWRA’s Five-Year Strategic Business Plan FY2016-2020. At the Division and Department-level, additional and more specific goals and initiatives are identified.

I. Drinking Water Quality and System Performance

- Begin Tunnel Redundancy projects to ensure delivery of reliable and cost-effective water services to customer communities.
- Continue to support core operations to ensure compliance with regulatory requirements.

II. Wastewater Management and System Performance

- Implement new National Pollutant Discharge Elimination System (NPDES) Permits for the Clinton Wastewater Treatment Plant.

- Continue to meet or surpass environmental compliance standards for the Deer Island Treatment Plant as required by the National Pollutant Discharge Elimination System (NPDES) permit and air quality permits.

III. Infrastructure Management and Resilience

- Continue to invest in asset protection to ensure adequate availability of equipment and facilities to support core operations.
- Continue to prepare for severe weather and other critical events that could affect the water and wastewater delivery systems.

IV. Finance and Management

- Continue to plan and develop long-term strategies to ensure sustainable and predictable assessments to MWRA communities at the combined and the utility level.
- Secure favorable financing terms to support both the capital and current expense budgets and preserve the Authority's credit rating.
- Invest in cyber security protection.
- Continue to focus on succession planning with emphasis on training for current employees.

V. Environmental Sustainability

- Continue to aggressively pursue renewable and sustainable energy resources to reduce the environmental impacts of daily operations, increase energy efficiencies, and reduce overall operating costs.
- Continue to identify, assess, and implement initiatives to reduce energy demand and increase energy self-generation in MWRA's system.
- Enter into a new Memorandum of Understanding with Eversource for payment of energy reduction incentives.
- Pursue grant-funding and cost-sharing arrangements to defray costs of implementing new energy reduction and energy self-generation projects.
- Continue to monitor climate change, research and move forward with plans to reduce impacts of sea level rise and storm surge events on MWRA infrastructure.

FY18 ACCOMPLISHMENTS

I. Drinking Water Quality and System Performance

- Met all water quality and treatment standards in the drinking water system during FY18.
- Contaminant Monitoring System – Rolled out use of the Mobile Water Quality Trailer and made progress on upgrading two sites (John J. Carroll Water Treatment Plant raw tap and Shaft 9A).
- Distributed \$33.9 million in interest-free loans to member water communities including \$3 million for lead service line replacement.

II. Wastewater Management and System Performance

- During the first six months of FY18, the Department of Laboratory Services performed 266,000 tests (including data entry of field tests) including the Massachusetts Bay water column testing for the Harbor and Outfall Monitoring program.
- The Environmental Quality (EnQual) Department carried out permit-required environmental monitoring of Boston Harbor and Massachusetts Bay water column, sediments, fish and shellfish and CSO receiving water quality. The department finalized nine technical reports, made monitoring results available on the EnQual page on MWRA's website, and sent reports to government regulators, the Outfall Monitoring Science Advisory Panel and interested members of the public.
- Distributed \$21.7 million in grants and interest-free loans to member sewer communities to rehabilitate their wastewater collection systems with the goal of structurally reducing infiltration and inflow.

III. Infrastructure Management and Resilience

- Procured and implemented HVAC insulation replacement in the pump and blower area at the Nut Island Headworks in the aftermath of the January 2016 fire in the lower part of the facility.
- Procured and completed emergency repairs to Deer Island Treatment Plant Gravity Thickeners #5 and #6.
- Expanded MWRA's primary security system and participated in the planning and execution of a week-long cyber security table top drill for management and senior staff defending critical infrastructure.

IV. Finance and Management

- Executed a \$9.6 million and a 29.4 million defeasance of outstanding senior principal in October 2017 and June 2018 respectively. These defeasances decreased the debt service requirement between FY19 and FY22 by a total of \$44.6 million reducing the rate of increase to the Rate Revenue Requirement in those years.
- Conducted a procurement for \$100.6 million in variable rate direct purchases to replace the 2008 Series F and 2012 Series F bonds. MWRA received a number of strong proposals and issued two new series Direct Purchase Bonds with TD Bank N.A. for \$50.6 million and U.S. Bank N.A. for \$50.0 million.

V. Environmental Sustainability

- Received a total of \$880,000 in revenue for energy generated at numerous facilities including the following: hydroelectric \$391,000 from Oakdale Station, \$147,000 from Cosgrove Station, \$10,600 from the Loring Road Pump Station, and \$3,600 from Chicopee Valley Aqueduct (CVA) Fish Hatchery pipeline; wind of \$270,000 from Charlestown Pump Station; and solar of \$97,500 from Carroll Water Treatment Plant.
- Continue to leverage MWRA's self-generation assets and participation in the competitive energy market to offset operating costs. The combined impact of participation in the Independent System Operators of New England (ISO-NE) load response program, non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits, and receipt of utility rebates for CEB-funded efficiency projects resulted in \$3.3 million in revenue in FY18. MWRA also avoided approximately

\$600,000 in capacity charges through operation of self-generation assets during peak load events as called by the regional transmission organization (ISO New England).

- Deer Island generated 29.1% of the Plant’s total requirement during FY18.
- Continued to operate new phosphorus treatment system and natural gas lines at the Clinton Wastewater Treatment Plant; both are in their first year of operation.

SOURCES AND USES OF FUNDS

Funds supporting the Budget are not subject to appropriation with the exception of State debt service assistance. The table to the right shows MWRA's sources and uses of funds for the Final FY19 Budget.

Revenue

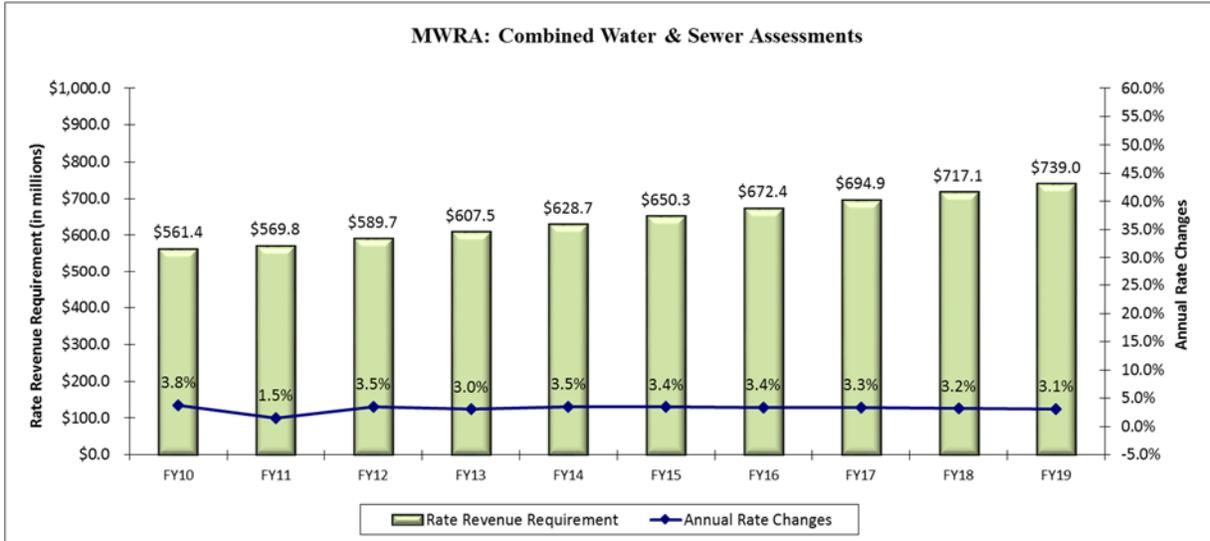
MWRA is required by its enabling act to balance its budget each year by establishing user assessments for water and sewer services that provide funds sufficient to recover the cost of operations (excluding depreciation), maintenance and improvements, and debt service, as well as meeting required reserve levels.

In the Final FY19 Budget, 96.2% of revenue is raised from rate revenue. The remaining 3.8% of revenue will come from interest on investments, charges to other water and sewer customers (including Chicopee Valley Aqueduct (CVA) communities), non-recurring revenue, annual charges to sewer system users with permits issued by MWRA's Toxic Reduction and Control Department, penalties assessed to holders of sewer use permits, and other miscellaneous sources.

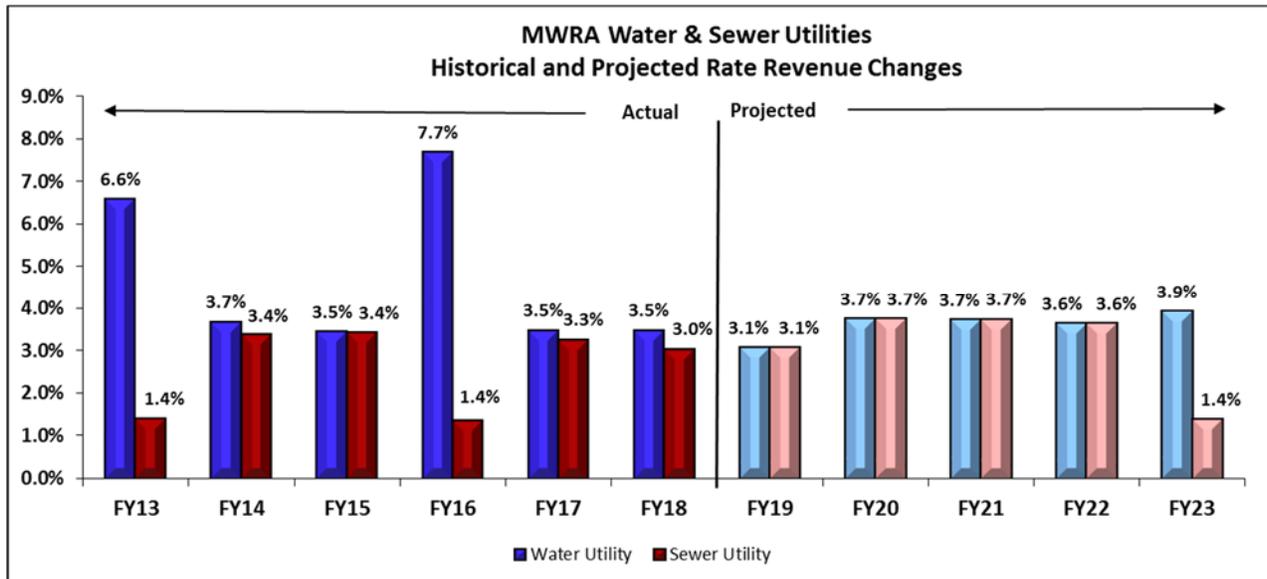
Rate Revenue

Under the Final FY19 Budget, the MWRA will raise \$739.0 million of its total revenue requirement from water and sewer assessments to member communities. Of the \$739.0 million, \$489.2 million will fund the sewerage system, and \$249.9 million will fund the water system, an increase of 3.1% as compared to FY18. The chart below shows the historical rate revenue requirements at the combined utility level for the past ten years.

