

MASSACHUSETTS WATER RESOURCES AUTHORITY



Fiscal Year 2017 Proposed CURRENT EXPENSE BUDGET

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MASSACHUSETTS WATER RESOURCES AUTHORITY

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Louis M. Taverna, Chairman
MWRA Advisory Board
100 First Avenue
Boston, MA 02129

March 2016

Dear Chairman Taverna:

At its February 10, 2016 meeting, the MWRA Board of Directors voted to transmit the FY17 Proposed Current Expense Budget to the Advisory Board for its review and comment.

The FY17 Proposed Budget recommends a combined assessment increase of 3.9% in-line with the projection for FY17 last year, due to our continuing practice of targeted debt defeasance for the most challenging out-years and managing both direct and indirect expenses. The FY17 Proposed Budget reflects the benefits of a planned \$25.0 million defeasance in FY16 with targeted savings primarily in FY20, deferring the use of reserves for future years.

Total expenses are \$724.2 million, a \$21.7 million or 3.1% increase over the FY16 Budget. Capital financing costs at \$451.4 million remain the largest portion of the budget, representing 62.3% of the total expenses. Operating expenses are \$272.8 million, of which \$228.6 million is for direct expenses and \$44.2 million is for indirect expenses.

MWRA continues to employ a rates management strategy which promotes sustainable and predictable assessment increases. As such, the assessment increases for FY18-19 are also estimated below 4%.

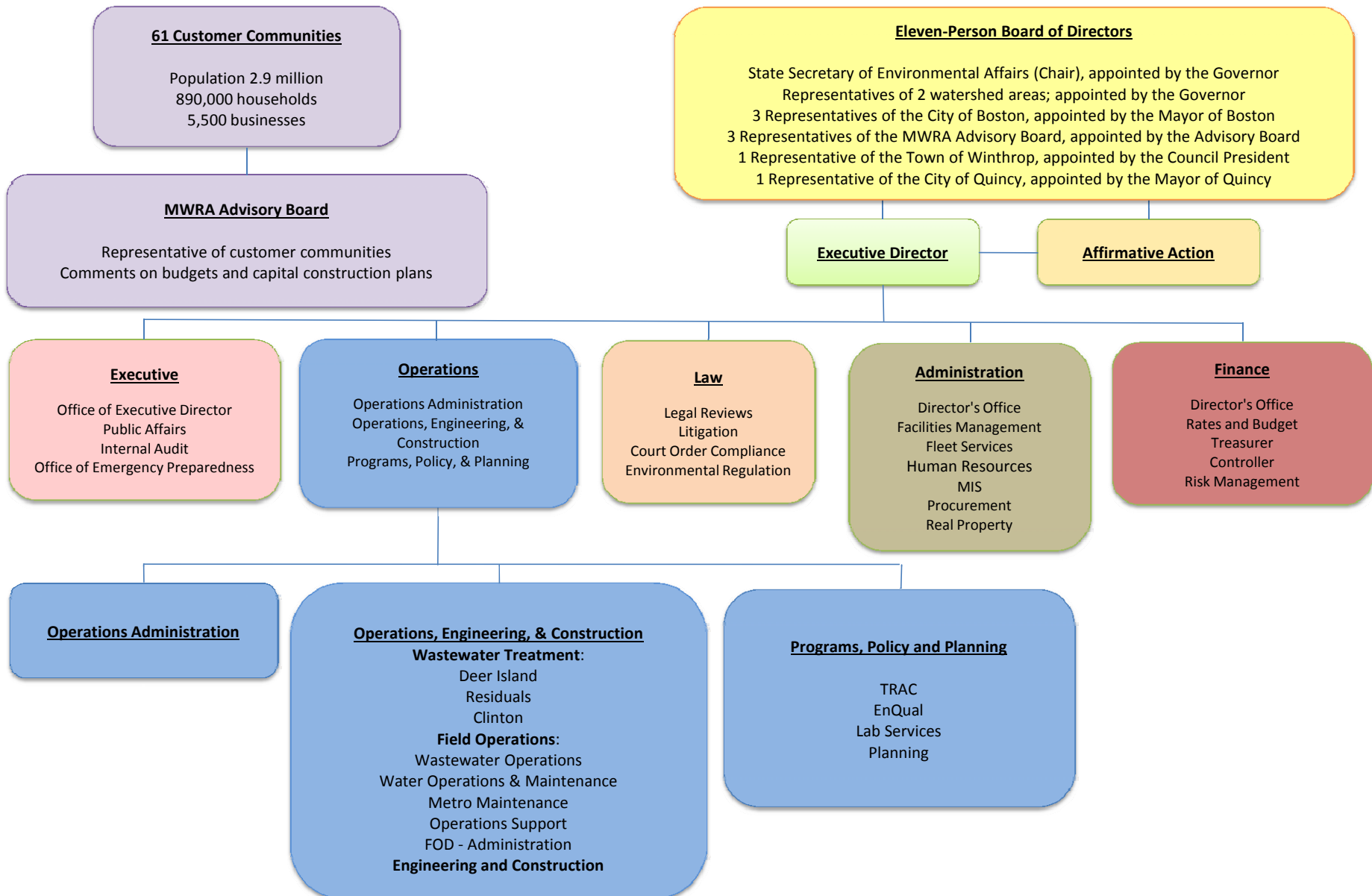
For the first time, the FY17 Proposed Budget addresses the smoothing of rate revenue increases at the utility level. Staff are planning to reconvene the Long-Term Rates Management Committee with the intent of discussing the proposed method off achieving this goal, and providing the Board with a recommendation prior to the approval of the Final FY17 Budget in June 2016.

Additional budget information and a copy of this document are available online at www.mwra.com. Questions or comments on this document should be directed to the MWRA Budget Department.

We look forward to working with the Advisory Board members and staff during your review of the FY17 Proposed Current Expense Budget. Thank you for your continued support and recommendations.

Sincerely,

Frederick A. Laskey
Executive Director



61 Customer Communities

Population 2.9 million
890,000 households
5,500 businesses

MWRA Advisory Board

Representative of customer communities
Comments on budgets and capital construction plans

Eleven-Person Board of Directors

State Secretary of Environmental Affairs (Chair), appointed by the Governor
Representatives of 2 watershed areas; appointed by the Governor
3 Representatives of the City of Boston, appointed by the Mayor of Boston
3 Representatives of the MWRA Advisory Board, appointed by the Advisory Board
1 Representative of the Town of Winthrop, appointed by the Council President
1 Representative of the City of Quincy, appointed by the Mayor of Quincy

Executive Director

Affirmative Action

Executive

Office of Executive Director
Public Affairs
Internal Audit
Office of Emergency Preparedness

Operations

Operations Administration
Operations, Engineering, & Construction
Programs, Policy, & Planning

Law

Legal Reviews
Litigation
Court Order Compliance
Environmental Regulation

Administration

Director's Office
Facilities Management
Fleet Services
Human Resources
MIS
Procurement
Real Property

Finance

Director's Office
Rates and Budget
Treasurer
Controller
Risk Management

Operations Administration

Operations, Engineering, & Construction

Wastewater Treatment:
Deer Island
Residuals
Clinton
Field Operations:
Wastewater Operations
Water Operations & Maintenance
Metro Maintenance
Operations Support
FOD - Administration
Engineering and Construction

Programs, Policy and Planning

TRAC
EnQual
Lab Services
Planning

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Executive Summary

Executive Summary

MWRA Mission

The Massachusetts Water Resources Authority (MWRA) is an independent authority 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. MWRA's long-term plan emphasizes improvements in service and systems and includes performance targets for operating the water and wastewater systems and maintaining new and existing facilities.

Parallel to MWRA's goal of carrying out its capital projects and operating programs is its goal of providing sustainable and predictable assessments by working in partnership with its member communities. The need to achieve and maintain a balance between these two goals continues to be the critical issue facing the MWRA. MWRA has a five-year Strategic Business Plan which articulates the mission statement, values, and goals of the agency, including specific initiatives. To that end, the MWRA applies a multi-year rates management strategy to provide sustainable and predictable assessment increases to its member communities.

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 the budget and provides summary explanations of the variances at the line item level. At least twice a year staff prepares projections for the year-end with a similar level of explanations. The performance indicator reports capture a variety of parameters regarding performance of each major functional area, on a monthly and quarterly basis.

Overview

Each year, MWRA prepares a budget that reflects the best available information for anticipated expenditures and revenues. MWRA transmitted its FY17 Proposed Budget to the Advisory Board in February. The Advisory Board has sixty days to review, comment, and provide recommendations. MWRA also hosts a public hearing to solicit comments on the budget and community assessments from citizens in its service area. During the review period, Advisory Board and MWRA staff will continue to meet and evaluate the impact of changing circumstances as they arise. Following the receipt of the Advisory Board's comments and recommendations, MWRA presents its official responses to the Board of Directors at budget hearings. In June, 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 the final budget and final assessments Fiscal Year 2017 to the Board for approval in June 2016.

FY17 Proposed Budget Summary

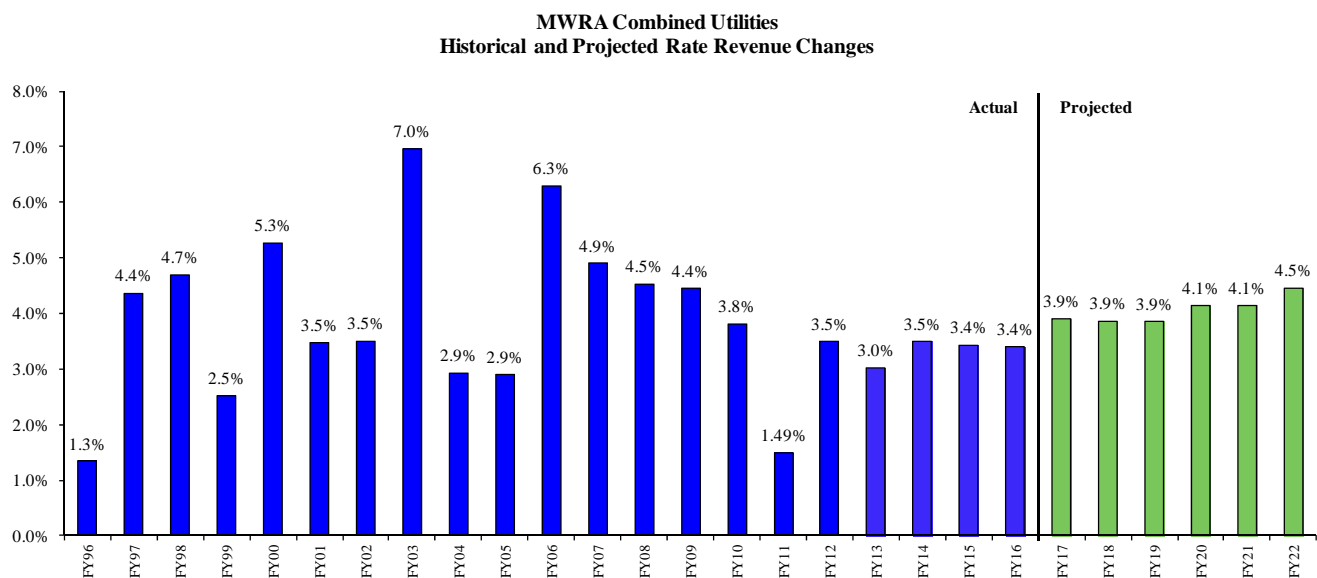
The FY17 Proposed Budget has a combined assessment increase of 3.9%, measures taken by the Authority to achieve the 3.9% rate increase include:

- Continued practice of targeted defeasance; The FY17 Proposed Budget includes a planned defeasance of \$25.0 million which will reduce debt service by approximately \$1.1 in years FY17-19 and \$22.4 million in FY20.
- Direct Expense increase of \$5.8 million or 2.6% mostly for wages, health insurance and maintenance;
- Funding of 1,155 FTE's, 5 fewer than in FY16 Budget;
- Indirect Expense decrease of \$2.8 million or 6.0% for lower pension contributions, the Harbor Electric Energy Corporation for the Deer Island cross harbor cable contract, offset by higher operating expenses for Watershed Management;
- \$5.0 million decrease in Other Revenue due to a one-time revenue for water provided during the community managed CSO project to Cambridge in FY16;
- No use of Rate Stabilization or Bond Redemption; and
- Assumes No Debt Service Assistance*.

*It is important to note that for the first time since 2003, the Governor's 2017 budget includes \$1.1 million for Debt Service Assistance. MWRA and Advisory Board staff will continue to work with the House and Senate to ensure its inclusion in the final FY17 state budget, but this offset to debt service is not include in the FY17 Proposed Budget. Any funds received will go directly to rate relief.

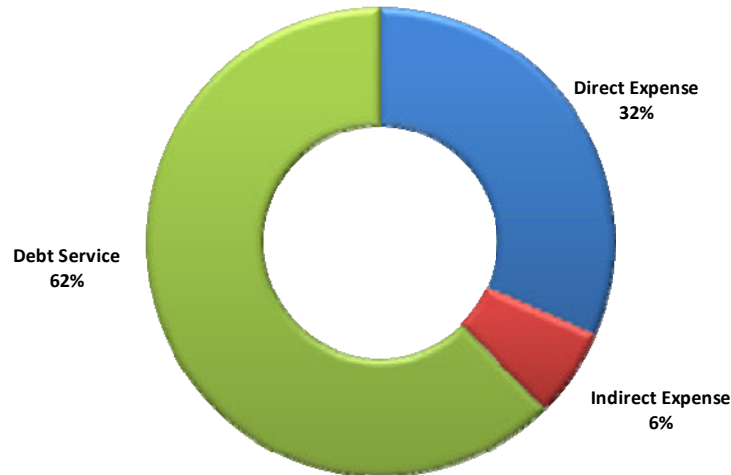
As MWRA continues to pursue a rate management strategy which promotes sustainable and predictable assessments and addresses the Authority's Pension and Other Post Employment Benefits (OPEB) related liabilities.