SOURCES & USES OF FUNDS*		
\$ in Millions		
<i>Sources of Funds</i>		
Other User Charges	\$9.3	1.2%
Other Revenue	6.0	0.8%
Investment Income	13.6	1.8%
Rate Revenue	739.0	96.2%
Rate Stabilization	0.0	0.0%
TOTAL REVENUE	\$767.9	100.0%
<i>Uses of Funds</i>		
Total Expenses before Debt		
Service Offsets	\$0.0	
Less:		
Debt Service Assistance	0.9	
Bond Redemption	-	
Sub-Total Net Expenses	0.9	
Capital Financing	0.9	0.3%
Direct Expenses	239.6	83.6%
Indirect Expenses	46.0	16.0%
TOTAL EXPENSES	\$286.5	100.0%
TOTAL EXPENSES Less Offsets	\$287.5	
<small>*May not add up due to rounding</small>		



Beginning in FY17, the MWRA successfully implemented a rate increase smoothing mechanism that allows the rate revenue requirement to be smoothed between utilities eliminating annual volatility mostly driven by debt service payments for capital projects. The charts below show the historical percent increase for the last five years and the projected increases for the next five years.



Non-Rate Revenue

Other User Charges

Other User Charges include revenues derived from the provision of water and sewer services to communities and other entities under special agreements. Other User Charges in the Final FY19 Budget total \$9.3 million, with \$8.9 million from charges related to water and \$447,000 from sewer. Other User Charges include \$5.0 million for Chicopee Valley Aqueduct communities (Chicopee, South Hadley, and Wilbraham), \$1.8 million for Deer Island water usage, \$727,000 for entrance fees from member communities, and \$500,000 for the Commonwealth's partial reimbursement for Clinton Wastewater Treatment Plant expenses. Additional Other User Charges are \$318,000 or 3.5% more than the FY18 Budget which is mainly due to assessment increases related to increases for Lancaster and Chicopee.

Revenue Source	FY 19 Budget
Deer Island	\$ 1,819,018
Department of Youth Services	41,815
Commonwealth Zoological (Stone Zoo)	44,200
DCR Pools/Parks	29,467
DCR Blue Hills Ski Area	72,285
Lancaster	450,278
Worcester	188,387
Clinton	500,000
Chicopee	3,542,075
South Hadley	710,359
Wilbraham	757,295
Dedham-Westwood WD Entrance Fee	111,345
Town of Stoughton Entrance Fee	407,239
Town of Wilmington Entrance Fee	207,915
Subtotal Other User Charges - Water	\$ 8,881,679

Regis College	\$ 72,560
NE Center for Children	22,690
WTP Residuals (Water treatment plants)	351,839
Subtotal Other User Charges - Sewer	\$ 447,089

Other Revenue

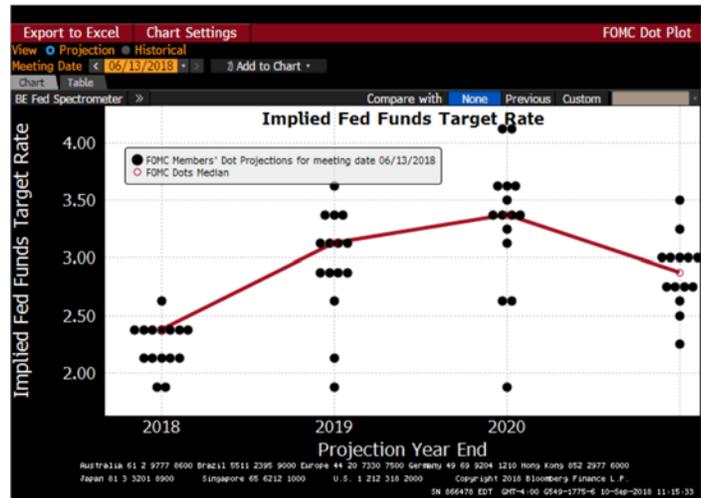
Source of Revenue	FY18 Budget	FY19 Budget
Power Sales - Hydroturbines	\$ 209,255	\$ 123,479
Power Sales - Solar	94,803	97,729
Renewable Portfolio Credits	317,703	206,930
Water Demand Response (Load Reduction)	105,416	141,038
Antenna Licenses	202,500	251,374
Utility Rebates for Equipment	50,000	50,000
Rutland/Holden Trunk Sewer	150,000	130,000
Antennae Repair - Water Tank Access	45,000	50,000
Other Miscellaneous	146,300	180,711
Subtotal Other Water	\$ 1,320,977	\$ 1,231,261
Permit Fees (TRAC)	\$ -	-
Monitoring (TRAC)	2,100,000	\$ 2,100,000
Penalties (TRAC)	100,000	100,000
Renewable Portfolio Credits	913,394	342,495
Sewer Demand Response (Load Reduction)	2,059,517	1,322,562
Charlestown Wind	373,153	405,423
Utility Rebates for Equipment	50,000	50,000
FRRC Mgt. Fees, FRSA leases, etc.	327,527	334,189
Other Miscellaneous	114,500	127,706
Subtotal Other Sewer	\$ 6,038,091	\$ 4,782,375

Other Revenue is budgeted at \$6.0 million, a decrease of \$1.3 million or 18.3% from the FY18 budget. Other Revenue includes \$3.0 million from the sale of the Authority's Renewable Portfolio Credits, sale of generated power to the grid, and revenue from participating in the ISO New England demand response program. The price of Renewable Portfolio Credits dropped significantly during FY18. The FY19 Budget reflects both the drop and an anticipated small rebound resulting from new Commonwealth renewable energy legislation. Sale of generated power to the grid in FY19 is less than FY18 based on anticipated revenue in FY18 due to issues with the Deer Island hydroturbines. The ISO New England demand response program is a \$1.2 million decrease in FY19 from the FY18 Budget due to a reduction in the payment rate per kilowatt for the demand response program. Other Revenue includes \$2.2 million in permit fees and penalties, level funded with the FY18 Budget.

Investment Income

MWRA earns interest income by investing funds in both long and short-term investments vehicles governed by the Amended and Restated General Revenue Bond Resolution and its Investment Policy. The FY19 Final Budget includes \$13.6 million in investment income, an increase of \$3.4 million or 32.9% over the FY18 budget reflecting higher interest rate assumptions. The short-term interest rate assumption is at 1.75% for FY19 which is 70 basis points above the FY18 Budget level.

At the June 13th Federal Open Market Committee meeting, the Feds increased rates by 25 basis points. Members of the Federal Open Market Committee projected rates ranging from a low of 1.88% to a high of 4.13% through December of 2020.



Non-Recurring Revenue

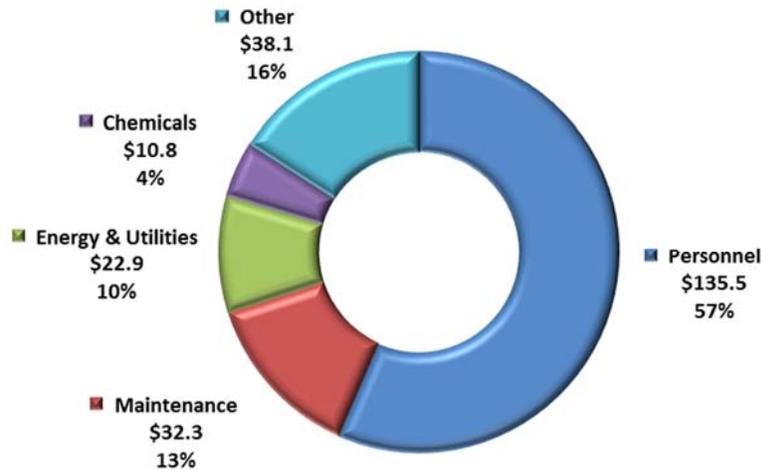
Non-Recurring Revenue is one-time revenue used in a given fiscal year to reduce assessments to member communities. In any fiscal year when annual revenues exceed expenses, MWRA may transfer the unexpended amount to the rate stabilization reserve. Within certain limits, MWRA may use this money to reduce the Rate Revenue Requirement in any subsequent year. Consistent with the requirements of its enabling act and its general bond resolution, MWRA treats transfers from the rate stabilization reserve as revenue in that fiscal year. For the Final FY19 Budget, no rate stabilization fund usage is projected.

DIRECT EXPENSES

The Final FY19 Direct Expenses Budget totals \$239.6 million, an increase of \$7.0 million, or 3.0%, over the FY18 Budget. The primary drivers of the Direct Expenses increases are wage increases associated with collective bargaining contracts and cost of living adjustments (COLAs); overtime cost increases mainly for wage increases to reflect recent historical spending for planned overtime in the Field Operations Division; chemical costs for increased quantities and prices of new contracts; utility costs for increased pricing; and other materials related to the proposed FY19 replacement of all desktop computers following the implementation of the Microsoft Office 16 suite upgrade that was completed in FY18. MWRA continues to manage direct expenses through implementing cost improvement initiatives, such as cross-training staff, competitive purchase of energy and chemicals, lease space reductions, and self-generation of electricity.

The chart below combines related direct expense line items into general cost categories. Personnel costs (wages and salaries, overtime, fringe benefits, workers' compensation, and training) are the largest component of the direct expense budget accounting for 57%, followed by other expenses (professional services, other materials, and other services) at 16%, maintenance at 13%, energy & utilities at 10%, and chemicals at 4%.

Direct Expenses by Category
\$s in millions



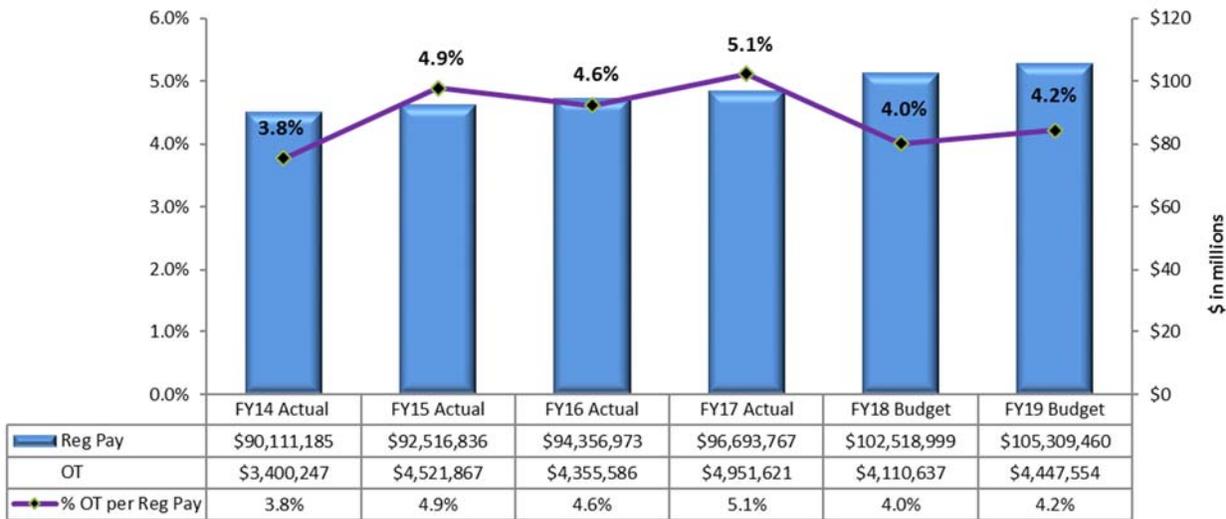
Wages and Salaries – The budget includes \$107.0 million for Wages and Salaries versus \$104.3 million in the FY18 Budget, an increase of \$2.7 million or 2.6%. Regular Pay, which is 98.4% of total Wages and Salaries, increased \$2.8 million primarily for wage increases associated with collective bargaining agreements and additional staff, offset by lower salaries for new hires compared to retirees. The FY19 Budget funds 1,155 FTEs, reflecting five additional FTEs that will support the Tunnel Redundancy capital program. The 5 additional FTEs represent the first year of the hiring of staff to support the Tunnel Redundancy Program. As always, new hires and backfilling of vacant positions will be managed at the agency level and addressed on a case-by-case basis by senior management. A more detailed description of the changes to FTEs by Division is included in the individual Division’s budget section.

Division	FY17	FY18	FY19
Executive	5.0	5.0	5.0
Emergency Preparedness	5.8	7.8	8.0
Affirmative Action	6.0	6.0	6.0
Internal Audit	6.7	6.8	6.7
Public Affairs	12.9	13.0	12.9
Tunnel Redundancy	0.0	0.0	5.0
Operations	918.8	918.8	920.3
Law	15.5	15.5	13.5
Administration	141.0	142.0	140.6
Finance	38.3	35.5	37.0
Authority Total	1,150.0	1,150.4	1,155.0

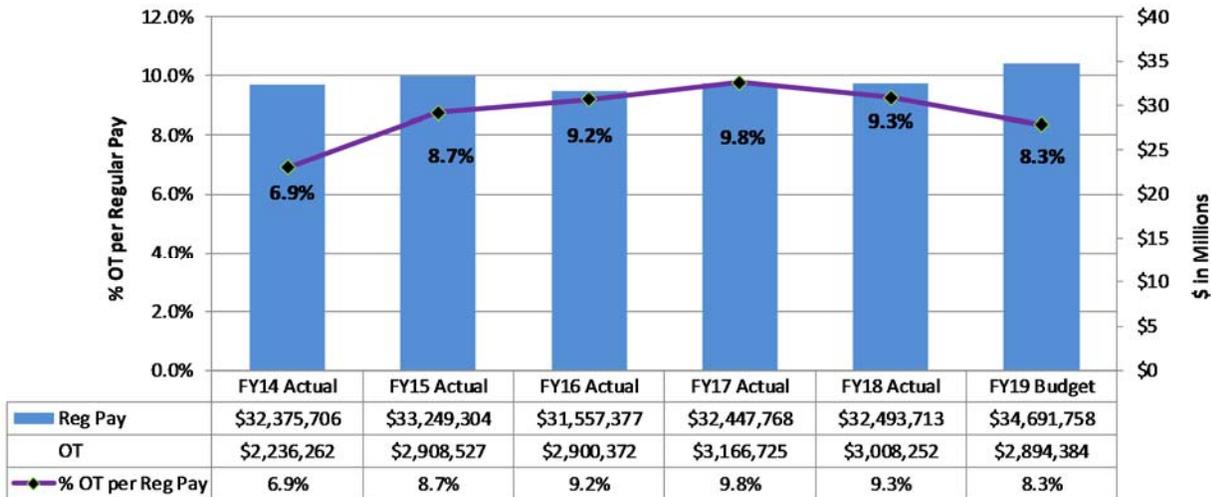
**Prior to fiscal year 2017, personnel were budgeted based on position counts by division, regardless of whether they were full-time or part-time employees. Beginning in FY17, the budget is based on FTEs. Personnel who work less than full-time result in fractional counts.*

Overtime – The overtime line item is comprised of both emergency overtime and budgeted overtime for maintenance and capital projects. The Final FY19 Budget includes \$4.4 million for Overtime, an increase of \$337,000 or 8.2% as compared to the FY18 Budget mainly for wage increases associated with collective bargaining agreements and is based on recent historical spending for planned overtime in the Field Operations Division.

MWRA: % Overtime vs. Regular Pay



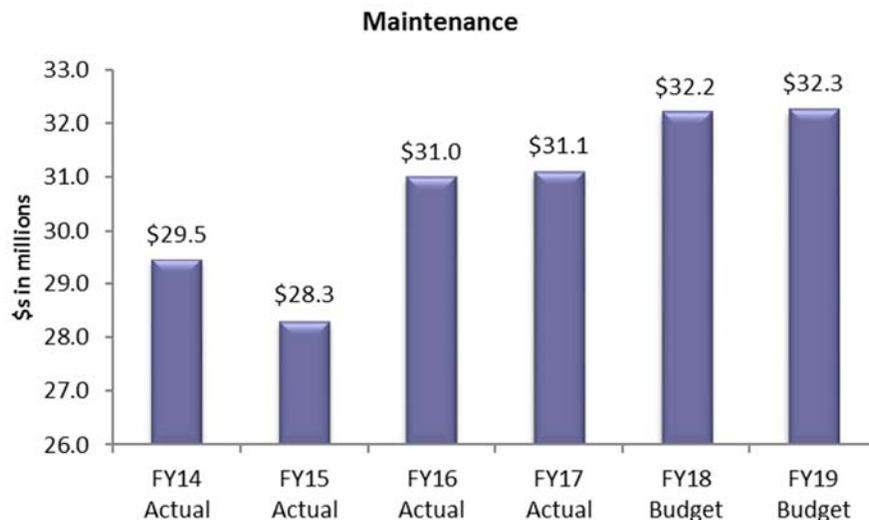
Field Operations Department: % Overtime vs. Regular Pay



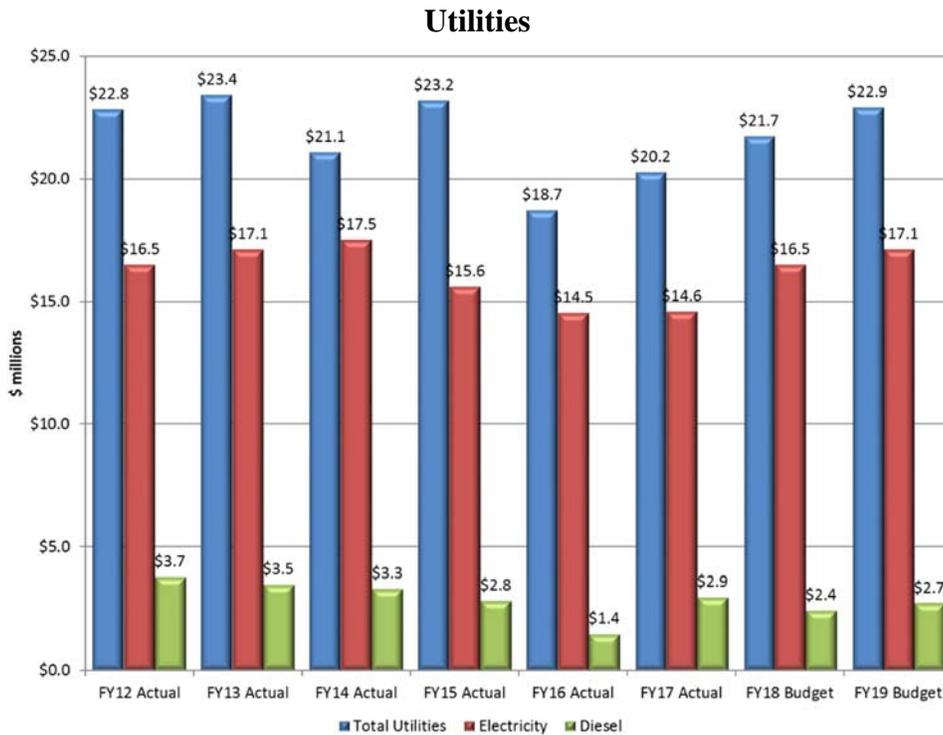
Fringe Benefits – The budget includes \$21.2 million for Fringe Benefits, an increase of \$176,000 or 0.8% from the FY18 Budget. Health Insurance premiums total \$18.3 million, an increase of \$139,000 or 0.8% from the FY18 Budget largely due to an increase in the rates for the health plans structure offset by a change to the number and mix of plans based on FY18 enrollment changes.

Fringe Benefits			
Line Item	FY17 Actual	FY18 Budget	FY19 Budget
Overtime Meals	\$ 107,056	\$ 79,365	\$ 90,147
Health Insurance	16,868,559	18,139,271	18,278,017
Dental Insurance	1,137,659	1,160,985	1,160,145
Unemployment Insurance	111,286	160,744	150,000
Medicare	1,359,681	1,387,610	1,425,262
Tuition Reimbursement	39,394	70,000	70,000
Total Fringe Benefits	\$ 19,623,635	\$ 20,997,975	\$ 21,173,571

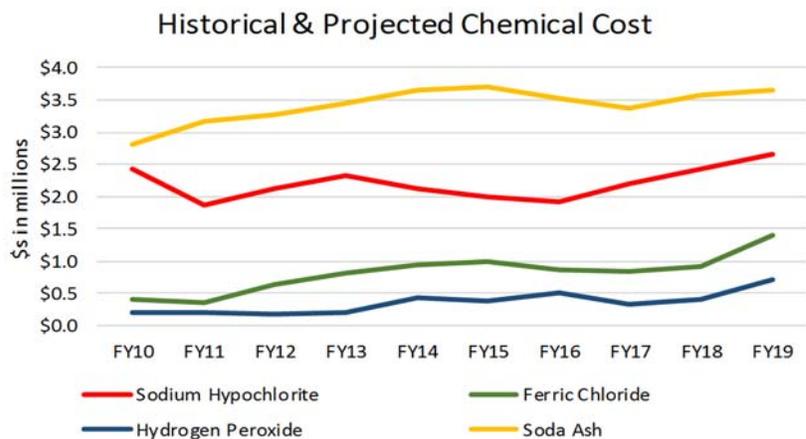
Maintenance – The budget includes \$32.3 million for Maintenance projects, essentially level funded with the FY18 budget. Operations accounts for \$27.1 million or 84.1% of the total maintenance budget. Of this amount, \$15.0 million is for maintenance services and \$12.1 million is for maintenance materials.