The graph below represents historical and projected assessment changes based on the FY17 Proposed Budget.



The FY17 Proposed Budget projects total expenses of \$724.2 million, \$21.7 million or 3.1% above the FY16 Budget. Capital financing costs remain the largest component of the CEB and account for 62.3% of total expenses.

FY17 Current Expense Budget



Total expenses include \$451.4 million for Capital Financing costs and \$272.8 million for operating expenses, of which \$228.6 million is for Direct Expenses and \$44.2 million is for Indirect Expenses. Total expenses increased \$21.7 million or 3.1% from the FY16 Budget mainly due to a higher debt service requirement of \$18.7 million, higher Direct Expenses of \$5.8 million due to inclusion of Cost of Living Adjustments (COLA) for staff, higher healthcare costs, and higher projected maintenance expenses. It is important to note that Direct Expenses increased at the 2.6% targeted level.

The FY17 Proposed Budget revenues, excluding rate revenue, total \$25.5 million, a decrease of \$4.6 million or 15.3% from the FY16 Budget. The FY17 Proposed Budget non-rate revenue budget includes \$15.8 million in Other User Charges and Other Revenue and \$9.7 million for Investment Income. The majority of the decrease reflects the impact of a one-time water revenue for the water provided during the Cambridge Combined Sewer Overflow (CSO) project in FY16.

The FY17 Proposed Rate Revenue Requirement is \$698.7 million, an increase of \$26.3 million or 3.91% over the FY16 Budget.

The table on the following page shows MWRA's FY17 Proposed Budget for revenue and expenses compared with the FY16 Budget and FY15 Actual. Changes from FY16 to FY17 are described in the Revenue and Expense section of the Executive Summary.

Table I-1

TOTAL MWRA	FY15 Actuals	FY16 Approved Budget	FY17 Proposed Budget	Change	
				FY17 Proposed Budget vs FY16 Approved Budget	
				\$	%
EXPENSES					
WAGES AND SALARIES	\$ 94,350,655	\$ 99,363,168	\$ 102,229,030	\$ 2,865,862	2.9%
OVERTIME	4,521,867	4,219,293	4,192,676	(26,617)	-0.6%
FRINGE BENEFITS	18,325,579	19,326,756	20,592,609	1,265,853	6.5%
WORKERS' COMPENSATION	2,307,123	2,343,000	2,274,190	(68,810)	-2.9%
CHEMICALS	9,749,142	9,790,849	9,985,755	194,906	2.0%
ENERGY AND UTILITIES	21,073,529	23,164,822	22,418,027	(746,795)	-3.2%
MAINTENANCE	28,322,686	28,698,772	30,320,567	1,621,795	5.7%
TRAINING AND MEETINGS	369,657	413,714	435,481	21,767	5.3%
PROFESSIONAL SERVICES	4,950,866	5,819,611	6,316,156	496,545	8.5%
OTHER MATERIALS	6,060,042	6,164,588	6,172,140	7,552	0.1%
OTHER SERVICES	22,378,137	23,529,902	23,651,024	121,122	0.5%
TOTAL DIRECT EXPENSES	\$ 212,409,283	\$ 222,834,475	\$ 228,587,653	\$ 5,753,178	2.6%
INSURANCE	\$ 2,161,628	\$ 2,160,797	\$ 2,123,297	(37,500)	-1.7%
WATERSHED/PILOT	27,167,900	28,096,233	29,996,321	1,900,088	6.8%
HEEC PAYMENT	2,690,026	1,946,157	773,859	(1,172,298)	-60.2%
MITIGATION	1,459,902	1,400,000	1,558,000	158,000	11.3%
ADDITIONS TO RESERVES	482,953	(34,927)	195,747	230,674	-660.4%
RETIREMENT FUND	7,824,155	8,159,521	3,132,624	(5,026,897)	-61.6%
ADDITIONAL PENSION DEPOSIT	-	-	1,500,000	1,500,000	
POSTEMPLOYMENT BENEFITS	4,821,320	5,224,848	4,876,050	(348,798)	-6.7%
TOTAL INDIRECT EXPENSES	\$ 46,607,884	\$ 46,952,628	\$ 44,155,898	\$ (2,796,731)	-6.0%
STATE REVOLVING FUND	\$ 75,066,883	\$ 81,876,276	\$ 86,718,919	4,842,643	5.9%
SENIOR DEBT	240,678,003	283,024,431	269,326,256	(13,698,175)	-4.8%
SUBORDINATE DEBT	99,686,106	49,222,442	69,997,992	20,775,550	42.2%
LOCAL WATER PIPELINE CP	263,758	4,149,242	4,149,242	-	0.0%
CURRENT REVENUE/CAPITAL	10,200,000	11,200,000	18,000,000	6,800,000	60.7%
CAPITAL LEASE	3,217,060	3,217,060	3,217,060	-	0.0%
CORE FUND DEPOSIT	730,421	-	-	-	
BOND REDEMPTION	(6,745,598)	-	-	-	
VARIABLE RATE SAVINGS	(13,016,491)	-	-	-	
DEFEASANCE ACCOUNT	-	-	-	-	
DEBT SERVICE ASSISTANCE	(853,660)	-	-	-	
TOTAL DEBT SERVICE	\$ 409,226,482	\$ 432,689,451	\$ 451,409,469	\$ 18,720,018	4.3%
TOTAL EXPENSES	\$ 668,243,648	\$ 702,476,554	\$ 724,153,020	\$ 21,676,465	3.1%
REVENUE & INCOME					
RATE REVENUE	\$ 650,315,783	\$ 672,440,000	\$ 698,700,000	26,260,000	3.91%
OTHER USER CHARGES	8,274,428	8,683,898	8,795,741	111,843	1.3%
OTHER REVENUE	10,014,309	12,000,066	6,956,430	(5,043,636)	-42.0%
RATE STABILIZATION	-	-	-	-	
INVESTMENT INCOME	9,688,997	9,352,590	9,700,849	348,259	3.7%
TOTAL REVENUE & INCOME	\$ 678,293,517	\$ 702,476,554	\$ 724,153,020	\$ 21,676,466	3.1%

FY17 Goals:

- Ensure delivery of reliable and cost-effective water and sewer services to customer communities.
- Ensure that water supply and wastewater collection and treatment preserve public health and protect natural resources.
- Develop and implement long-term strategies to ensure assessment increases to MWRA's communities are sustainable and predictable.
- Provide overall management of the agency and ensure adherence to all applicable policies and regulations.
- 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.
- Manage MWRA's debt portfolio and long-term expenses.
- Improve the quality and presentation of budget documents and regularly required reports while working to develop new reports that will aid the Authority's Board of Directors, Management, and the MWRA Advisory Board.
- Plan, develop, implement, and operate efficient, reliable, and economical water treatment/delivery and wastewater transport/treatment systems.
- Ensure compliance with state and federal drinking water quality and wastewater discharge regulations including the Safe Drinking Water Act (SDWA), the Clean Water Act, and National Pollutant Discharge Elimination System (NPDES) permits.
- Plan and implement rehabilitation of existing facilities and construction of new facilities including pipelines, pump stations, storage facilities, and treatment facilities on schedules that allow for sufficient system capacity and performance.
- Dispose of wastewater treatment by-products in a cost-effective and environmentally sound manner.
- Continue to implement strategies for workforce succession in preparation for expected retirement of many MWRA employees in the upcoming five to ten years.

FY17 Initiatives:

- Continue assessment and evaluation of sustainable cost savings opportunities throughout the organization.
- Develop options and recommendations to ensure sustainable and predictable assessments and charges to our communities at both the water and wastewater utility level.
- Continue the implementation of the recommendation of the Five-year IT Plan and improve the effectiveness of the staff while maintaining system security and integrity.
- Attract and retain a qualified high-performance workforce.

- Maintain effective relationship with the unions representing the MWRA workforce while protecting and maintaining management flexibility.
- Continue to identify, assess, and implement initiatives to reduce energy demand and increase energy self-generation in MWRA's system, including the projects noted in MWRA's Memorandum of Understanding with Eversource. Pursue grant-funding and cost-sharing arrangements to defray costs of implementing these initiatives.
- Prepare for commencement of pilot, commercial food waste co-digestion project at Deer Island Treatment Plant in January 2017.
- Self-generate ~30% of the Deer Island Treatment Plant's (DITP) required power through optimization of power generation assets, including the wind turbines and the Steam Turbine Generation (STG) back pressure system.
- Continue to optimize new ultraviolet disinfection treatment process for MWRA's potable water system at the Carroll Water Treatment Plant and Brutsch Disinfection Facility.
- Operate new Spot Pond covered storage facility in water system for first full year.
- Plan for implementation of requirements of the new National Pollutant Discharge Elimination System (NPDES) Permits for DITP (assume new permit is issued by January 2017) and Clinton Wastewater Treatment Plant (assume new permit in effect for all of FY17).

FY16 Mid-Year Accomplishments:

- The Long-Term CSO Control Plan was declared to be substantially complete by the Court in December 2015.
- Maintained MWRA's strong credit ratings, Aa1, AA+, AA+ from Moody's, Standard & Poor's and Fitch respectively. MWRA's credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. These high credit ratings enable MWRA to borrow at very advantageous interest rates.
- 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 and the non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits resulted in \$1.2 million in revenue for the first six months of FY16. Deer Island also self-generated ~29% of the plant's total required power during that time period.
- Received revenue for energy generated at numerous facilities including the following: hydroelectric \$321,000 from Oakdale Station, \$71,000 from Cosgrove Station, and \$11,000 from the Loring Road Pump Station; wind of \$121,000 from Charlestown Pump Station; and solar of \$53,000 from Carroll Water Treatment Plant.
- Developed the FY17 Budget consistent with the FY16 planning estimates, for both the Current Expense Budget and the Capital Improvement Program.
- Received \$44,000 in utility rebates for completed CEB-funded energy projects through the second quarter.

- At Deer Island Treatment Plant, treated 99.7% of flow through secondary and met secondary permit limits at all times.
- Operated Deer Island Treatment Plant without any NPDES Permit violations during FY16.
- Processed 99.9 average tons per day of sludge at the Pelletization Plant and disposed of 2,459 of grit and screenings through a contracted vendor.
- In water system, exercised 210 and replaced 7 mainline valves; exercised 111 and replaced 3 blow-off valves.
- In the wastewater system, inspected 17.27 miles and cleaned 19.73 miles of MWRA pipeline. Inspected more than 410 structures and rehabilitated 75 manholes. Also inspected 21, and cleaned 25 inverted siphon barrels.

SOURCES AND USES OF FUNDS

MWRA funds its operations primarily through member community assessments. Funds supporting the current expense budget are not subject to appropriation with the exception of debt service assistance. The table below shows MWRA's sources and uses of funds for the FY17 Proposed Budget.

SOURCES & USES OF FUNDS*		
\$ in Millions		
<i>Sources of Funds</i>		
Other User Charges	\$8.8	1.2%
Other Revenue	7.0	1.0%
Investment Income	9.7	1.3%
Rate Revenue	698.7	96.5%
Rate Stabilization	0.0	0.0%
TOTAL REVENUE	\$724.2	100.0%
<i>Uses of Funds</i>		
Total Expenses before Debt		
Service Offsets	\$451.4	
Less:		
Debt Service Assistance	-	
Bond Redemption	-	
Sub-Total Net Expenses	451.4	
Capital Financing	451.4	62.3%
Direct Expenses	228.6	31.6%
Indirect Expenses	44.2	6.1%
TOTAL EXPENSES	\$724.2	100.0%
TOTAL EXPENSES Less Offsets	\$724.2	
*May not add up due to rounding		

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 FY17 Proposed Budget, 96.5% of revenue is derived from rate revenue. The remaining 3.5% 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 (TRAC), penalties assessed to holders of sewer use permits, and other miscellaneous sources.

Rate Revenue

The Rate Revenue Requirement for FY17 is \$698.7 million, an increase \$26.3 million or 3.9% over the FY16 Budget. The Rate Revenue Requirement is the difference between total expenses of \$724.2 million, less non-rate revenue of \$25.5 million. Of the \$698.7 million, \$463.5 million will fund the sewerage system, an increase of 3.9% as compared to FY16; and \$235.2 million will fund the water system, also an increase of 3.9% as compared to FY16.

Non-Rate Revenue

FY17 non-rate revenue totals \$25.5 million, which is a decrease of \$4.5 million or 15.0% versus the FY16 Budget. The FY17 non-rate revenue budget includes:

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 FY17 Budget total \$8.8 million, an increase of \$409,000 or 4.9% from the Final FY16 Budget and includes \$4.9 million for Chicopee Valley Aqueduct (CVA) communities, \$1.6 million for Deer Island water usage, \$753,000 for entrance fees from member communities, and \$500,000 for the Commonwealth's partial reimbursement for Clinton Wastewater Treatment Plant expenses. Other User Charges are \$112,000 or 1.3% more than the FY16 Budget which is mainly due to assessment increases related to increases for Deer Island, Chicopee, and Lancaster.

Other Revenue

Other Revenue is budgeted at \$7.0 million, a decrease \$5.0 million or 42.0% from the FY16 Budget mainly for due to one-time revenue for water provided during the community managed CSO project to the City of Cambridge in FY16. Other Revenue includes \$3.6 million from the sale of the Authority's Renewable Portfolio Credits, sale of generated power, and revenue from the demand response program as well as \$2.2 million in permit fees and penalties.

Permit Fees and Penalties

The FY17 Proposed Budget includes \$2.2 million in fees charged to industries that discharge toxic materials into the MWRA sewer system. These permit fees partially offset the annual costs of permitting, inspecting, and monitoring these industries.

Energy Revenue

The FY17 Proposed Budget includes \$3.6 million which pertains to the Authority's energy programs for the sale of Renewable Portfolio Standard credits, participation in the demand response program, and the sale of power including hydro, wind, and solar generated at various MWRA's facilities as well as a large number of miscellaneous revenue items.

Miscellaneous Revenue

The FY17 Proposed Budget includes \$1.2 million in miscellaneous revenue, a \$5.0 million decline reflecting one-time water revenues collected from the City of Cambridge.

Investment Income

MWRA earns income by investing reserves and fund balances in a variety of interest-yielding securities. The FY17 Proposed Budget includes \$9.7 million in investment income, an increase of \$348,000 or 3.7% from the FY16 Budget due to higher projected interest rate assumptions. The FY17 Proposed short-term interest rate is 0.50%, 30 basis points higher than the FY16 Budget.

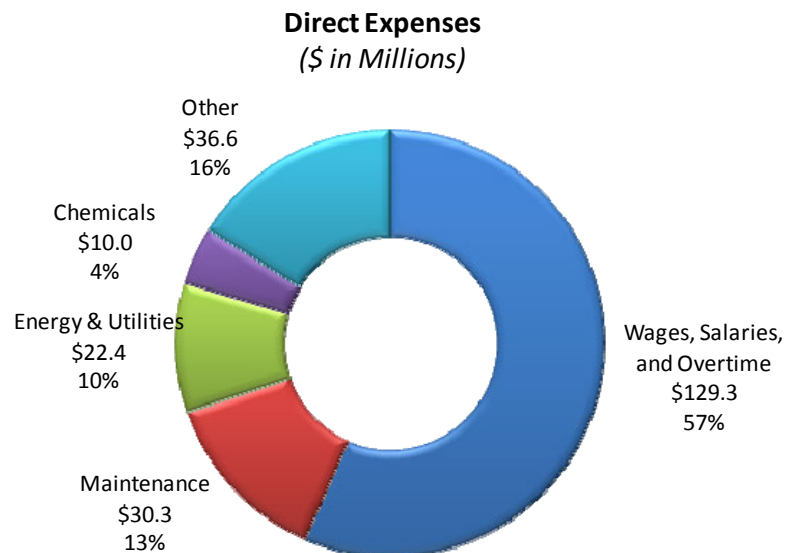
Non-Recurring Revenue

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 Proposed FY17 Proposed Budget, no Rate Stabilization fund usage is projected.

Direct Program Expenses

FY17 Proposed Direct Expenses total \$228.6 million, an increase of \$5.8 million, or 2.6%, from the FY16 Budget. The principal drivers for the increase are wages and salaries due to cost of living adjustments (COLAs), lower energy costs mainly for projected electricity pricing, sludge expense reflecting lower contract indices. Offset by higher spending for fringe benefits driven by higher projected healthcare cost increases, and higher maintenance. 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 increased self-generation of electricity.

The chart below combines related direct expense line items into general cost categories and shows that labor costs (wages and salaries, overtime, fringe benefits, workers' compensation, and training) are the largest component of the direct expense budget 57%, other (professional services, other materials, and other services) 16%, maintenance 13%, utilities 10%, and chemicals 4%.



Direct Expenses

Wages and Salaries – The FY17 Proposed Budget includes \$102.2 million for Wages and Salaries as compared to \$99.4 million in the FY16 Budget, an increase of \$2.9 million or 2.9%. Regular Pay which is 98.2% of total Wages and Salaries, increased \$2.9 million mostly for COLA increases. The FY17 Proposed Budget funds 1,155 positions, 5 fewer FTE positions than FY16 Budget of 1,160. It is important to note that the Authority is striving to achieve the 1,150 FTE goal recommended by Amawalk consultants based on a staffing study in 2012, to be reached in a five-year timeframe. As always, new hires and backfills of vacant positions will be managed at the agency level and addressed on a case-by-case basis by senior management.

Overtime – The FY17 Proposed Budget includes \$4.2 million for Overtime, basically level funded with FY16 Budget.

Fringe Benefits – The FY17 Proposed Budget includes \$20.6 million for Fringe Benefits, an increase of \$1.3 million or 6.5% from the FY16 Budget. Health Insurance premiums total \$17.8 million, an increase of \$1.0 million or 6.2% from the FY16 Budget largely due to an anticipated 8% increase in rate structure.

Workers' Compensation – The FY17 Proposed Budget includes \$2.3 million for Workers' Compensation, a decrease of \$69,000 or 2.9% from the FY16 Budget and is based on a three-year average of actual and projected spending.

Chemicals – The FY17 Proposed Budget includes \$10.0 million for Chemicals, an increase of \$195,000 or 2.0% from the FY16 Budget mainly due to a half year funding for the Deer Island National Pollutant Discharge Elimination System (NPDES) permit which is projected to have more stringent requirements for enterococcus treatment compliance, offset by favorable pricing.

Utilities – The FY17 Proposed Budget includes \$22.4 million for Utilities, which is a reduction of \$747,000 or 3.2% from the FY16 Budget. The decrease reflects an ongoing decline in energy prices, most notably electricity and diesel fuel. Also, the budget reflects less purchased power at the Deer Island Treatment Plant due to self-generation increases and demand decreases resulting from energy-efficiency projects. The FY17 Proposed Budget funds \$16.7 million for Electricity, \$2.8 million for Diesel Fuel, \$2.1 million for Water, and \$590,000 for Natural Gas.

Maintenance – The FY17 Proposed Budget includes \$30.3 million for Maintenance projects, an increase of \$1.6 million or 5.7% from the FY16 budget. The FY17 Maintenance request is \$2.0 million above FY15 actuals, reflecting a \$1.1 million increase in MIS for software license upgrades, additional funds for energy efficient projects, a new control valve for Weston Aqueduct, maintenance at Caruso Pump Station, and other maintenance initiatives.

Training and Meetings – The FY17 Proposed Budget includes \$436,000 for Training and Meetings, an increase of \$22,000 or 5.3% from the FY16 Budget.

Professional Services – The FY17 Proposed Budget includes \$6.3 million for Professional Services, an increase of \$497,000 or 8.5% from the FY16 Budget. The FY17 Proposed Budget reflects funding of \$1.8 million for Security, \$1.6 million for Regulatory Monitoring, and \$1.6 million for Other Professional Services to support items such as professional staff development, 24/7 monitoring of the MWRA MIS network, and as-needed engineering services.

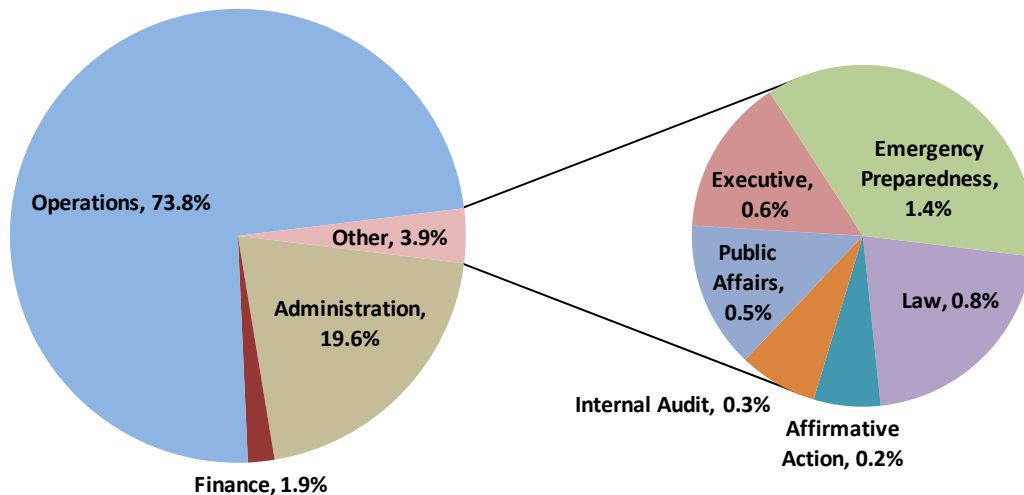
Other Materials – The FY17 Proposed Budget includes \$6.2 million for Other Materials, an increase of \$8,000 or 0.1% from the FY16 Budget. The budget includes funding of \$1.9 million for Vehicle Purchases, \$932,000 for Vehicle Expenses mostly for fuel purchases for the MWRA fleet, \$880,000 for Lab and Testing Supplies, \$478,000 for Computer Hardware needs, \$420,000 for Health and Safety, \$410,000 for Equipment/Furniture, and \$406,000 for Work Clothes.

Other Services – The FY17 Proposed Budget includes \$23.7 million for Other Services, an increase of \$121,000 or 0.5% from the FY16 Budget. The budget includes funding of \$13.4 million for Sludge Pelletization, \$4.1 million for Space/Lease Rentals and related expenses for the CNY, Chelsea facilities, and a potential Chelsea satellite location, \$2.1 million for Voice and Data costs, \$1.2 million for Grit & Screenings removal, and \$1.1 million for Other Services. The largest increase is for Telecommunications of \$431,000 for SCADA data lines, and Space/Lease Rentals of \$464,000 for additional space requirements. Increased costs were nearly offset by a \$732,000 decline in Sludge Pelletization cost due to deflation.

Functional Area Budget Summary

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

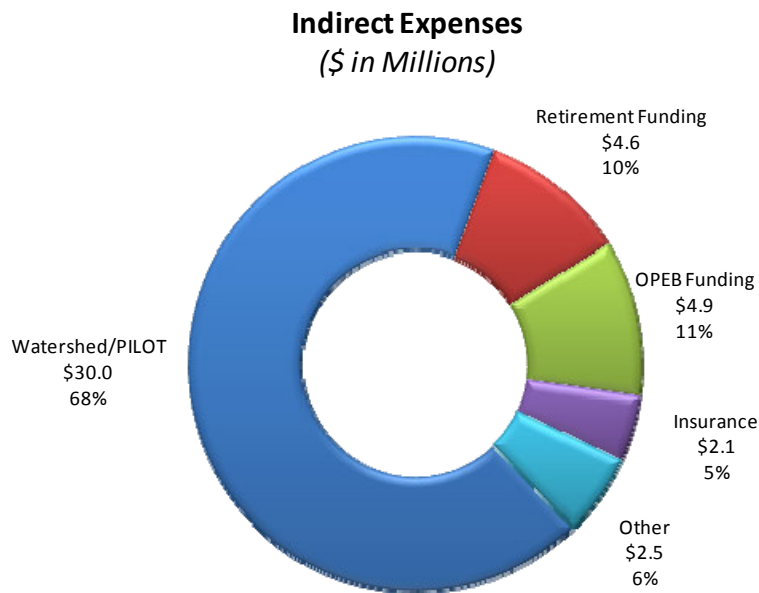
**MWRA Direct Expense Budgets
by Division**



Indirect Program Expenses

The FY17 Proposed Budget Indirect Budget is \$44.2 million, a decrease of \$2.8 million or 6.0% from the FY16 Budget, due primarily to a \$3.6 million reduction the Authority’s pension contribution. The budget includes \$30.0 million for the Division of Water Supply Protection, an increase of \$1.9 million or 6.8% the FY16 Budget. The largest increases are for operating expenses net of revenues of \$1.8 million mainly for additional funding for capital projects, healthcare costs, and contractual increases.

The graph below represents indirect expense line items into the general cost categories and shows that Water Supply Protection Program expenses are the largest component of the indirect expense budget 68% followed by OPEB funding at 11%, Retirement funding 10%, Other (for items such as HEEC, Mitigation, and Addition to Reserves) 6%, and Insurance 5%.



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, operating expenses of the Division of Water Supply Protection, and debt service costs for purchases of land around the supply reservoirs to protect the watersheds. The budget includes \$30.0 million for the Watershed Management budget, an increase of \$1.9 million or 6.8% over the FY16 Budget. The budget includes \$16.0 million for reimbursement of operating expenses net of revenues, \$8.4 million for Payment in Lieu of Taxes (PILOT), and \$5.6 million for debt service expenses on prior land purchases financed by the Commonwealth. The largest increases are for operating expenses net of revenues of \$1.8 million mainly for additional funding for capital projects, healthcare costs, and contractual increases.

Retirement System Contribution

The FY17 Proposed Budget includes \$4.6 million for the Retirement Fund, a reduction of \$3.5 million or 61.6% over the FY16 required contribution. The minimum required contribution for FY16 is \$3.1 million based on the January 1, 2015 actuarial report. An additional pension deposit of \$1.5 million was also included in the FY17 Proposed Budget in recognition of lower than assumed returns on pension investments in CY15.

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

The Authority has complied with the GASB 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other than Pensions (OPEB)*, by disclosing this liability in the year-end Financial Statements. As part of the multi-year strategy to address its unfunded liabilities for OPEB

and pension holistically, the Board approved a plan to pay down our pension liability and upon reaching full funding, move to address the OPEB obligation. This strategy was employed in the FY08-16 budgets (although temporarily halted in FY11 to achieve a 1.5% rate increase). Based on the latest actuarial evaluation, MWRA's pension fund is at 98.6% funding level. In the FY17 Proposed Budget the Authority is proposing to fund its OPEB liability at \$4.9 million, continuing the Authority's long-term commitment to address its liabilities. Furthermore, to maximize the benefits in terms of returns and accounting treatment, an irrevocable OPEB Trust was established after Board approval and funding started on April 23rd, 2015 with \$10,800,000 deposit. The source of the deposit is \$10 million cash reserves which became available due to the Amended and Revised Bond Indenture, and \$800,000 from funds appropriated in FY10 for funding OPEB. The \$4.9 million contribution is 50% of the Actuarial Required Contribution (ARC) after the reduction of the pay-as-you-go portion budgeted under the Fringe line item, based on the January 1, 2014 actuarial report.