Utilities – The budget includes \$22.9 million for Utilities, which is an increase of \$1.1 million or 5.2% from the FY18 Budget. The budget funds \$17.1 million for Electricity; \$2.7 million for Diesel Fuel; \$2.3 million for Water; and \$585,000 for Natural Gas. The increase in Utilities includes \$647,000 at Deer Island to account for the new Eversource transmission and distribution rate and an increase in the budget for diesel fuel of \$262,000 based on recent cost increases.



Chemicals – Price volatility tends to make the Chemicals budget line difficult to forecast, as well as changes in chemical needs depending upon effluent and water quality. The FY19 budget includes \$10.8 million for Chemicals, an increase of \$994,000 or 10.1% from the FY18 Budget mainly due to increased quantities and prices for Ferric Chloride and Hydrogen Peroxide at the Deer Island Wastewater Treatment Plant, and increased prices for Sodium Hypochlorite primarily at the Carroll Water Treatment Plant, offset by lower quantities at Deer Island. The volatility in Soda Ash is less in FY19 than in prior years. The FY19 Budget does not include any funding for the new Deer Island National Pollutant Discharge Elimination System



(NPDES) permit which is projected to have more stringent requirements for enterococcus treatment compliance, which would result in additional chemical usage.

Other Services – The budget includes \$23.1 million for Other Services, an increase of \$301,000 or 1.3% from the FY18 Budget. The primary increase in the budget reflects an increase in the base cost of the sludge pelletization contract, which is budgeted at \$13.3 million for FY19 versus \$12.8 million for FY18, offset by a decrease of \$122,000 in Other rentals for the decision to purchase the multi function devices vs. leasing them and a decrease of \$74,000 for Telephone services based on actual expenditures. The Other Services budget includes \$2.0 million for Telephone services, \$3.7 million for Leases/Rentals of which \$1.9 million is for the Chelsea lease and \$1.5 million is for the Charlestown Navy Yard lease, and \$1.2 million for Grit & Screenings Removal.

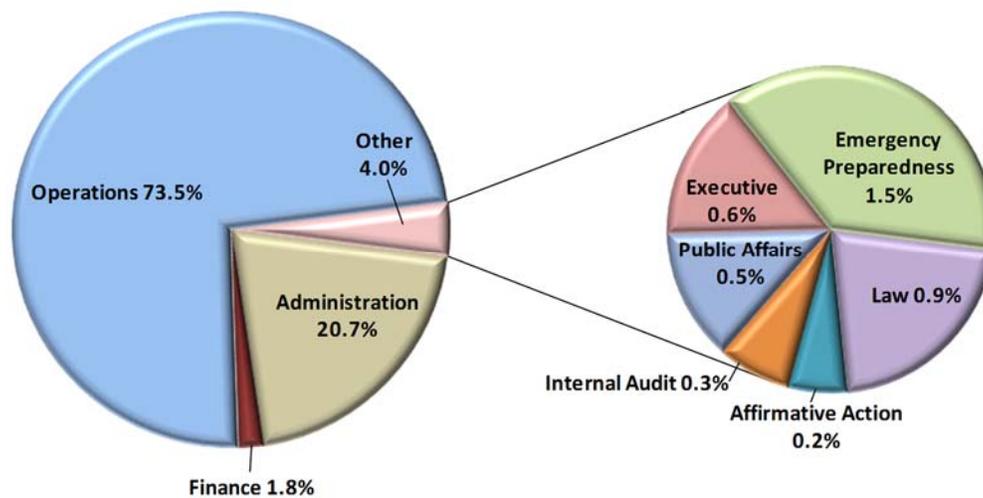
Functional Area Budget Summary

The chart below shows the breakdown of the MWRA’s direct expense budget by division.

FY19 Final Current Expense Budget MWRA Direct Expenses by Division						
DIVISION	FY16 Actuals	FY17 Actuals	FY18 Final Budget	FY19 Final Budget	Change FY19 to FY18	
EXECUTIVE	\$ 6,748,473	\$ 6,706,254	\$ 7,481,735	\$ 7,590,300	\$ 108,565	1.4%
OPERATIONS	160,119,301	162,910,111	170,234,435	176,153,628	5,919,192	3.4%
LAW	2,044,933	2,285,192	2,306,866	2,059,794	(247,072)	-12.0%
ADMINISTRATION	43,217,254	44,967,226	48,426,600	49,486,446	1,059,846	2.1%
FINANCE	3,918,090	3,853,121	4,126,344	4,321,656	195,312	4.5%
TOTAL	\$ 216,048,051	\$ 220,721,904	\$ 232,575,980	\$ 239,611,824	\$ 7,035,844	3.1%

Phoniex

**MWRA Direct Expense Budget
By Division**

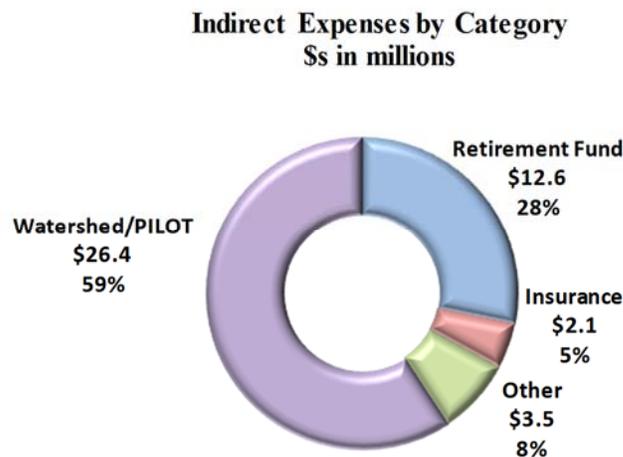


Detailed summaries for each Division budget are provided following the Executive Summary.

INDIRECT EXPENSES

The FY19 Indirect Expense Budget is \$46.0 million, an increase of \$7.1 million or 18.3% over the FY18 Budget.

The following graph combines related indirect expense line items into the general cost categories and shows that Water Supply Protection expenses (for Watershed Reimbursement and PILOT payments) are the largest component of the indirect expense budget at 51% followed by Retirement Funds at 24%, Other (for items such as HEEC, Mitigation, and Addition to Reserves) at 21%, and Insurance at 4%.



Insurance

MWRA purchases property and casualty insurance from external insurance carriers with a self-insured retention of \$2.5 million dollars and Worker's Compensation Excess insurance with a self-insured retention of \$500,000 per claim. The budget includes \$2.1 million for Insurance, an increase of \$86,000 or 4.3% from the FY18 Budget. The FY19 Budget is based on actual average spending for the past five years, FY13-17, inflation, and increased costs of insurance as a result of the natural disasters throughout the United States in calendar year (CY) 2017. MWRA mitigates the budgetary risk of self-insurance by maintaining an Insurance Reserve. The reserve, which was established as part of the Bond Resolution, requires that an independent insurance consultant review the funding level every three years and provide recommendations as to its adequacy. The Insurance Reserve Fund is currently funded at \$14.0 million which was within the acceptable range as identified in the triennial insurance consultant review as of February 2017.

Watershed Reimbursement/PILOT

The Enabling Act directs MWRA to pay the Commonwealth of Massachusetts for several statutory obligations: Payment in Lieu of Taxes (PILOT) for Commonwealth-owned land in the watersheds and operating expenses of the Division of Water Supply Protection. The budget includes \$26.4 million for the

Watershed Management budget, an increase of \$1.2 million or 4.9% over the FY18 Budget. The budget includes \$17.9 million for reimbursement of operating expenses net of revenues, and \$8.5 million for Payment in Lieu of Taxes (PILOT). The largest increases are for operating expenses net of revenues of \$1.2 million mainly for contractual increases, healthcare costs, and funds for the replacement of the New Salem Facility, which burnt down in a fire in April 2018. The FY19 operating capital budget also includes the Clinton crew headquarters construction, purchase of large equipment and dam repairs.

	FY18 Budget	FY19 Budget	FY19 vs. FY18	%
Operating Expenses	\$ 16,664,006	\$ 17,321,420	\$ 657,414	3.9%
Major Projects*	1,050,000	1,600,000	550,000	52.4%
Revenue	(990,000)	(1,014,993)	(24,993)	2.5%
Net	16,724,006	17,906,427	1,182,421	7.1%
Pilot	8,440,000	8,500,000	60,000	0.7%
Total	\$ 25,164,006	\$ 26,406,427	\$ 1,242,421	4.9%

*Not Including projects included in MWRA Capital Budget

Harbor Electric Energy Company (HEEC)

The budget includes \$1.4 million for the Harbor Energy Electric Company (HEEC), an increase of \$429,000 or 44.8% over the FY18 Budget to reflect updated calculations for the Operations and Maintenance component of the HEEC payment obligations and capital improvements to the electrical substations providing electricity to the Deer Island Wastewater Treatment Plant.

Mitigation

MWRA disburses mitigation funds to communities affected by MWRA projects or facilities pursuant to MWRA's Statement of Mitigation Principles and/or specific agreements with communities. MWRA mitigation may include relieving the direct impacts of construction, meeting environmental and regulatory requirements, long-term operating agreements, or community compensation for impacts over and above those addressed by other mitigation. In rare situations, where the extent and duration of the impact of a project or facility on a community is such that restoring the area to its pre-project state is insufficient to relieve the stress of MWRA's presence during the project, MWRA funds or contributes to improvements to affected areas.

Mitigation expenses are funded in the capital budget and in the current expense budget. The Final FY19 Budget includes funding of \$1.6 million in community compensation for the City of Quincy and the Town of Winthrop. Both mitigation agreements expire in FY25.