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, a decrease of \$38,000 or 1.7% from the FY16 Budget. The FY17 Proposed Budget was based on actual average spending for the past five years, FY11-15. The budget includes \$1.7 million for premiums and fees and \$440,000 for the projected cost of claims made against the self-insured portion of MWRA coverage. 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 insurance consultant review as of February 2014.

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 FY17 Proposed Budget includes funding of \$1.6 million in potential community compensation for the City of Quincy and the Town of Winthrop. Both mitigation agreements expire in FY25.

Harbor Electric Energy Company (HEEC)

The budget includes \$774,000 for the Harbor Energy Electric Company (HEEC), a decrease of \$1.2 million or 60.2% from the FY16 Budget. This funding is for the repayment of the capital investment for the Deer Island electric cable and substation which provides electric power to the treatment plant. The significant decrease is due to contractual obligations which expired in May 2015, ending the amortization of the cable financing component of the capital investment.

Operating Reserves

Funding for the Operating Reserve for FY17 is \$195,000 higher than the FY16 Budget. The Operating Reserve balance is in compliance with MWRA General Bond Resolution which requires a balance of one-sixth of annual operating expenses. Based on the FY17 Proposed Budget the required balance is \$39.61 million versus the \$39.42 million required in FY16.

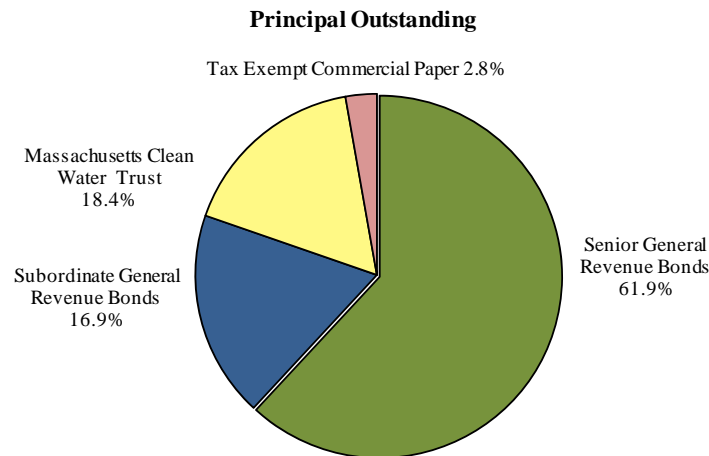
Capital Financing

Outstanding Debt and Debt Management

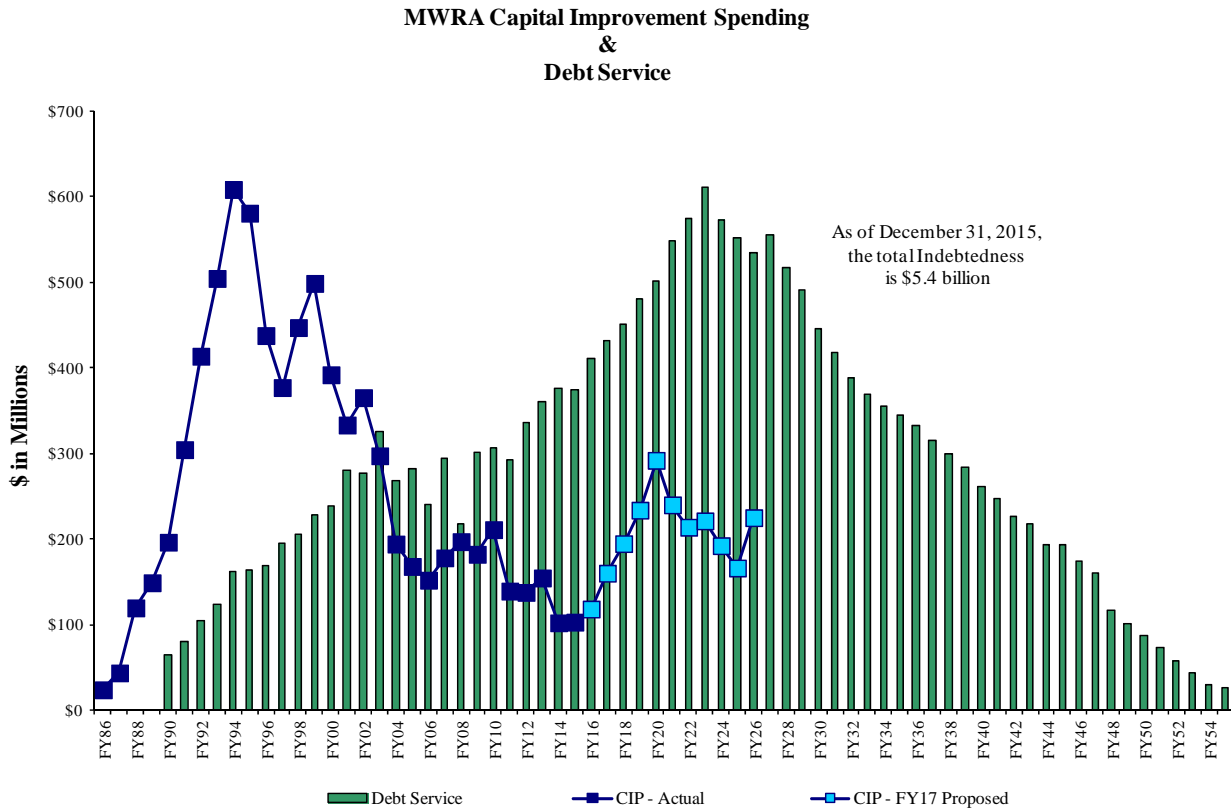
The \$8.0 billion spent on MWRA's modernization efforts to date, has relied heavily on debt financing. Total debt as of December 2015 was \$5.4 billion consisting of long-term senior and subordinated debt, as well as short-term Tax-Exempt Commercial Paper and a Tax-Exempt Revolving Loan. The MWRA enjoys strong unenhanced senior debt ratings of Aa1, AA+, and AA+ from Moody's, Standard & Poor, and Fitch, respectively.

Type	Principal Outstanding December 31, 2015	% of Total
Senior General Revenue Bonds	\$ 3,316,310,000	61.9%
Massachusetts Clean Water Trust	\$ 987,656,759	18.4%
Subordinate General Revenue Bonds	\$ 905,490,000	16.9%
Tax Exempt Commercial Paper and Revolving Loan	\$ 149,000,000	2.8%
Total	\$ 5,358,456,759	100.0%

← 80.3% of MWRA's
Debt is Fixed Rate

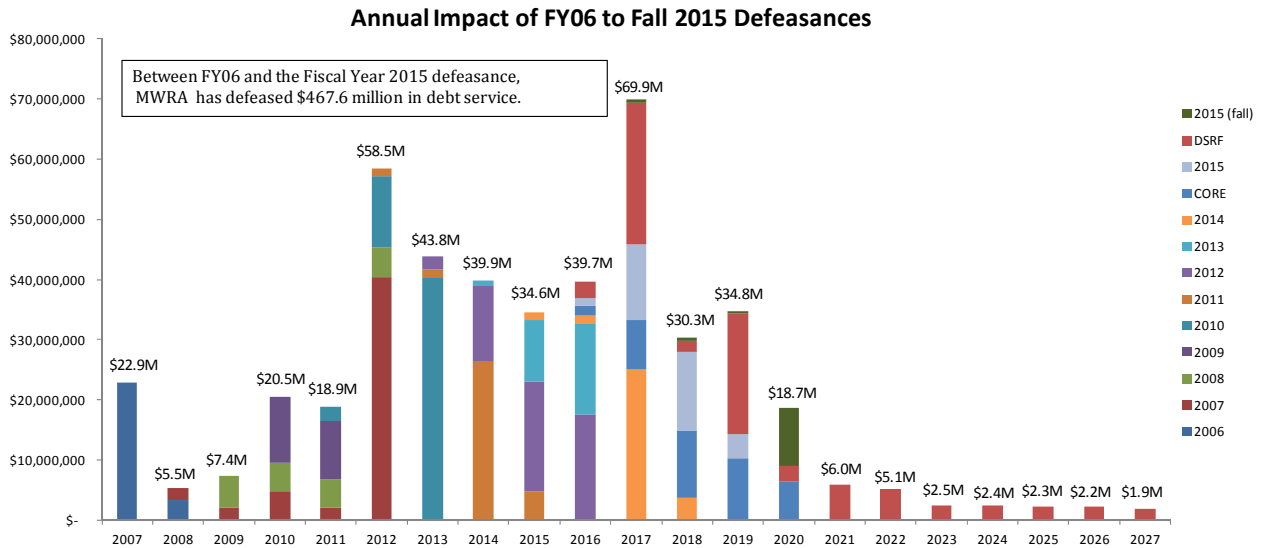


The following graph was updated with FY17 Proposed CIP spending and debt service projections to illustrate the relationship between the MWRA's CIP and debt service.



Over the past 25 years, MWRA has been focused on construction of new water and sewer facilities, many of which had been neglected for years, to bring the system into regulatory compliance. These efforts relied heavily on debt financing. Going forward, the majority of capital spending will be geared towards asset protection and water redundancy initiatives. As indicated above, as of December 31, 2015, MWRA's total debt was \$5.4 billion which relate to the significant increases in debt service obligations in the upcoming years. The Authority's debt service obligation as a percent of total expenses has increased from 36% in 1990 to over 62% in the FY17 Proposed Budget, thus continuing to be the largest challenge for the Authority to manage assessments in future years.

MWRA continues to actively manage 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, and the use of surplus revenues to defease debt. The MWRA also uses a short-term debt program that includes Tax-Exempt Commercial Paper and a Tax-Exempt Revolving Loan to minimize the financing cost of construction. Since 2006, the Authority has defeased over \$467.6 million in debt as illustrated in the following graph.



As a result of the Authority’s Capital Improvement Program, debt service as a percent of total expenses (before offsets) has increased steadily from 36% in 1990 to over 62% in the FY17 Proposed 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 fiscal year 2017 is less than scheduled principal payments which will contribute to decrease MWRA’s outstanding indebtedness.

The FY17 Proposed Budget capital financing costs total \$451.4 million and remain the largest portion of the MWRA’s budget, accounting for 62.3% of total expenses. The budget includes a planned defeasance of \$25.0 million which will reduce debt service by approximately \$22.4 million in FY20, and \$1.1 million in years FY17-19.

The FY17 Proposed Budget assumes a 3.25% interest rate for variable rate debt which is the same level as in FY16 Budget. 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 is no guarantee that rates will remain as low as they are.

The FY17 Proposed Budget capital financing costs increased by \$18.7 million or 4.3% compared to the FY16 Budget. This increase in the MWRA's debt service is the result of projected FY17 borrowings and the structure of the debt, partially offset by the impact of the projected defeasance. The FY17 capital financing budget includes:

- \$269.3 million in principal and interest payments on MWRA's senior fixed rate bonds. This amount includes \$6.5 million to support issuances of \$100 million in April 2016 and \$5.2 million to support issuances of \$125 million of new money in January 2017. Also it includes a reduction of \$1.1 million for the effect of the planned FY16 defeasance;
- \$70.0 million in principal and interest payments on subordinate bonds;
- \$86.7 million in principal and interest payments on SRF loans. This amount includes \$10.4 million to support issuances of \$32.0 million of replacement loans and \$96.5 million in regular loans during 2016 and 2017;
- \$18.0 million to fund ongoing capital projects with current revenue and to meet coverage requirements;
- \$4.1 million to fund the interest expense related to the Local Water Pipeline Assistance Program; and,
- \$3.2 million for the Chelsea Lease.

The table below provides detail on the FY17 Proposed Budget capital financing line item. It further illustrates 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 F.

TABLE I-3				
FY17 Final Current Expense Budget - Capital Financing Detail (as of 12/31/15)				
\$ in Millions				
	Amount Outstanding	Total FY16 Capital Costs	Sewer	Water
Total SRF ¹ Debt	\$987.7	\$86.7	\$66.9	\$19.9
Total Senior Debt	\$3,316.3	269.3	174.6	94.7
Total Subordinate Debt	\$905.5	70.0	53.1	16.9
Total SRF and Debt Service²	\$5,209.5	\$426.0	\$294.5	\$131.5
Water Pipeline Commercial Paper	149.0	4.1	0.0	4.1
Current Revenue/Capital ³		18.0	18.0	0.0
Capital Lease		3.2	1.9	1.3
	149.0	\$25.4	\$19.9	\$5.4
Total Capital Financing (before Debt Service Offsets)	5,358.5	\$451.4	\$314.5	\$136.9
Debt Service Offsets:				
Debt Service Assistance		0.0	0.0	0.0
Bond Redemption		0.0	0.0	0.0
Total Capital Financing	5,358.5	\$451.4	\$314.5	\$136.9

¹ SRF debt service payments reflect net MWRA obligations after state and federal subsidies.

² Numbers may not add due to rounding.

³ Current Revenue/Capital is revenue used to fund ongoing capital projects.

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 45 local bodies purchase wastewater transport and treatment services. Thirty-five local bodies purchase both. Approximately 2.9 million people, or 43% 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 FY17 Proposed Budget, rate revenue from BWSC will account for 31% of MWRA's total rate revenue. The table on page I-20, lists MWRA communities, the services received, and the MWRA preliminary assessments for FY17.

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 table on page I-21 presents the calculation of MWRA's FY17 Proposed 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.