Operating Reserves

Funding for the Operating Reserve for FY19 is \$1.9 million. The Operating Reserve balance is established by MWRA's Amended and Restated General Revenue Bond Resolution which requires a balance of one-sixth of annual operating expenses. Based on the FY19 Budget, the required balance is \$42.0 million versus the \$40.1 million required in FY18.

RETIREMENT SYSTEMS AND EMPLOYEE BENEFITS

Retirement System

All employees of the Authority are members of a contributory retirement system for public employees. The Act provides that all employees transferred to the Authority from the MDC on July 1, 1985 who were members of the State Employees' Retirement System (the "State System") shall remain members of the State System. All other employees of the Authority are members of a separate retirement system established in the Act known as the Massachusetts Water Resources Authority Retirement System (the "Authority System"). The Authority System is managed by a five-member board consisting of the Secretary of the Authority, *ex officio*, two members elected each for three-year terms by the present and retired members of the Authority System, a member appointed by the Authority for a three-year term, and another member selected by the other four members.

Neither the Authority nor the Authority System has any liability for retirement benefits paid to members of the State System. For these individuals, the total cost of benefits earned while employed by the Authority is paid by the Commonwealth and by the employees' own contributions. As of July 1, 2018, 52 employees of the Authority were members of the State System. While employees of the DCR Division of Water Supply Protection are not members of the Authority System and the Authority is not directly responsible for the payment of benefits, the cost of such benefits are included in the computation of the expenses of the Division that are reimbursable in part by the Authority.

The retirement benefits of employees of the Authority System are funded in part by employee contributions and investment returns, and in part by the Authority. As of July 1, 2018, there were 1,120 active members, 96 inactive members, and 605 retirees in the Authority System. The Act requires the Authority to pay annually to the Authority System any amounts needed to finance any pension benefits earned by its members. The Authority System undertakes an actuarial study every two years, the most recently completed study being as of January 1, 2018 (the "2018 Pension Study"). The unfunded accrued liability reported in the 2018 Pension Study was estimated to be approximately \$27.7 million, resulting in the Authority System being approximately 95.0% funded. The Authority's contributions to the Authority System for Fiscal Years 2014 through 2018 were approximately \$12.4 million (including a \$4.9 million optional payment), \$12.6 million (including an optional payment of \$4.8 million), \$8.2 million, \$4.6 million (including an optional payment of \$1.5 million), and \$3.3 million, respectively. The FY19 CEB includes a \$7.0 million contribution to the Authority System. The Authority is scheduled to make the necessary contributions so that the Authority System will be fully funded by the end of Fiscal Year 2026.

Employee contributions to both the State System and Authority System range from 5% of salary to not more than 11% of salary depending upon salary and the initial date of becoming a member of a system. Employees of the Authority do not participate in the federal Social Security Administration System.

GASB 45 – Accounting and Reporting by Employers for Postemployment Benefits Other than Pensions

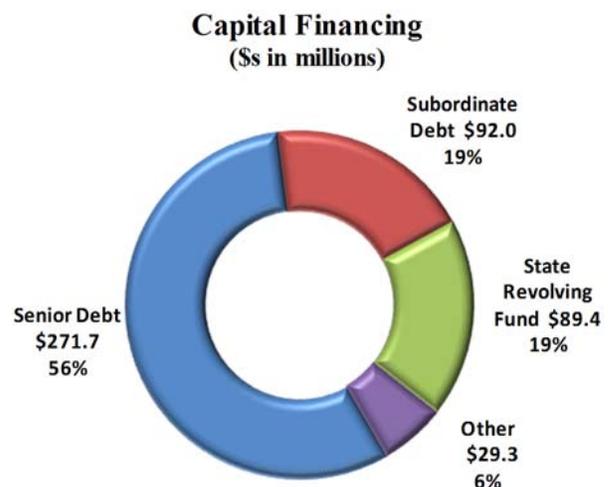
In addition to providing the pension benefits described above, the Authority provides other postemployment health care and life insurance benefits (“OPEB”) for retired employees through the Group Insurance Commission (“GIC”). GIC is a quasi-independent state agency that administers an agent multi-employer defined benefit OPEB plan (the “OPEB Plan”). The benefits, benefit levels, employee contributions and employer contributions are governed by and can be amended by the Authority. As of January 1, 2018, the most recent actuarial evaluation date for the Authority’s OPEB liability, approximately 746 retirees and survivors and 960 active employees met the eligibility requirements for the OPEB Plan and the unfunded actuarial accrued liability was determined to be \$122.0 million. At the end of Fiscal Year 2018, the Authority calculated its net OPEB obligation at \$121.2 million. The Authority previously decided not to fund any OPEB liability until the Authority System was fully funded. Based on the actuarial study of the Authority System completed as of January 1, 2015, which showed the Authority System was 98.3% funded, in Fiscal Year 2015 the Authority established an irrevocable OPEB trust (the “OPEB Trust”). The Authority began funding the OPEB Trust in April 2015 with an initial deposit of \$10.8 million, including \$10 million released from reserves in connection with certain modifications to the General Resolution that became effective in April 2015, and \$800,000 that had been segregated by the Authority toward its OPEB liability in Fiscal Year 2010. In Fiscal Years 2016, 2017, and 2018 \$5.2 million, \$4.9 million, and \$5.0 million, respectively, was deposited to the OPEB Trust.

The FY19 CEB includes \$5.6 million for deposit to the OPEB Trust, which represents 50% of the actuarial required contribution (the “ARC”) for Fiscal Year 2019, based on the actuarial evaluation as of January 1, 2016, after reduction of the pay-as-you-go portion included in the FY19 CEB. The Authority currently expects that the OPEB Trust will be funded annually at 50% of the ARC for the applicable fiscal year, based on the most current actuarial evaluation and after reduction of the pay-as-you-go portion included in the CEB for such fiscal year.

Note: Additional details regarding the Retirement Systems and Employee Benefits is available on the MWRA Internet site in the Notes to Financial Statements based on the Annual Audit Reports.

CAPITAL FINANCING

The FY19 capital financing costs total \$482.4 million and remains the largest portion of the MWRA’s budget. The FY19 Budget capital financing costs increased by \$10.2 million or 2.2% compared to the FY18 Budget. This increase is primarily the result of projected FY18 and FY19 borrowings and the structure of the existing debt, and increased current revenue for capital partially offset by the impact of defeasance and a reduction from the FY18 Budget of \$6.5 million for a HEEC cable capacity reserve.

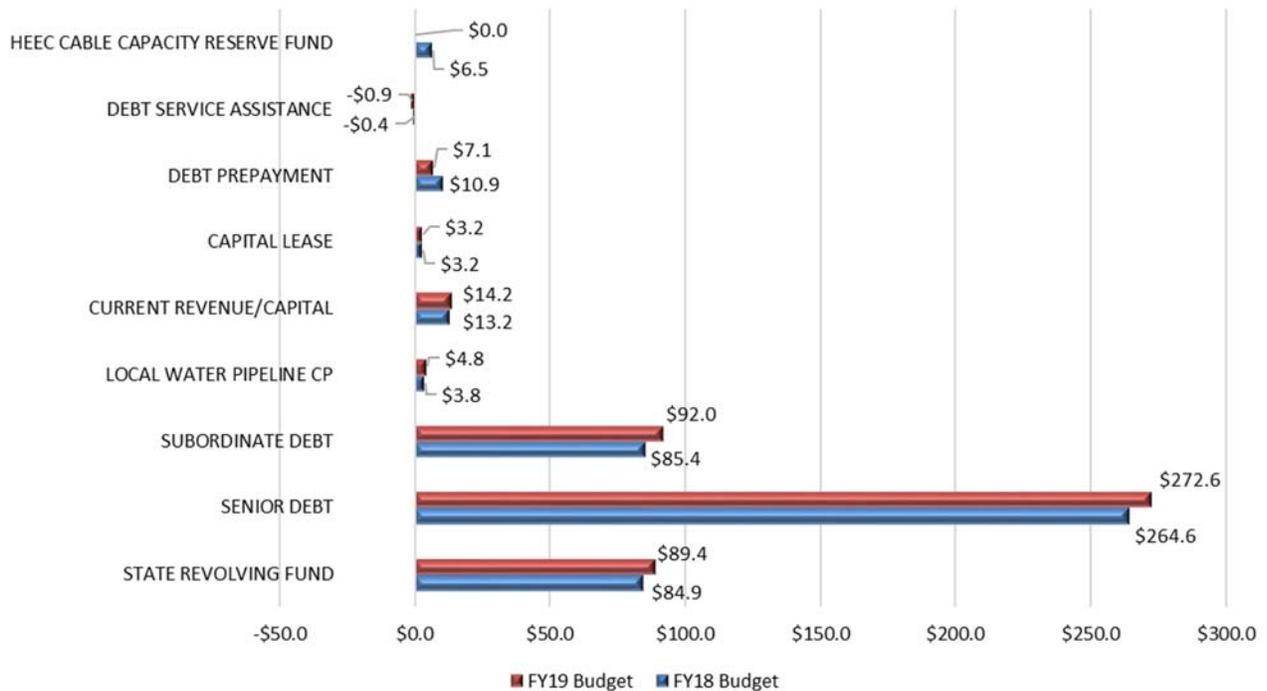


The FY19 capital financing budget includes:

- \$272.6 million in principal and interest payments on MWRA’s senior fixed rate bonds. This amount includes \$3.5 million to support the issuance of \$125 million in new money bonds in February 2019. Also it includes a reduction of \$1.4 million as a result of the FY18 defeasance;
- \$92.0 million in principal and interest payments on subordinate variable rate bonds;
- \$89.4 million in principal and interest payments on SRF loans. This amount includes \$8.6 million to support issuances of \$50.0 million of loans during the fall of 2018 and \$50 million in the spring of 2019;
- \$14.2 million to fund ongoing capital projects with current revenue;
- \$7.1 million in debt prepayment.
- \$4.8 million to fund the interest expense related to the Local Water Pipeline Assistance Program; and
- \$3.2 million for the Chelsea Facility Lease.

The budget also includes \$944,726 offset to debt service expenses from the Debt Service Assistance received in FY18.

FY18 vs FY19 Capital Financing Budget Comparison



Outstanding Debt and Debt Management

The \$8.4 billion spent on MWRA’s modernization efforts since the Authority was established in 1986, has relied heavily on debt financing. Total debt as of June 30, 2018 is \$5.1 billion consisting of senior and subordinated debt, Tax-Exempt Commercial Paper and a revolving loan. The total debt is \$102.3 million less than the MWRA’s total debt as of June 30, 2017. The MWRA enjoys strong unenhanced senior debt ratings of Aa1, AA+, and AA+ from Moody’s, Standard & Poor, and Fitch, respectively.