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 FY16 Water Assessment	Preliminary FY17 Water Assessment	Percent Change from FY16	Final FY16 Sewer Assessment	Preliminary FY17 Sewer Assessment	Percent Change from FY16	Final FY16 Combined Assessment	Preliminary FY17 Combined Assessment	Dollar Change from FY16	Percent Change from FY16
ARLINGTON	\$4,724,970	\$4,996,174	5.7%	\$7,099,278	\$8,040,018	4.4%	\$12,424,248	\$13,036,192	\$611,944	4.9%
BELMONT	2,674,576	2,839,601	6.2%	4,624,861	4,854,094	5.0%	7,299,437	7,693,695	394,258	5.4%
BOSTON (BWSC)	80,205,208	83,118,048	3.6%	129,701,392	133,108,935	2.6%	209,906,600	216,224,981	6,318,381	3.0%
BROOKLINE	6,910,863	7,074,458	2.4%	12,639,876	12,974,353	2.6%	19,550,438	20,048,811	498,373	2.5%
CHELSEA	4,155,184	4,231,090	1.8%	7,435,243	7,710,925	3.7%	11,590,427	11,942,015	352,188	3.0%
EVERETT	4,636,654	4,967,690	7.1%	8,056,404	8,173,297	1.5%	12,693,058	13,140,987	447,929	3.5%
FRAMINGHAM	8,243,826	8,191,962	-0.6%	11,893,982	12,901,859	8.5%	20,137,808	21,093,821	956,013	4.7%
LEXINGTON	6,695,144	7,378,622	10.2%	6,970,176	7,311,103	4.9%	13,665,320	14,689,725	1,024,405	7.5%
MALDEN	6,941,616	6,978,157	0.5%	12,439,049	13,022,132	4.7%	19,380,667	20,000,289	619,422	3.2%
MEDFORD	6,432,009	6,487,565	0.4%	11,355,458	11,848,484	5.2%	17,787,467	18,406,049	618,582	3.5%
MELROSE	2,853,930	2,927,124	2.6%	6,054,875	6,291,182	3.9%	8,908,805	9,218,306	309,501	3.5%
MILTON	3,156,824	3,373,637	6.9%	5,018,915	5,305,001	7.5%	8,175,739	8,768,638	592,899	7.3%
NEWTON	12,205,271	13,001,583	6.5%	19,710,607	20,848,755	4.8%	31,915,878	33,850,338	1,734,460	5.4%
NORWOOD	3,755,101	3,667,261	-2.3%	6,718,885	7,068,382	5.2%	10,473,986	10,735,643	261,657	2.5%
QUINCY	11,918,042	11,822,716	-0.8%	19,481,076	20,097,713	3.2%	31,399,118	31,920,428	521,310	1.7%
READING	2,032,760	2,117,862	4.2%	4,624,378	4,799,386	3.8%	6,657,144	6,916,248	259,104	3.9%
REVERE	5,013,281	4,963,446	-1.0%	10,261,623	10,676,230	4.0%	15,274,904	15,639,676	364,772	2.4%
SOMERVILLE	7,060,400	7,888,467	8.9%	15,588,894	16,020,502	2.8%	22,648,294	23,708,969	1,062,675	4.7%
STONEHAM	3,381,301	3,187,200	-5.7%	4,429,220	4,870,084	3.2%	7,810,521	7,767,284	(43,237)	-0.7%
WALTHAM	8,631,171	9,421,137	9.2%	12,680,425	13,203,950	4.1%	21,311,596	22,625,087	1,313,491	6.2%
WATERTOWN	3,392,382	3,303,955	-2.6%	5,760,051	6,006,615	4.3%	9,152,433	9,310,570	158,137	1.7%
WINTHROP	1,629,580	1,680,092	1.3%	3,183,339	3,339,880	4.9%	4,812,889	4,989,972	177,083	3.7%
TOTAL	\$196,650,271	\$203,356,444	3.4%	\$326,324,706	\$338,161,880	3.6%	\$522,974,977	\$541,518,324	\$18,543,347	3.5%

MWRA Sewer and Partial Water Customers	Final FY16 Water Assessment	Preliminary FY17 Water Assessment	Percent Change from FY16	Final FY16 Sewer Assessment	Preliminary FY17 Sewer Assessment	Percent Change from FY16	Final FY16 Combined Assessment	Preliminary FY17 Combined Assessment	Dollar Change from FY16	Percent Change from FY16
CANTON	\$1,268,728	\$1,880,349	30.8%	\$3,933,960	\$4,178,270	6.2%	\$5,202,688	\$6,058,619	\$837,931	12.2%
NEEDHAM	1,012,962	1,043,468	3.0%	5,408,445	5,718,107	5.7%	6,421,407	6,761,575	340,168	5.3%
STOUGHTON	1,106,344	1,148,754	3.8%	4,392,863	4,776,102	8.7%	5,499,207	5,924,856	425,649	7.7%
WAKEFIELD	1,855,071	1,859,516	0.2%	5,563,262	5,849,953	5.2%	7,418,333	7,709,469	291,136	3.9%
WELLESLEY	852,477	1,060,456	24.4%	5,278,300	5,492,441	4.1%	6,130,777	6,552,907	422,130	6.9%
WILMINGTON	353,379	705,846	99.7%	2,476,867	2,612,734	5.5%	2,830,246	3,318,580	488,334	17.3%
WINCHESTER	1,234,222	1,550,435	25.6%	3,868,401	4,057,343	4.9%	5,102,683	5,607,778	505,095	9.9%
WOBURN	3,091,283	3,368,527	9.0%	9,492,994	9,435,302	-0.6%	12,584,277	12,803,829	219,552	1.7%
TOTAL	\$10,792,466	\$12,417,351	15.1%	\$40,415,172	\$42,120,252	4.2%	\$51,207,638	\$54,537,603	\$3,329,965	6.5%

MWRA Sewer-only Customers	Final FY16 Water Assessment	Preliminary FY17 Water Assessment	Percent Change from FY16	Final FY16 Sewer Assessment	Preliminary FY17 Sewer Assessment	Percent Change from FY16	Final FY16 Combined Assessment	Preliminary FY17 Combined Assessment	Dollar Change from FY16	Percent Change from FY16
ASHLAND				\$2,380,635	\$2,499,256	5.0%	\$2,380,635	\$2,499,256	\$118,621	5.0%
BEDFORD				3,199,185	3,390,016	6.0%	3,199,185	3,390,016	190,831	6.0%
BRAINTREE				8,507,387	9,159,033	7.7%	8,507,387	9,159,033	651,646	7.7%
BURLINGTON				4,905,353	5,109,626	4.2%	4,905,353	5,109,626	204,273	4.2%
CAMBRIDGE				23,259,670	23,898,854	2.7%	23,259,670	23,898,854	639,184	2.7%
DEDHAM				5,063,931	5,346,896	5.6%	5,063,931	5,346,896	282,965	5.6%
HINGHAM SEWER DISTRICT				1,695,096	1,809,609	6.8%	1,695,096	1,809,609	114,513	6.8%
HOLBROOK				1,657,660	1,770,134	6.8%	1,657,660	1,770,134	112,474	6.8%
NATICK				5,526,614	5,748,874	4.0%	5,526,614	5,748,874	222,260	4.0%
RANDOLPH				6,011,817	6,309,225	4.9%	6,011,817	6,309,225	297,408	4.9%
WALPOLE				3,559,098	3,735,603	5.0%	3,559,098	3,735,603	176,505	5.0%
WESTWOOD				2,473,298	2,598,290	5.1%	2,473,298	2,598,290	124,994	5.1%
WEYMOUTH				11,087,503	11,838,429	6.8%	11,087,503	11,838,429	750,926	6.8%
TOTAL				\$79,327,245	\$83,213,845	4.9%	\$79,327,245	\$83,213,845	\$3,886,600	4.9%

MWRA Water-only Customers	Final FY16 Water Assessment	Preliminary FY17 Water Assessment	Percent Change from FY16	Final FY16 Sewer Assessment	Preliminary FY17 Sewer Assessment	Percent Change from FY16	Final FY16 Combined Assessment	Preliminary FY17 Combined Assessment	Dollar Change from FY16	Percent Change from FY16
LYNNFIELD WATER DISTRICT	\$614,185	\$645,883	5.2%				\$614,185	\$645,883	\$31,698	5.2%
MARBLEHEAD	2,278,325	2,350,641	3.2%				2,278,325	2,350,641	72,316	3.2%
NAHANT	425,527	478,410	12.4%				425,527	478,410	52,883	12.4%
SAUGUS	3,645,083	3,707,441	1.7%				3,645,083	3,707,441	62,358	1.7%
SOUTHBOROUGH	850,020	952,159	12.0%				850,020	952,159	102,139	12.0%
SWAMPSCOTT	1,827,959	1,841,378	0.7%				1,827,959	1,841,378	13,419	0.7%
WESTON	2,240,675	2,455,608	9.6%				2,240,675	2,455,608	214,933	9.6%
TOTAL	\$11,881,774	\$12,431,520	4.6%				\$11,881,774	\$12,431,520	\$549,746	4.6%

MWRA Partial Water-only Customers	Final FY16 Water Assessment	Preliminary FY17 Water Assessment	Percent Change from FY16	Final FY16 Sewer Assessment	Preliminary FY17 Sewer Assessment	Percent Change from FY16	Final FY16 Combined Assessment	Preliminary FY17 Combined Assessment	Dollar Change from FY16	Percent Change from FY16
DEDHAM-WESTWOOD WATER DISTRICT	\$305,532	\$197,155	-35.5%				\$305,532	\$197,155	(\$108,377)	-35.5%
LYNN (LWSC)	264,873	244,900	-7.5%				264,873	244,900	(19,973)	-7.5%
MARLBOROUGH	3,894,026	3,903,196	0.2%				3,894,026	3,903,196	9,170	0.2%
NORTHBOROUGH	1,103,542	1,140,248	3.3%				1,103,542	1,140,248	36,706	3.3%
PEABODY	1,480,393	1,513,209	2.2%				1,480,393	1,513,209	32,816	2.2%
TOTAL	\$7,048,366	\$6,998,708	-0.7%				\$7,048,366	\$6,998,708	(\$49,658)	-0.7%
SYSTEMS TOTAL	\$226,372,877	\$235,204,023	3.9%	\$446,067,123	\$463,495,977	3.9%	\$672,440,000	\$698,700,000	\$26,260,000	3.9%

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.

Calculation of the Preliminary FY17 Rate Revenue Requirement (000's)

	Sewer	Water	Total
Allocated Direct Expenses	\$152,085	\$76,502	\$228,588
Allocated Indirect Expenses	\$9,453	\$34,703	\$44,156
PLUS			
Capital Expenses:			
Debt Service (less offsets)	\$294,546	\$131,497	\$426,043
Current Revenue for Capital	\$16,812	\$1,188	\$18,000
Other Capital Expenses	\$1,894	\$5,472	\$7,366
PLUS			
Non-Rate Revenue:			
Investment Income	-\$5,206	-\$4,495	-\$9,701
Fees and Other Revenue	-\$6,089	-\$9,664	-\$15,752
Rate Stabilization	\$0	\$0	\$0
EQUALS			
Rate Revenue Requirement	\$463,496	\$235,204	\$698,700

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 FY17, community assessments are projected to represent 96.5% 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 FY17 through FY26. The planning estimates shown below assume no Debt Service Assistance from the Commonwealth and use of Rate Stabilization and Bond Redemption reserves through FY2023 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 & Budget Projections											
Proposed FY17 Final CEB	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026
Total Rate Revenue (\$000)	\$ 672,440	\$ 698,700	\$ 725,693	\$ 753,637	\$ 784,833	\$ 817,291	\$ 853,700	\$ 836,601	\$ 836,694	\$ 834,221	\$ 874,134
Rate Revenue Change from Prior Year (\$000)	\$ 22,124	\$ 26,260	\$ 26,993	\$ 27,943	\$ 31,197	\$ 32,458	\$ 36,409	\$ (17,099)	\$ 93	\$ (2,473)	\$ 39,913
Rate Revenue Increase	3.4%	3.9%	3.9%	3.9%	4.1%	4.1%	4.5%	-2.0%	0.0%	-0.3%	4.8%
Use of Reserves (\$000)	\$ -	\$ -	\$ -	\$ -	\$ 4,273	\$ 24,765	\$ 24,141	\$ 9,441	\$ -	\$ -	\$ -

Estimated Household Bill

Based on annual water usage of 61,000 gallons	\$1,055	\$1,102	\$1,152	\$1,204	\$1,261	\$1,319	\$1,382	\$1,419	\$1,467	\$1,516	\$1,590
Based on annual water usage of 90,000 gallons	\$1,556	\$1,626	\$1,700	\$1,777	\$1,860	\$1,947	\$2,040	\$2,093	\$2,164	\$2,236	\$2,346

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 \$65.4 million increase in direct expenses from FY17 to FY26 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 FY17;
- CIP inflation rate of 2.5%;
- Capital spending based on the latest CIP expenditure forecast for FY17 to FY19, and FY23 to FY26. Capital spending is capped between FY20 to FY22.
- Long-term fixed rate debt issues with 30-year terms and 5.0% interest rates in FY17, 5.25% rates in FY18, 5.5% rates in FY19, 5.75% rates in FY20 and 6.0% rates from FY21 and beyond;
- Variable rate interest projected at 3.25% in FY17, 3.50% in FY18, 3.75% in FY19, and 4.0% thereafter.

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 is an area of increased concern. Many of the savings in prior years through staffing reductions, optimization of operations, and scope revisions to professional services are already reflected in the budget. More importantly, going forward the MWRA is faced with a growing need to maintain its facilities and ensure that adequate funding is available.

As in the past, the peak years on the next ten-year horizon regarding assessments are driven by the current debt structure.

FY17 Proposed Capital Improvement Program

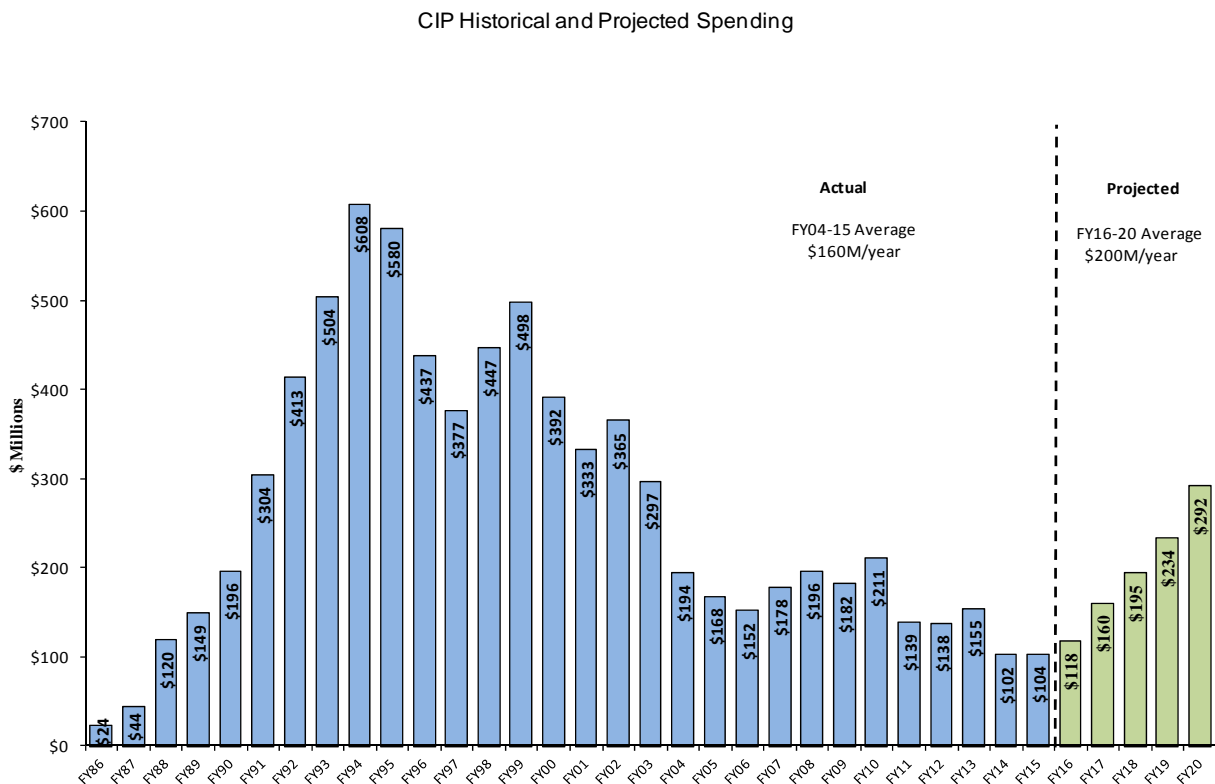
The FY17 Proposed Capital Improvement Program (CIP) totals \$7.0 billion, of which approximately \$3.7 billion has been expended through FY15 with a remaining balance of \$3.1 billion. Of that remaining balance, \$678.7 million is projected to be spent within the FY14-18 timeframe. It is important to note that the totals represented above do not include the Boston Harbor Project and some other smaller projects removed from the CIP upon completion. These projects totaled approximately \$4.1 billion dollars. As such, the overall Authority CIP budget since inception totals more than \$11.1 billion dollars of nearly \$8.0 billion has been spent through FY15.

The FY17 Proposed Capital Improvement Program projects \$160.1 million in spending for FY17, of which \$87.3 million supports Wastewater System Improvements, \$61.0 million supports Waterworks System Improvements, and \$11.9 million is for Business and Operations Support.

In FY16, the Authority has reached another significant milestone as the court mandated Combined Sewer Overflow (CSO) program has been declared substantially complete as of December 2015. Only surface restoration work and system testing will remain to be done over the next two years. Under the CSO program, CSO discharge volume has been reduced from 3.3 billion gallons in 1988 to 0.4 billion gallons, a reduction of 88%. Additionally, 93% of remaining discharge volume is treated at MWRA's four CSO facilities.

Historical Spending

The chart below captures the historical CIP spending through FY15 and projects spending to FY18 based on the FY17 Proposed CIP.



Changing Nature of the Capital Program - Shift from Mandated Projects

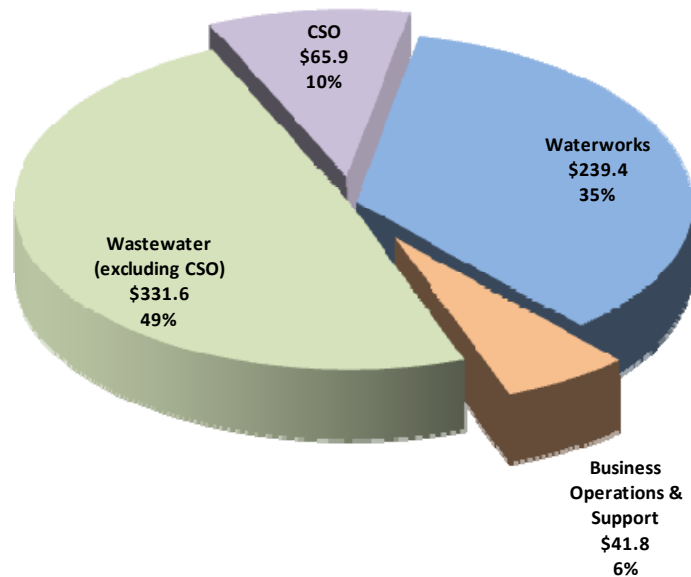
Since 1985, nearly 80% of the Authority’s spending had been on court mandated projects. Going forward, the majority of spending will support Asset Protection, Water System Redundancy, Pipeline Replacement and Rehabilitation, and continued support for Community Assistance programs. Asset Protection and Water System Redundancy spending is projected to rise from past levels and currently accounts for 53.0% and 27.5% of FY14-18 capital expenditures respectively, a total of nearly \$546.3 million of the \$678.7 million projected to be spent over the 5-year period.

	Total Contract	FY09-13	FY14-18
Asset Protection	\$2,335.7	\$248.0	\$359.8
Carroll WTP	438.1	38.5	15.0
Water Redundancy	2,772.3	134.7	186.5
CSO	881.9	315.5	65.9
Other	559.5	88.4	51.5
Total	\$6,987.5	\$825.1	\$678.7
Asset Protection	33.4%	30.1%	53.0%
Carroll WTP	6.3%	4.7%	2.2%
Water Redundancy	39.7%	16.3%	27.5%
CSO	12.6%	38.2%	9.7%
Other	8.0%	10.7%	7.6%
Total	100.0%	100.0%	100.0%

Spending during the FY14-18 timeframe is projected to be \$678.7 million. Yearly cash-flows for the proposed Cap period are shown below:

(000s)	FY14	FY15	FY16	FY17	FY18	Total FY14-18
Wastewater System Improvements	\$55.7	\$75.4	\$79.4	\$87.3	\$99.8	\$397.5
Interception & Pumping	6.9	8.6	10.7	29.3	31.2	86.8
Treatment	29.1	25.7	30.3	31.1	46.9	163.1
Residuals	0.1	-	-	2.9	1.6	4.6
CSO	15.6	23.6	19.0	5.0	2.8	65.9
Other Wastewater	4.0	17.5	19.4	19.0	17.3	77.2
Waterworks System Improvements	\$41.0	\$22.7	\$30.6	\$61.0	\$84.1	\$239.4
Drinking Water Quality Improvements	30.2	12.4	8.4	3.6	3.9	58.5
Transmission	4.5	2.5	7.5	23.2	36.3	73.9
Distribution & Pumping	4.8	8.9	14.1	31.5	40.6	100.0
Other Waterworks	1.5	(1.1)	0.6	2.7	3.4	6.9
Business & Operations Support	5.5	5.5	8.3	11.9	10.6	41.8
Total MWRA	\$102.2	\$103.6	\$118.3	\$160.1	\$194.6	\$678.7

The graph below illustrates a breakdown of the major program spending for the FY14-18 timeframe.



Going forward the largest decision that MWRA will have to make is pertaining to the Long-Term Redundancy project specifically the Metrowest Tunnel System alternative plans. That decision will have a significant impact on the capital program for more than 17 years, the estimated duration of this contract.

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. Operating costs will be reduced by approximately \$539,000 through FY27, primarily due to Asset Protection projects at the Deer Island Treatment Plant. These reductions will be offset by IS program related maintenance initiatives that are projected to increase operating costs by nearly \$559,000 by FY27. The following table summarizes the projected CIP impact on the operating budget by project over the next ten years, beginning in FY18.

Fiscal Year	CEB Impacts (000)										
	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	Total
DI Treatment Plant Asset Protection (not including Co-Digestion or Combined Heat and Power Plant)	(\$966)	\$983	(\$219)	(\$248)	\$0	(\$143)	\$0	\$0	\$0	\$0	(\$592)
DI Treatment Plant Asset Protection - Co-Digestion ONLY	0	0	0	0	0	0	0	0	0	0	0
Clinton Phosphorous Removal Project	29	30	0	0	0	0	0	0	0	0	60
Wastewater Alternative Energy Projects	0	0	0	0	0	0	0	0	0	0	0
North Dorchester Bay	361	(371)	0	0	0	418	(430)	0	0	0	(23)
Total Wastewater (inflated)	(\$576)	\$642	(\$219)	(\$248)	\$0	\$275	(\$430)	\$0	\$0	\$0	(\$556)
Empty	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Empty	0	0	0	0	0	0	0	0	0	0	0
Wachusett Algae Treatment Facility	0	0	0	39	41	0	0	0	0	0	80
Empty	0	0	0	0	0	0	0	0	0	0	0
Water Energy Projects	(31)	(32)	0	0	0	0	0	0	0	0	(63)
Total Water (inflated)	(\$31)	(\$32)	\$0	\$39	\$41	\$0	\$0	\$0	\$0	\$0	\$17
Maximo Upgrades & Lawson Enhancements	\$103	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$103
Storage Upgrades	103	106	0	0	0	0	0	0	0	0	209
Telecommunications	0	27	0	0	0	0	0	0	0	0	27
NET 2020 DITP & Southborough	0	0	0	0	0	0	0	0	0	0	0
Information Security Program	31	0	0	0	0	0	0	0	0	0	31
Information Technology Management Program	0	0	0	0	0	0	0	0	0	0	0
Application Improvement Program	0	0	82	0	0	0	0	0	0	0	82
IT Infrastructure Program	0	107	0	0	0	0	0	0	0	0	107
Total Business and Operations Support (inflated)	\$237	\$240	\$82	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$559
TOTAL MWRA	(\$370)	\$850	(\$137)	(\$208)	\$41	\$275	(\$430)	\$0	\$0	\$0	\$20

MWRA Organization and History

The MWRA Enabling Act

MWRA was created by legislative act in 1984, and inherited the Sewerage and Waterworks Divisions of the Commonwealth of Massachusetts Metropolitan District Commission (MDC). In July 1985, MWRA assumed control of the water and sewer systems, including facilities, properties, and the right to utilize water withdrawn from system reservoirs. 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 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.

In 1987, the legislature transferred responsibility to operate and maintain the Clinton Wastewater Treatment Plant from the Commonwealth to the MWRA.

History and Accomplishments

In 1985, the U.S. District Court for Massachusetts found MDC in violation of numerous aspects of the federal Clean Water Act, and the responsibility for those violations passed to MWRA as successor to MDC. The court issued a detailed compliance schedule for actions to be taken by MWRA to achieve and maintain compliance with the Clean Water Act.

MWRA achieved all of the milestones in the schedule related to the construction of treatment facilities on Deer Island, and is working to achieve milestones with respect to implementation of its long-term Combined Sewer Overflow (CSO) control plan. These achievements have made noticeable, measurable improvements in the quality of Boston Harbor and its beaches.

MWRA is also working to achieve compliance with an extensive consent order issued by the Massachusetts Department of Environmental Protection (MassDEP) mandating the steps necessary to achieve required improvements to the MWRA water system.

MWRA Rates Management

Between FY96 and FY02 the MWRA limited rate revenue increases to an average of 3.6% annually as a result of debt service assistance from the Commonwealth, federal grants to support the Boston Harbor Project, lower borrowing costs, use of financing tools that delayed costs to later years, a favorable bid climate for construction projects, and aggressive efforts to control capital and operating costs.

As debt service costs resulting from mandated capital investment have steadily increased, MWRA's dependence on rising debt service assistance (DSA) allocations have similarly increased. DSA reached a high of \$50.2 million in FY02. In FY03, in response to a state-wide recession, debt service assistance was eliminated and as a result, MWRA was forced to have an unprecedented mid-year rate adjustment, increasing the rate increase from 2.9% to 6.9% as part of an overall strategy in response to cover the loss. Additionally, the Authority made substantial cuts to both its capital improvement program and current expense budgets. Reductions in debt service assistance result in greater reliance on reserves, budget cuts or a combination of the two. In response to a strengthening local economy, debt service assistance was restored in FY04 at the level of \$4.1 million. In the following four years, the debt service allocation increased to \$8.0 million in FY05, \$9.6 million in FY06, \$19.0 million in FY07, and \$17.0 million in FY08. In light of the economic downturn in the ensuing years, no Debt Service Assistance was received in FY09-11. In FY12, it was once again restored at a reduced level of \$384,000 but was once again eliminated in FY13 through 9C cuts. For the FY14 and FY15 budgets, no Debt Service Assistance was assumed but the Authority received \$854,000 of Debt Service Assistance in March 2014.