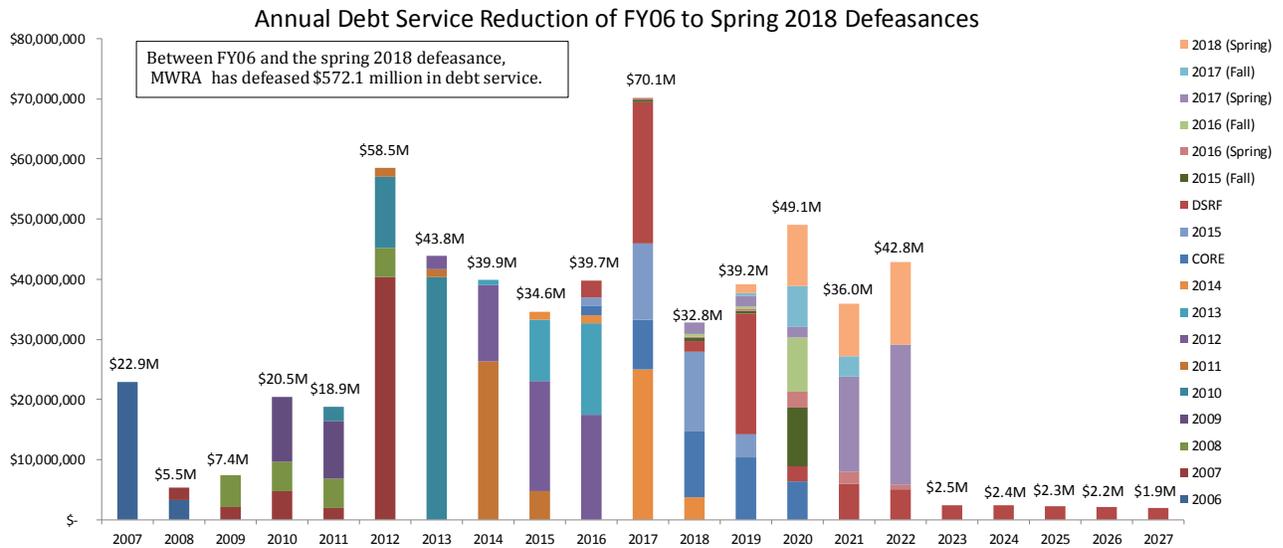
Type	Principal Outstanding June 30, 2018	% of Total
Senior General Revenue Bonds	\$ 3,162,435,000	61.9%
Massachusetts Clean Water Trust	\$ 942,880,187	18.4%
Subordinate General Revenue Bonds	\$ 831,400,000	16.3%
Tax Exempt Commercial Paper/Revolving Loan	\$ 175,000,000	3.4%
Total	\$ 5,111,715,187	100.0%

← 80.3% of MWRA's Debt is Fixed Rate

As a result of the Authority’s Capital Improvement Program, capital financing as a percent of total expenses (before offsets) has increased steadily from 36% in 1990 to 62.8% in the FY19 Current Expense Budget. Much of this debt service is for completed projects, primarily the Boston Harbor Project and the Integrated Water Supply Improvement Program. The MWRA’s capital spending, from its inception, had been dominated by projects mandated by court ordered or regulatory requirements, which in total have accounted for ~80% of capital spending to date. Going forward, and as the Combined Sewer Overflow (CSO) projects reached substantial completion in December 2015, the majority of spending will be focused on asset protection and water redundancy initiatives. The projected capital spending scheduled for FY19 is less than scheduled principal payments which will contribute to decrease MWRA’s outstanding indebtedness.

The Authority has actively managed its debt structure to take advantage of favorable interest rates. Tools used by the MWRA to lower borrowing costs and manage rates include current and advanced refunding of outstanding debt, maximizing the use of the subsidized State Revolving Fund (SRF) debt, issuance of variable rate debt, swap agreements, and the use of surplus revenues to defease debt. The MWRA also uses tax exempt commercial paper to minimize the financing cost of construction in process.

The Final FY19 Budget includes a defeasance of \$29.4 million in outstanding principal which will reduce debt service by approximately \$1.4 million in FY19, and \$10.2 million in FY20, \$8.7 million in FY21 and \$13.6 million in FY22.



The FY19 Budget assumes a 3.5% interest rate for variable rate debt which is 0.25% higher than the rate in FY18. The Authority’s variable rate debt assumption is comprised of three separate elements: the interest rate for the daily and weekly series; liquidity fees for the Standby Bond Purchase Agreement, Letter of Credit, and Direct Purchase providers; and remarketing fees. While MWRA continues to experience unusually low interest rates, they are not reflective of historical averages and there are projected increases in the future.

Grant Revenues

In the past, MWRA has been able to finance approximately 20 percent of its capital spending with grant receipts, totaling approximately \$1.1 billion through FY03. However, since FY03, the MWRA has only received \$4.9 million in capital grants. In addition to participating in federal and state grant programs, the MWRA benefitted from the American Recovery and Reinvestment Act of 2009 which forgave approximately \$33.0 million in State Revolving Fund loan principal. The Authority continues to pursue grant funding and take advantage of any possible program available to maximize grant funding opportunities.

MWRA expects to borrow the majority of funds necessary for future capital spending. Borrowing will include the issuance of fixed and variable rate revenue bonds; low interest loans from the Massachusetts Clean Water Trust (also known as the State Revolving Loan Fund or SRF), and a Tax-Exempt Commercial Paper program. The table below details the FY19 budget capital financing line item. It also shows how upgrading the sewerage system has dominated the capital program to date. Current and future borrowings increasingly support improvements to the water system. A complete list of the Authority’s indebtedness by series is presented in Appendix E.

	Amount Outstanding	Total FY19 Capital Costs	Sewer	Water
Total SRF ¹ Debt	\$942.9	\$89.4	\$68.3	\$21.0
Total Senior Debt	3,162.4	272.6	178.3	94.3
Total Subordinate Debt	831.4	92.0	63.9	28.1
Total SRF and Debt Service²	\$4,936.7	\$454.0	\$310.5	\$143.5
Water Pipeline Commercial Paper	\$175.0	\$4.8	\$0.0	\$4.8
Current Revenue/Capital ³		14.2	13.5	0.7
Capital Lease		3.2	1.9	1.3
Debt Prepayment ⁴		7.1	5.6	1.5
	\$175.0	\$29.3	\$21.1	\$8.2
Total Capital Financing (before Debt Service Offsets)	\$5,111.7	\$483.3	\$331.6	\$151.7
Debt Service Offsets:				
Debt Service Assistance		-\$0.9	-\$0.9	-\$0.1
Bond Redemption		0.0	0.0	0.0
Total Capital Financing	\$5,111.7	\$482.4	\$330.7	\$151.6

CIP Impact on Current Expense Budget

In addition to the annual financing costs included in the Current Expense Budget, the Capital Improvement Program affects the annual operating budget when capital facilities come on-line and require adjustments to operating budgets. In prior years, completion of the Deer Island Treatment Plant, the Carroll Water Treatment Plant, and the residuals processing facility in Quincy resulted in significant increases in operating expenses.

For FY19, the South Boston CSO Tunnel inspection will be performed by in-house staff resulting in a reduction of operating costs of \$350,000. This is the first year of a tunnel inspection program that will be conducted every five years. This reduction will be offset by operating cost increases for natural gas, electricity and chemicals of approximately \$173,000 due to the newly constructed Phosphorous Removal building at the Clinton Wastewater Treatment Plant. Additional operating cost increases of \$233,000 in FY19 are the result of Maximo upgrades and Lawson enhancements occurring within the MIS department.

The following table summarizes the projected CIP impact on the operating budget by project over the next ten years.

Fiscal Year	CIP Impacts (000)										
	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	Total
DI Treatment Plant Asset Protection (not including Co-Digestion or Combined Heat and Power Plant)	\$206	(\$244)	\$0	(\$56)	(\$128)	(\$119)	\$0	\$0	\$0	\$0	(\$341)
DI Treatment Plant Asset Protection - Hydroturbine Replacements	0	0	0	(113)	0	0	0	0	0	0	(113)
Clinton Phosphorous Removal Project	0	0	0	0	0	0	0	0	0	0	0
Wastewater Alternative Energy Projects	0	0	0	0	0	0	0	0	0	0	0
South Boston CSO Tunnel Inspection/Cleaning and Outfalls Inspection (previously named North Dorchester Bay project)	0	0	0	844	(869)	0	0	0	979	(1,008)	(55)
Total Wastewater (inflated)	\$206	(\$244)	\$0	\$675	(\$997)	(\$119)	\$0	\$0	\$979	(\$1,008)	(\$508)
Metro Tunnel Redundancy	\$770	\$791	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,562
Empty	0	0	0	0	0	0	0	0	0	0	0
Wachusett Algae Treatment Facility	0	0	0	0	0	0	0	63	65	0	129
Empty	0	0	0	0	0	0	0	0	0	0	0
Water Energy Projects	0	0	0	0	0	0	0	0	0	0	0
Total Water (inflated)	\$770	\$791	\$0	\$0	\$0	\$0	\$0	\$63	\$65	\$0	\$1,690
Maximo Upgrades & Lawson Enhancements	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Storage Upgrades	0	0	0	0	0	0	0	0	0	0	0
Telecommunications	0	0	0	0	0	0	0	0	0	0	0
NET 2020 DITP & Southborough	0	0	0	0	0	0	0	0	0	0	0
Information Security Program	0	0	0	0	0	0	0	0	0	0	0
Information Technology Management Program	0	0	0	0	0	0	0	0	0	0	0
Application Improvement Program	0	0	0	0	0	0	0	0	0	0	0
IT Infrastructure Program	0	0	0	0	0	0	0	0	0	0	0
Total Business and Operations Support (inflated)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL MWRA	\$976	\$547	\$0	\$675	(\$997)	(\$119)	\$0	\$63	\$1,044	(\$1,008)	\$1,182

Operating costs are projected to increase in FY20 and FY21 by \$1.6 million primarily due to five additional staff for the Tunnel Redundancy Program. This will be offset by Deer Island Treatment Plant Asset Protection initiatives resulting in a reduction of operating costs of \$454,000 through FY29 including the HVAC equipment replacement, Winthrop Terminal Facility Variable Frequency Drive Replacement, Hydroturbine Replacements and future South System Pump Station VFD Replacements.

The next South Boston CSO Tunnel inspection will be in FY23 and result in an increase to operating costs of approximately \$844,000.