Planning estimates for 2017 through 2026 forecast rate revenue requirement increases of 3.9% annually from FY17 through FY19, 4.1% in FY20 and FY21, and 4.5% in FY22.

In FY06, the MWRA formed a Rates Management Committee to evaluate the Authority's debt portfolio and credit structure to propose recommendations that deliver responsible short-term solutions for mitigating imminent rate spikes and long-term strategies for achieving sustainable and predictable rates. In line with the Board of Directors' strategy to deliver long-term sustainable and predictable rates for our 61 ratepayer communities, the MWRA initially preserved the scheduled use of its reserves for future years when projected rate increases are more significant. The change to the indenture released more than \$113 million in reserves in April 2015 and was applied in future years to mitigate rate increases.

The FY17 Proposed 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; and
- Continues the Authority's multi-year rates management strategy of providing sustainable and predictable assessment increases to our member communities.

MWRA Organization

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 before the Table of Contents.

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 **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; monitors water quality; and includes the Planning and Coordination Department.

In FY2015 the **Administration and Finance Division** was separated into two divisions.

The **Administration Division** is responsible for managing the support services functions of the Authority.

The Administration 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 (A&F) 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.

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, 2015 are available online at www.mwra.com.



Executive Office Budget

EXECUTIVE DIVISION

Executive

Office of Executive Director
Office of Emergency Preparedness
Internal Audit
Public Affairs

FY17 Proposed Current Expense Budget EXECUTIVE DIVISION					
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17
WAGES & SALARIES	\$ 540,943	\$ 578,597	\$ 578,483	\$ 595,807	\$ 17,324 3.0%
OVERTIME	-	65	-	-	-
TRAINING & MEETINGS	612	43	900	850	(50) -5.6%
PROFESSIONAL SERVICES	158,222	155,009	167,452	171,380	3,928 2.3%
OTHER MATERIALS	2,037	3,069	3,520	3,485	(35) -1.0%
OTHER SERVICES	470,520	499,041	526,456	541,134	14,678 2.8%
TOTAL	\$ 1,172,334	\$ 1,235,824	\$ 1,276,811	\$ 1,312,656	\$ 35,845 2.8%

FY17 Proposed Current Expense Budget EXECUTIVE DIVISION by Department					
DEPARTMENT	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17
EXECUTIVE OFFICE	\$ 473,229	\$ 506,811	\$ 507,106	\$ 521,483	\$ 14,377 2.8%
BOARD OF DIRECTORS	74,124	78,863	79,969	82,807	\$ 2,838 3.5%
ADVISORY BOARD / OTHER COMMITTEES	624,981	650,150	689,736	708,366	18,630 2.7%
TOTAL	\$ 1,172,334	\$ 1,235,824	\$ 1,276,811	\$ 1,312,656	\$ 35,845 2.8%

The **Executive Office** provides executive management and guides the implementation of MWRA policies established by the Board of Directors. It is responsible for developing and implementing specific goals and programs to achieve MWRA's primary mission of providing reliable and efficient water and sewer services, improving water quality, and for creating a framework within which all divisions can operate effectively. The Executive Office oversees a centralized MWRA-wide security program to preserve and protect MWRA facilities, systems and employees.

The Executive Office has direct oversight of the Office of Emergency Preparedness, Internal Audit, Public Affairs, and the Affirmative Action and Compliance Unit (AACU) Departments.

FY17 Goals:

- Ensure delivery of reliable and cost-effective water and sewer services to customer communities.
- Ensure that water supply and wastewater collection and treatment preserve public health and protect natural resources.

- Provide overall management of the agency and ensure adherence to all applicable policies and regulations.
- 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.
- Manage communication and garner support from key constituents for MWRA programs.

The Executive Office budget supports the Executive Director's Office (which includes the Board of Directors' cost center), the MWRA Advisory Board, and Advisory Committees' cost centers. The Board of Directors formulates policies to guide MWRA actions and is responsible for major policy and fiscal decision-making. The MWRA Advisory Board was established by the Enabling Act to serve as "watchdog" for MWRA's customer communities. The Advisory Board makes recommendations to MWRA on annual expense budgets and capital improvement programs. In addition, the Advisory Board reviews and comments on MWRA reports, hold hearings on related matters, and makes recommendations to the Governor and the Legislature. The other advisory committees supported by this budget are the Water Supply Citizens' Advisory Committee and the Wastewater Advisory Committee. The Executive Office budget accounts for less than 1% of the MWRA FY17 Proposed Direct Expense Budget.

Budget Highlights:

- The FY17 Proposed Budget is \$1.3 million, an increase of \$36,000 or 2.8%, as compared to FY16 Budget.
- \$596,000 for **Wages and Salaries**, an increase of \$17,000 or 3%, as compared to FY16 Budget, due mainly for contractual increases. The FY17 Proposed Budget includes funding for five positions, the same as FY16 Budget.
- \$171,000 for **Professional Services**, an increase of \$4,000 or 2.4%, as compared to FY16 Budget, mainly due to projected increases in the Advisory Committees operating expenses. This budget funds the Water Supply Citizens' Advisory Committee (WSCAC) and the Wastewater Advisory Committee (WAC) budgets.
- \$541,000 for **Other Services**, an increase of \$15,000 or 2.8%, as compared to FY16 Budget, mainly due to projected increases in the MWRA Advisory Board operating expenses which include wages and salaries, space rental, and general administrative office expenses.

OFFICE OF EMERGENCY PREPAREDNESS

FY17 Proposed Current Expense Budget OFFICE OF EMERGENCY PREPAREDNESS						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 488,502	\$ 554,860	\$ 590,797	\$ 604,015	\$ 13,218	2.2%
OVERTIME	771	797	-	-	-	-
MAINTENANCE	329,657	553,878	465,151	499,651	34,500	7.4%
TRAINING & MEETINGS	1,902	3,915	17,000	17,000	-	0.0%
PROFESSIONAL SERVICES	1,727,302	1,804,732	1,895,000	1,920,000	25,000	1.3%
OTHER MATERIALS	21,746	12,849	33,260	18,967	(14,293)	-43.0%
OTHER SERVICES	18,821	110,950	124,172	121,124	(3,048)	-2.5%
TOTAL	\$ 2,588,701	\$ 3,041,980	\$ 3,125,380	\$ 3,180,757	\$ 55,377	1.8%

The **Office of Emergency Preparedness (OEP)** was created in November 2005 to consolidate Authority-wide security and emergency response functions. It is responsible for oversight of the MWRA's security and emergency response plans, policies, and procedures; implementation and training for the Emergency Response Plan; and management, training, and outfitting of the Emergency Service Unit (ESU), which will respond to any intentional or accidental contamination of the water supply. The Director of Emergency Planning and Preparedness reports directly to the Executive Director.

FY17 Goals:

- Develop and implement policies and programs to provide security, critical infrastructure protection, and emergency planning for the MWRA's water and wastewater systems.
- Expand, equip, train, and lead the Emergency Service Unit (ESU).
- Develop and exercise emergency plans and procedures.
- Manage and direct security guard, security monitoring, and security maintenance contracts.

FY17 Initiatives:

- Procure a new Security Equipment Maintenance and Repair Services contract, a new Security Guard Services contract, and a new Monitoring and Maintenance of Intrusion Alarm Systems contract to replace existing contracts.
- Continue to enhance Emergency Response Plans for all water and wastewater facilities. Update Emergency Action Plans (EAPs) as needed, including the Western Section Dam EAPs and spill control EAPs.
- Procure a contract to replace old cameras in the security system.
- Continue the process of ensuring that new construction and rehabilitation of facilities includes an integrated security and surveillance system improvement component. Continue task order security

enhancement designs for selected water and wastewater critical sites, fencing installation, and other facility hardening initiatives.

- Implement notification drills, tabletop exercises, and field training exercises (including at least one major drill). Continue the community emergency response training program and tabletop exercise series for MWRA community water system staff.
- Continue to transition the security monitoring system to the new video software standard.
- Establish a backup security monitoring center and communications head end at Norumbega.

FY16 Mid-Year Accomplishments:

- Integrated the new Spot Pond Pump Station into the existing access control and monitoring system.
- Participated in the planning and execution of a multi-agency desktop drill for a train derailment at the Wachusett Reservoir.
- Started 24/7 on-call monitoring of the station water quality alarms.
- Expanded the primary security system by adding card access for CNY MIS network closets, new cameras at Deer Island and CNY, a new camera and motion detector at the front gate at Chelsea, and enhanced security at the ICCF building for the water quality lab.
- Continued to update spill control Emergency Action Plans for water and wastewater facilities subject to spill regulations.
- Completed a total of 69 training events or drills.
- Expanded relationships with Department of Homeland Security threat intelligence, and physical and cyber vulnerability staff.
- Continued to provide an emergency response training program and a tabletop exercise series for MWRA community water system staff.

Budget Highlights:

- The FY17 Proposed Budget is \$3.2 million, an increase of \$55,000 or 1.8%, as compared to the FY16 Budget.
- \$604,000 for **Wages and Salaries**, an increase of \$13,000 or 2.2%, as compared to the FY16 Budget, mainly for contractual increases. The FY17 Proposed Budget includes funding for six positions, the same as FY16 Budget.
- \$500,000 for **Ongoing Maintenance**, an increase of \$35,000 or 7.4.0%, as compared to the FY16 Budget, mainly due to increase in contract amounts. This budget includes funding of \$326,000 to cover the MWRA-wide security systems preventative maintenance and repair service, \$150,000 for MWRA-wide Security systems maintenance materials and equipment, including cameras, intrusion

detection, card readers, and \$24,000 for the intrusion alarm annual and semi-annual monitoring services contracts.

- \$1.9 million for **Professional Services**, an increase of \$25,000 or 1.3%, as compared to the FY16 Budget, primarily to include EAP work on Western Reservoirs, thereby covering over 30 communities. The budget includes \$636,000 for security services at the DITP facility, \$591,000 for the Chelsea facility, \$405,000 for the Carroll Water Treatment Plant, \$84,000 for the Account Manager, \$47,000 for the Training Officer, \$55,000 for vehicle maintenance and emergency allowance, and \$22,000 for Charlestown Navy Yard (CNY) facility. Also included under Professional Services is \$80,000 for updating the Dam EAPs to match the regulatory change to FEMA's PD-64 and annual updates.
- \$19,000 for **Other Materials**, a decrease of \$14,000 or 43%, as compared to the FY16 Budget, based on the FY15 actual spending. This budget mainly funds purchase of Health and Safety materials for the ESU Team.
- \$121,000 for **Other Services**, a decrease of \$3,000 or 2.5%, as compared to the FY16 Budget, based on the FY15 actual spending. This budget includes funding for licensing cost for two-way radios with Department of Conservation and Recreation (DCR) and for mandatory monthly testing and inspection of the Self-Contained Breathing Apparatus (SCBA).

AFFIRMATIVE ACTION AND COMPLIANCE UNIT

FY17 Proposed Current Expense Budget AFFIRMATIVE ACTION & COMPLIANCE UNIT							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 557,924	\$ 510,897	\$ 525,433	\$ 548,653	\$ 23,220	4.4%	
OVERTIME	-	137	-	-	-	-	
TRAINING & MEETINGS	0	1,250	6,295	4,800	(1,495)	-23.7%	
OTHER MATERIALS	2,068	1,703	1,664	1,664	-	0.0%	
OTHER SERVICES	321	312	936	924	(12)	-1.3%	
TOTAL	\$ 560,313	\$ 514,298	\$ 534,328	\$ 556,041	\$ 21,713	4.1%	

The **Affirmative Action and Compliance Unit (AACU)** 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 Business Enterprises (MBE), Women Business Enterprises (WBE), and Disadvantaged Business Enterprises (DBE) in Authority procurement activities.

FY17 Goals:

- Assist divisions and departments in the implementation of MWRA's affirmative action program and promote MWRA's policy of non-discrimination for all persons in or recruited into its workforce.
- Maintain adequate internal audit and reporting systems to monitor MWRA's accomplishments of goal attainment in identified underutilized job groups for female and minority representation.
- Communicate to managers and supervisors MWRA's commitment to its equal opportunity policies and affirmative action programs.
- Assist the Human Resources department in the coordination and oversight of all external/internal recruitment and selection activities including interviewing, hiring, transfers, and promotions of all candidates, including those who are members of a protected class.
- Provide for the equitable participation of minority/women and disadvantaged-owned businesses in procurement opportunities, ensure that minorities and women are represented in the labor force on construction contracts, and coordinate with other public entities regarding state and federal requirements.
- Assist divisions and departments in the understanding and implementation of MBE/WBE/DBE program policies and practices as well as monitor and report on contractor compliance and expenditures.

FY17 Initiatives:

- Conduct a comprehensive voluntary self-identification survey of employees to identify the race and ethnic designations as used by the Equal Employment Opportunity Commission. Definitions of the race and ethnicity categories are as follows: 1.) Hispanic or Latino, 2.) White (Not Hispanic or Latino), 3.) Black or African American (Not Hispanic or Latino), 4.) Native Hawaiian or Other Pacific Islander (Not Hispanic or Latino), 5.) Asian (Not Hispanic or Latino), 6.) American Indian or Alaska Native (Not Hispanic or Latino), and a **New Category** - Two or more races (Not Hispanic or Latino) - All persons who identify with more than one of the above five races.