Other increases to operating costs over the next ten years include charges to the Wachusett Algae Treatment Facility for \$63,000 and \$65,000 in utilities during FY27 and FY28 respectively as well as \$77,000 for maintenance for the MIS Application Improvement Program project.

RATE ASSESSMENT AND METHODOLOGY

Community Profile and Assessments

MWRA provides wholesale water and sewer services to 61 communities or local bodies. Fifty-one local bodies purchase water supply services, and 43 local bodies purchase wastewater transport and treatment services (this does not include Chicopee Valley Aqueduct water service or Clinton Wastewater Treatment plant customers whose assessments are included in other user charges). Thirty-five local bodies purchase both. Approximately 3.0 million people, or 44% of the population of Massachusetts, live and work in the communities that purchase water and/or wastewater services from MWRA.

MWRA's largest single customer is the Boston Water and Sewer Commission (BWSC), which provides retail services in the City of Boston. In the FY19 Budget, rate revenue from BWSC will account for 31% of MWRA's total rate revenue. The table on page I-24, lists MWRA communities, the services received, and the MWRA assessments for FY19.

Each year MWRA determines preliminary wholesale water and sewer assessments in February and final assessments in June before the beginning of the new fiscal year. These assessments must satisfy the statutory requirement that MWRA fully recover its budgeted water and sewer costs by apportioning net costs among its wholesale water and sewer customers.

The following table presents the calculation of MWRA's FY19 Rate Revenue Requirement. The table shows that most of MWRA's current expenses are directly attributable to either water or sewer service costs, or to investment in the water or sewer systems. Expenses that support both systems are allocated to water or sewer assessments based on generally accepted cost allocation principles. Investment Income and Other Revenues offset water and sewer expenses. The resulting net cost of water and sewer services is the amount MWRA recovers through water and sewer assessments.

Calculation of the Final FY19 Rate Revenue Requirement
(\$s in thousands)

	Sewer	Water	Total
Allocated Direct Expenses	\$158,495	\$81,117	\$239,612
Allocated Indirect Expenses	13,525	32,437	45,963
PLUS			
Capital Expenses:			
Debt Service (less offsets)	309,681	143,421	453,102
Current Revenue for Capital	13,490	710	14,200
Other Capital Expenses	7,560	7,507	15,067
PLUS			
Non-Rate Revenue:			
Investment Income	-8,335	-5,224	-13,559
Fees and Other Revenue	-5,229	-10,113	-15,342
Rate Stabilization	0	0	0
EQUALS			
Rate Revenue Requirement	\$489,187	\$249,855	\$739,042

Wholesale Assessment Methodology

MWRA calculates separate user assessments for water and sewer services. Budgeted water operating and capital costs are allocated based on each community's share of total water use for the most recent calendar year. The sewer assessment methodology allocates budgeted operating and maintenance costs based on share of wastewater flow and strength parameters, and capital costs based on proportion of maximum flow, strength, and population. MWRA uses three-year averaging of wastewater flows to calculate the flow-related components of wholesale sewer assessments. Flow averaging moderates the short-term impact of year-to-year changes in community flow, but does not eliminate the long-term impact of changes in each community's relative contribution to the total flow.

MWRA Fully Served Water and Sewer Customers	Final FY18 Water Assessment	Final FY19 Water Assessment	Percent Change from FY18	Final FY18 Sewer Assessment	Final FY19 Sewer Assessment	Percent Change from FY18	Final FY18 Combined Assessment	Final FY19 Combined Assessment	Dollar Change from FY18	Percent Change from FY18
ARLINGTON	\$5,218,727	\$5,207,787	-0.2%	\$8,338,483	\$8,649,531	3.7%	\$13,557,210	\$13,857,318	\$300,108	2.2%
BELMONT	2,906,748	2,845,415	-2.1%	\$4,923,065	\$5,092,015	3.4%	7,829,813	7,937,430	107,617	1.4%
BOSTON (BWSC)	85,905,357	90,752,551	5.6%	\$135,974,820	\$141,531,379	4.1%	221,880,177	232,283,930	10,403,753	4.7%
BROOKLINE	6,806,844	7,037,965	3.4%	\$12,978,537	\$12,898,264	-0.6%	19,785,381	19,936,229	150,848	0.8%
CHELSEA	4,277,382	4,830,322	12.9%	\$7,717,861	\$8,305,015	7.6%	11,995,243	13,135,337	1,140,094	9.5%
EVERETT	5,182,465	5,466,023	5.5%	\$8,378,885	\$8,876,844	5.9%	13,561,350	14,342,867	781,517	5.8%
FRAMINGHAM	8,003,044	8,205,353	2.5%	\$13,063,056	\$13,423,226	2.8%	21,066,100	21,628,579	562,479	2.7%
LEXINGTON	7,246,531	7,128,006	-1.6%	\$7,402,979	\$7,572,486	2.3%	14,649,510	14,700,492	50,982	0.3%
MALDEN	6,762,968	7,119,028	5.3%	\$13,307,655	\$13,514,306	1.6%	20,070,623	20,633,334	562,711	2.8%
MEDFORD	6,383,291	6,462,326	1.2%	\$12,118,702	\$12,356,732	2.0%	18,501,993	18,819,058	317,065	1.7%
MELROSE	2,854,570	2,897,122	1.5%	\$6,387,893	\$6,520,195	2.1%	9,242,463	9,417,317	174,854	1.9%
MILTON	3,495,641	3,463,069	-0.9%	\$5,450,348	\$5,556,575	1.9%	8,945,989	9,019,644	73,655	0.8%
NEWTON	12,891,560	12,080,214	-6.3%	\$21,760,724	\$22,348,192	2.7%	34,652,284	34,428,406	(223,878)	-0.6%
NORWOOD	3,703,392	4,064,489	9.8%	\$7,436,847	\$7,628,062	2.6%	11,140,239	11,692,551	552,312	5.0%
QUINCY	12,199,555	11,998,387	-1.6%	\$20,574,282	\$20,708,161	0.7%	32,773,837	32,706,548	(67,289)	-0.2%
READING	2,211,234	2,296,922	3.9%	\$4,939,434	\$5,090,525	3.1%	7,150,668	7,387,447	236,779	3.3%
REVERE	4,896,715	5,185,345	5.9%	\$10,775,969	\$10,761,283	-0.1%	15,672,684	15,946,628	273,944	1.7%
SOMERVILLE	7,928,695	8,055,307	1.6%	\$16,508,256	\$17,094,747	3.6%	24,436,951	25,150,054	713,103	2.9%
STONEHAM	3,027,480	3,105,808	2.6%	\$4,600,334	\$4,616,825	0.4%	7,627,814	7,722,633	94,819	1.2%
WALTHAM	9,038,537	9,311,252	3.0%	\$13,521,664	\$13,800,824	2.1%	22,560,201	23,112,076	551,875	2.4%
WATERTOWN	3,388,389	3,696,371	9.1%	\$6,103,914	\$6,357,733	4.2%	9,492,303	10,054,104	561,801	5.9%
WINTHROP	1,615,822	1,698,840	5.1%	\$3,395,228	\$3,565,533	5.0%	5,011,050	5,264,373	253,323	5.1%
TOTAL	\$205,944,947	\$212,907,902	3.4%	\$345,658,936	\$356,268,453	3.1%	\$551,603,883	\$569,176,355	\$17,572,472	3.2%

MWRA Sewer and Partial Water Customers	Final FY18 Water Assessment	Final FY19 Water Assessment	Percent Change from FY18	Final FY18 Sewer Assessment	Final FY19 Sewer Assessment	Percent Change from FY18	Final FY18 Combined Assessment	Final FY19 Combined Assessment	Dollar Change from FY18	Percent Change from FY18
CANTON	\$2,538,303	\$1,874,192	-26.2%	\$4,210,854	\$4,383,915	4.1%	\$6,749,157	\$6,258,107	(\$491,050)	-7.3%
NEEDHAM	1,109,794	856,049	-22.9%	5,889,796	6,173,219	4.8%	6,999,590	7,029,268	29,678	0.4%
STOUGHTON	253,810	161,431	-36.4%	5,031,822	5,072,227	0.8%	5,285,632	5,233,658	(51,974)	-1.0%
WAKEFIELD	2,169,915	2,133,553	-1.7%	6,075,836	6,290,285	3.5%	8,245,751	8,423,838	178,087	2.2%
WELLESLEY	1,742,278	1,485,700	-14.7%	5,601,602	5,745,909	2.6%	7,343,880	7,231,609	(112,271)	-1.5%
WILMINGTON	776,226	503,145	-35.2%	2,804,912	2,913,415	3.9%	3,581,138	3,416,560	(164,578)	-4.6%
WINCHESTER	2,121,826	1,840,674	-13.3%	4,144,555	4,319,099	4.2%	6,266,381	6,159,773	(106,608)	-1.7%
WOBBURN	3,636,173	3,177,148	-12.6%	9,449,446	9,474,524	0.3%	13,085,619	12,651,672	(433,947)	-3.3%
TOTAL	\$14,348,325	\$12,031,892	-16.1%	\$43,208,823	\$44,372,593	2.7%	\$57,557,148	\$56,404,485	(\$1,152,663)	-2.0%

MWRA Sewer-only Customers	Final FY18 Water Assessment	Final FY19 Water Assessment	Percent Change from FY18	Final FY18 Sewer Assessment	Final FY19 Sewer Assessment	Percent Change from FY18	Final FY18 Combined Assessment	Final FY19 Combined Assessment	Dollar Change from FY18	Percent Change from FY18
ASHLAND				\$2,592,423	\$2,693,503	3.9%	\$2,592,423	\$2,693,503	\$101,080	3.9%
BEDFORD				3,546,882	3,655,178	3.1%	3,546,882	3,655,178	108,296	3.1%
BRAINTREE				9,599,185	9,758,859	1.7%	9,599,185	9,758,859	159,674	1.7%
BURLINGTON				5,286,375	5,530,776	4.6%	5,286,375	5,530,776	244,401	4.6%
CAMBRIDGE				24,713,139	25,518,527	3.3%	24,713,139	25,518,527	805,388	3.3%
DEDHAM				5,482,446	5,597,434	2.1%	5,482,446	5,597,434	114,988	2.1%
HINGHAM SEWER DISTRICT				1,846,255	1,902,184	3.0%	1,846,255	1,902,184	55,929	3.0%
HOLBROOK				1,804,666	1,824,554	1.1%	1,804,666	1,824,554	19,888	1.1%
NATICK				5,924,062	5,972,626	0.8%	5,924,062	5,972,626	48,564	0.8%
RANDOLPH				6,339,800	6,530,979	3.0%	6,339,800	6,530,979	191,179	3.0%
WALPOLE				3,821,880	3,988,527	4.4%	3,821,880	3,988,527	166,647	4.4%
WESTWOOD				2,777,442	2,988,061	7.6%	2,777,442	2,988,061	210,619	7.6%
WEYMOUTH				12,036,129	12,584,755	4.6%	12,036,129	12,584,755	548,626	4.6%
TOTAL				\$85,770,684	\$88,545,963	3.2%	\$85,770,684	\$88,545,963	\$2,775,279	3.2%

MWRA Water-only Customers	Final FY18 Water Assessment	Final FY19 Water Assessment	Percent Change from FY18	Final FY18 Sewer Assessment	Final FY19 Sewer Assessment	Percent Change from FY18	Final FY18 Combined Assessment	Final FY19 Combined Assessment	Dollar Change from FY18	Percent Change from FY18
LYNNFIELD WATER DISTRICT	\$748,610	\$759,983	1.5%				\$748,610	\$759,983	\$11,373	1.5%
MARBLEHEAD	2,469,760	2,531,598	2.5%				2,469,760	2,531,598	61,838	2.5%
NAHANT	537,696	496,315	-7.7%				537,696	496,315	(41,381)	-7.7%
SAUGUS	3,953,935	4,016,971	1.6%				3,953,935	4,016,971	63,036	1.6%
SOUTHBOROUGH	997,207	866,571	-13.1%				997,207	866,571	(130,636)	-13.1%
SWAMPSCOTT	1,892,557	2,021,785	6.8%				1,892,557	2,021,785	129,228	6.8%
WESTON	2,818,905	2,493,163	-11.6%				2,818,905	2,493,163	(325,742)	-11.6%
TOTAL	\$13,418,670	\$13,186,386	-1.7%				\$13,418,670	\$13,186,386	(\$232,284)	-1.7%

MWRA Partial Water-only Customers	Final FY18 Water Assessment	Final FY19 Water Assessment	Percent Change from FY18	Final FY18 Sewer Assessment	Final FY19 Sewer Assessment	Percent Change from FY18	Final FY18 Combined Assessment	Final FY19 Combined Assessment	Dollar Change from FY18	Percent Change from FY18
DEDHAM-WESTWOOD WATER DISTRICT	\$295,794	\$154,204	-47.9%				\$295,794	\$154,204	(\$141,590)	-47.9%
LYNN (LWSC)	326,368	320,031	-1.9%				326,368	320,031	(6,337)	-1.9%
MARLBOROUGH	4,902,062	5,820,947	18.7%				4,902,062	5,820,947	918,885	18.7%
NORTHBOROUGH	1,240,294	1,271,058	2.5%				1,240,294	1,271,058	30,764	2.5%
PEABODY	1,939,097	4,162,771	114.7%				1,939,097	4,162,771	2,223,674	114.7%
TOTAL	\$8,703,615	\$11,729,011	34.8%				\$8,703,615	\$11,729,011	\$3,025,396	34.8%
SYSTEMS TOTAL	\$242,415,557	\$249,855,191	3.07%	\$474,638,443	\$489,187,009	3.07%	\$717,054,000	\$739,042,200	\$21,988,200	3.07%

Retail Charges

As noted above, MWRA provides water and sewer services to communities on a wholesale basis. Each community then re-sells services on a retail basis. As a result, household water and sewer charges include each household's share of the community's MWRA water and sewer assessments, plus the community's own charges for the provision of local water and sewer services.

Each community independently establishes retail rates. When establishing local rates, community officials consider issues related to the pricing of services, level of cost recovery, and the local rate structure or methodology. Several factors contribute to a broad range of local rate structures in the MWRA service area:

- Differences in the extent to which water and sewer costs are supported through property taxes and other sources of revenue;
- Differences in the means by which communities finance investments in their own water and sewer systems; and
- Differences in communities' retail rate methodologies.

Some communities have flat unit rates, while others have inclining block rates. Local rates may also provide for differentials among classes of users, such as higher rates for commercial or industrial users, abatements to low-income or elderly residents, and adjusted sewer rates for customers with second meters used for lawn irrigation.

Additional information on rate structure within the member communities is available on the MWRA Advisory Board website as part of its annual retail rate survey.

Revenue and Expenditure Trends

Because MWRA is required by its enabling act to balance its budget and to establish annual assessments to cover all expenses, revenue must change as expenses are changing each year. The Rate Revenue Requirement in any year is the difference between MWRA expenses and other revenue sources, most notably non-rate revenue, investment income, and debt service assistance from the Commonwealth (which directly reduces debt service expense). For FY19, community assessments are projected to represent 96.4% of total revenue.

MWRA's planning estimates are projections based on a series of assumptions about future spending (operating and capital), interest rates, inflation, and other factors. MWRA uses the planning estimates to model and project what future rate increases might be based upon these assumptions, as well as to test the impact of changes to assumptions on future rate increases. The planning estimates are not predictions of what rate increases will be but rather they provide the context and framework for guiding MWRA financial policy and management decision making that ultimately determine the level of actual rate increases on an annual basis. Conservative projections of future rate increases benefit the MWRA by providing assurance to the rating agencies that MWRA anticipates to raise revenues sufficient to pay for its operations and outstanding debt obligations now and over the long-term. Additionally, conservative forecasts of rate revenue increases enable member communities to adequately plan and budget for future payments to MWRA.

MWRA also updates its estimates of anticipated revenues and expenses over a multi-year planning horizon. These estimates provide a context for budget discussions and allow MWRA to consider multiple-year rates management implications and strategies as it evaluates alternative capital and operating budget options, the ultimate goal being sustainable and predictable assessment increases.

The table below and Appendix D (in more detail) present the combined estimated future rate revenue requirements for FY19 through FY28. The planning estimates assume no Debt Service Assistance and use of Rate Stabilization and Bond Redemption reserves through FY2028 to manage the rate increases. These projections also include the release of cash and debt service reserves starting in FY16 as a result of Bond Indenture changes.

Rates and Budget Projections (\$s in thousands)										
Final FY19 Budget	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028
Total Rate Revenue	\$739,042	\$766,658	\$795,319	\$824,267	\$842,831	\$837,082	\$846,774	\$880,169	\$906,476	\$916,290
Rate Revenue Change from Prior Year	\$21,988	\$27,615	\$28,662	\$28,948	\$18,564	(\$5,749)	\$9,691	\$33,395	\$26,308	\$9,814
Rate Revenue Increase	3.07%	3.7%	3.7%	3.6%	2.3%	-0.7%	1.2%	3.9%	3.0%	1.1%
Estimated Annual Household Bill										
Based on annual water use of 61,000 gal.	\$1,157	\$1,208	\$1,262	\$1,318	\$1,369	\$1,409	\$1,459	\$1,526	\$1,591	\$1,649
Based on annual water use of 90,000 gal.	\$1,707	\$1,783	\$1,862	\$1,944	\$2,020	\$2,079	\$2,153	\$2,252	\$2,347	\$2,432

Increasing debt service to pay down and finance the capital improvement program is the most important factor driving estimates of future budget increases. Over the past several years MWRA's Tax-Exempt Commercial Paper program, debt refinancing, federal grants, SRF loans, and Commonwealth debt service assistance have mitigated the impact on ratepayers of new capital spending. However, new water system improvements, for which there are fewer non-ratepayer sources of funding, and the impact of new financing will increase MWRA capital financing costs over the next several years.

MWRA employs rates management tools where available (e.g. refunding for savings, extended maturities on future borrowings, variable rate debt, and increased use of Tax-Exempt Commercial Paper) to help cushion and smooth the growth in capital financing expenses. Despite these initiatives, the size of the capital program will unavoidably continue to drive increases in community assessments.

The second largest budget factor is projected growth of base operating costs. The estimated \$70.7 million increase in direct expenses from FY19 to FY28 is primarily the result of an assumed annual inflation rate.

MWRA's planning estimates are projections based on a series of assumptions about future spending (operating and capital), interest rates, inflation, and other factors. The assumptions include:

- Direct expense inflation rate of 2.7% for salaries and 3.0% for other direct expenses starting in FY19;
- CIP inflation rate of 2.5%;
- Capital spending based on the latest CIP expenditure forecast.
- Long-term fixed rate debt issues with 30-year terms and 5.0% interest rates in FY19, 5.25% interest rates in FY20, 5.5% rates in FY21, 5.75% rates in FY22 and 6.0% rates from FY23 and beyond;
- Variable rate interest projected at 3.5% in FY19, 3.75% in FY20, and 4.0% starting in FY21.

The planning estimates generally use conservative assumptions to help communities plan for future payments to MWRA.

There are several areas where differences from planning estimate assumptions may alter projected increases:

- Changes in anticipated borrowing rates or expected investment income rates;
- The planning estimates do not factor in any positive year-end variances which may be used to defease debt or reserved to offset Rate Revenue Requirements in future years;
- Fewer opportunities for SRF borrowing than expected due to Federal Budget cuts; a dollar borrowed through the SRF at 2% replaces the need to borrow a dollar long-term at an assumed 5% rate;
- Overall inflationary pressures;
- Debt refinancing opportunities;
- Capital spending; and
- Growth in direct expenses, greater than current assumptions.

MWRA Rates Management

Planning estimates for 2019 through 2028 forecast rate revenue requirement increases of 3.1% in FY19, 3.7% annually in FY20 and FY21, 3.6% in FY22, 2.3% in FY23, -0.7% in FY24, 1.2% in FY25, 3.9% in FY26, 3.0% in FY27, and 1.1% in FY28.

The FY19 Budget:

- Continues to refine planning estimates assumptions to provide greater predictability of future assessments;
- Judiciously uses reserves to lower rate increases, but maintain adequate balances;
- Continues the Authority's multi-year rates management strategy of providing sustainable and predictable assessment increases to our member communities; and
- For the second year, continues the smoothing strategy to even out the rate revenue requirement and rate changes caused by fluctuations in debt service at the utility level.

STATEMENT OF FINANCIAL POSITION

In accordance with its enabling act, each year MWRA submits annual reports to the Governor, the President of the State Senate, the House of Representatives, the Advisory Board, and the Chairs of the State Senate and House Committees on Ways and Means containing financial statements relating to its operations maintained in accordance with Generally Accepted Accounting Principles in the United States of America (GAAP) and, commencing with the annual reports for 1986, audited by independent certified public accountants. MWRA's audited financial statements at June 30, 2018 are available online at www.mwra.com.

2017 – 2018 MWRA School Program Poster Contest Winners, First and Second Place