FY16 Mid-Year Accomplishments:

- Provided management guidance to and participated in thirty two (32) selection committee interviews for positions', sourced nine (9) outreach contacts, and referred two (2) qualified candidates to Human Resources for underutilized positions.
- Completed a comprehensive self-identification outreach program for employees who are covered veterans and individuals with disabilities.
- Conducted oversight of 108 construction and professional projects, including 31 site visits monitoring the minority and women workforce as well as MBE/WBE/DBE compliance. With the exception of WBE Nonprofessional Services, the other procurement targets remain.

Budget Highlights:

- The FY17 Proposed Budget is \$556,000, an increase of \$22,000 or 4.1%, as compared to the FY16 Budget.
- \$549,000 for **Wages and Salaries**, an increase of \$23,000 or 4.4%, as compared to the FY16 Budget, mainly for contractual increases. The FY17 Proposed Budget includes funding for six positions, the same as FY16 Budget.

INTERNAL AUDIT

FY17 Proposed Current Expense Budget INTERNAL AUDIT						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 686,696	\$ 692,181	\$ 745,299	\$ 644,717	\$ (100,582)	-13.5%
OVERTIME	-	-	-	-	-	-
MAINTENANCE	-	5	-	-	-	-
TRAINING & MEETINGS	5,070	6,249	7,238	6,700	(538)	-7.4%
PROFESSIONAL SERVICES	-	-	-	-	-	-
OTHER MATERIALS	1,697	1,309	2,020	2,020	-	0.0%
OTHER SERVICES	2,540	2,820	1,162	1,691	529	45.5%
TOTAL	\$ 696,003	\$ 702,564	\$ 755,719	\$ 655,128	\$ (100,591)	-13.3%

The **Internal Audit Department** monitors the efficiency and integrity of MWRA operations by auditing financial and program operations; reviewing compliance with accounting and management control systems, laws and regulations; and coordinates the formulation and revisions to MWRA policies and procedures. Internal Audit also monitors MWRA contracts through its contract audit program, including approval of provisional consultant indirect cost rates and subsequent audit of consultant billings; performs labor burden reviews, construction change orders and claim audits, and vendor and other contract audits.

FY17 Goals:

- Encourage more economical and efficient operations, adhere to sound management procedures, and use controls designed to safeguard MWRA assets.
- Assure that automated and supporting manual management information systems have secure data control environments and to provide accurate and useful management information.
- Assure that contractors and consultants doing business with MWRA have adequate accounting and billing systems to provide current, complete and accurate cost and price information and project invoicing.

FY16 Mid-Year Accomplishments:

- Identified \$300,000 in savings related to: internal audits, management advisory services, consultant audits, construction labor burden reviews, and on-going savings from the lease of the engine house by the Fore River Railroad Corporation.
- Issued final audit reports on Halon Compliance and Cycle Inventory Counts at various facilities. Issued five incurred cost audits, four preliminary consultant and four preliminary construction reviews.
- Provided management advisory and data analysis services dealing with MWRA overhead rates, change order and amendments, overtime, and contract negotiations with HEEC, NEFCo and solar energy.

Budget Highlights:

- The FY17 Proposed Budget is \$655,000, a decrease of \$101,000 or 13.3%, as compared to the FY16 Budget.
- \$645,000 for **Wages and Salaries**, a decrease of \$101,000 or 13.5%, as compared to the FY16 Budget, primarily due to a decrease of one position offset by contractual increases. The FY17 Proposed Budget includes funding for seven positions, one less than FY16 Budget.

PUBLIC AFFAIRS

FY17 Proposed Current Expense Budget PUBLIC AFFAIRS						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 1,012,009	\$ 1,060,003	\$ 1,138,257	\$ 1,140,050	\$ 1,793	0.2%
OVERTIME	58	852	-	900	900	-
TRAINING & MEETINGS	4,054	(572)	3,365	4,415	1,050	31.2%
PROFESSIONAL SERVICES	4,925	1,175	1,300	1,300	-	0.0%
OTHER MATERIALS	28,711	25,199	25,625	26,175	550	2.1%
OTHER SERVICES	28,945	31,903	43,769	48,816	5,047	11.5%
TOTAL	\$ 1,078,702	\$ 1,118,560	\$ 1,212,316	\$ 1,221,656	\$ 9,340	0.8%

The **Public Affairs Department** is the institutional link to all MWRA constituencies. The department works for passage of legislation necessary to carry out MWRA's mission, monitors legislation, responds to inquiries by elected and appointed officials, and pursues funding from the state legislature for MWRA projects.

The **Community Relations Section** deals directly with cities and towns in the service area, responds to inquiries about MWRA, proactively incorporates community concerns into MWRA project work, coordinates outreach and education initiatives to highlight MWRA programs, and provides technical expertise for specific projects and initiatives. Community Relations staff also work in conjunction with Planning and Coordination Department staff to ensure compliance with state and local regulations and restrictions.

The **Environmental Review and Compliance Section** is responsible for directing Authority-wide MEPA environmental review to ensure that MWRA facilities are protected and private development projects do not negatively impact MWRA facilities. The section is the lead to implement the Public Access Aqueduct Program, a program approved by the Board in April 2012, that authorizes public access along MWRA emergency back-up Aqueducts located in 14 cities and towns in the MetroWest area.

The **Communications Section** manages media relations, issues press releases and responds to information requests, oversees the design and distribution of MWRA publications, manages the web site, and provides design, editorial, and graphics services for other sections of MWRA. In addition, the **Education Section** is responsible for curriculum development, teacher training workshops, as well as providing school education materials on water quality, water conservation, wastewater topics, and environmental issues. Both sections are lead by the Special Assistant to the Executive Director, located in the Executive Office.

FY17 Goals:

- Enhance overall public understanding of MWRA's mission, goals, and benefits to the public through extensive outreach and effective communication.
- Monitor and analyze legislation and regulations that affect the Authority, formulating appropriate responses in concert with the Office of the Executive Director (OED).

- Continue to coordinate the review of projects filed with Massachusetts Environmental Protection Agency (MEPA), and submit timely MEPA responses to ensure that Authority owned infrastructure is protected.
- Provide technical support to 14 cities and towns that host MWRA's emergency back-up aqueducts as part of the Public Access Aqueduct Program.
- Develop and implement proactive strategies for educating and informing key MWRA constituencies and the public at large about MWRA's mission, projects and progress, and promote understanding for associated costs.
- Gain public support for MWRA programs and projects while responding to the needs and concerns of elected and appointed public officials.
- Provide support to MWRA staff to ensure that MWRA projects meet regulatory requirements, and provide input to regulatory agencies in order to ensure MWRA interests are recognized during the development of regulations.
- Maintain and update MWRA's Community Contact Database. This Community Contacts tracking application is used to notify MWRA's communities of any operational issues or emergencies affecting them or surrounding communities.
- Continue to provide accurate and timely information to the public through the MWRA's website and the media, including social media like Twitter and Flickr.
- Continue to circulate Annual Water Quality Report to every household within the MWRA service area.

FY17 Initiatives:

Ongoing Advocacy – Commonwealth Rate Relief

MWRA's highest legislative priority continues to focus on the need for a more robust "Commonwealth Rate Relief Package" to help offset anticipated rate increases over the next several years.

MWRA's Public Affairs staff continues to monitor the Legislative session and are watching a number of bills that could impact the Authority from an operational and administrative perspective. The Executive Director and Director of Intergovernmental Affairs routinely meet with House and Senate leaders to advocate on behalf of the Authority and its customers.

FY16 Mid-Year Accomplishments:

- Successfully advocated for the funding of the Sewer Rate Relief Fund. The current FY16 General Appropriations Act (GAA) includes \$1.1 million for Sewer Rate Relief, which was not subject to the most recent round of 9c cuts. Additionally, in January, Governor Baker filed his FY17 budget proposal which included \$1.1 million for Sewer Rate Relief.

- Filed comments with the Massachusetts Environmental Policy Act Office related to 29 different development projects in the Commonwealth
- Submitted four Project Notification Forms to the Massachusetts Historic Commission.
- Launched the Everbridge communication platform to keep community members informed of construction project updates, service notices, and public meetings.
- Conducted several public meetings to update public officials and constituents of MWRA's upcoming construction projects and their impact on local communities.

Aqueduct Trail Progress - To date, at the direction of the MWRA Board of Directors, staff have issued several Section 8 (m) Permits as part of the Public Access Aqueducts Program authorizing approximately 21 miles of Aqueduct Trails. 13 miles are currently open to the public.

Permits from the Towns of Wayland and Needham are currently under review.

Wachusett Aqueduct and Open Channel

Northborough: 4.7 miles authorized (2.0 miles opened)
Southborough: 2.1 miles authorized (2.1 miles opened along the Open Channel)

Bay Circuit Trail Connector

Framingham: 0.1 mile authorized
Southborough: 0.4 miles authorized

Weston Aqueduct

Framingham: 4.3 miles authorized (1.45 miles opened)
¹*Weston:* 1.5 miles authorized (1.5 miles opened)

Sudbury Aqueduct

Framingham: 1.5 miles authorized (1.5 miles opened)
Natick: 1.4 miles authorized (1.4 miles opened)
Wellesley: 3.0 miles authorized (3.0 miles opened)

Cochituate Aqueduct

Natick: 2.6 miles authorized

Communications - The Five-Year Progress Report for 2011-2015 has been drafted and will be printed before the end of the fiscal year. Also, three additional construction photo books have been produced, for the John Carroll Treatment Plant, the East Boston CSO project and the South Boston CSO project, with several others underway. The in-house design of the Annual Water Quality Report has begun. Communications staff are also updating all MWRA forms on the intranet site.

School Education - The School Education staff continues to conduct weekly classroom visits within the MWRA service area to educate elementary school children on the importance of water and sewer infrastructure on their daily lives. The annual poster, essay and video contest raised awareness of this program and provide an important opportunity for the students, teachers and parents to learn together about MWRA's mission.

¹ Approximately 3.3 miles of additional trails were authorized surrounding the Loring Road Storage Tank and Weston Reservoir as part of previous MWRA commitments included in Memorandum of Agreements with the Town of Weston.

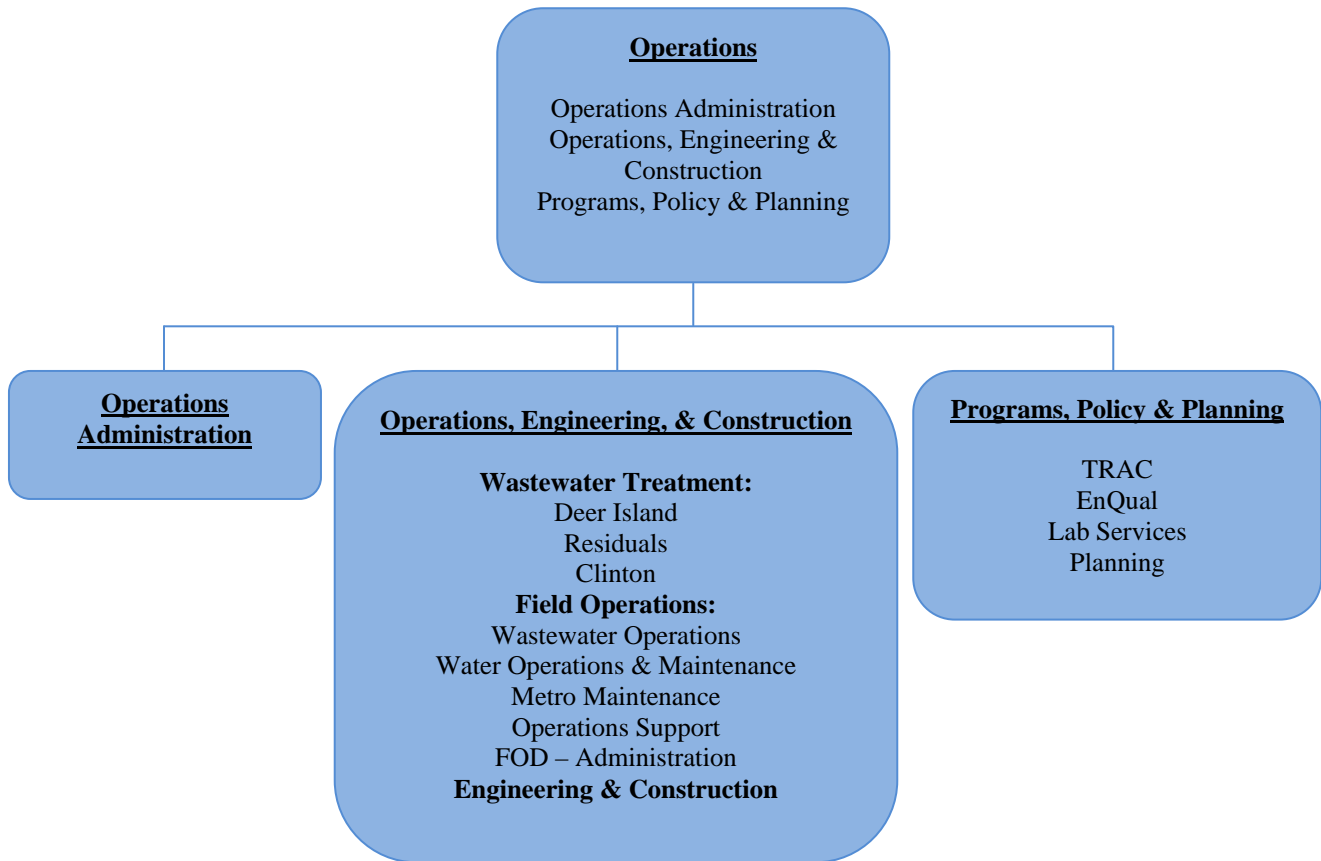
Budget Highlights:

- The FY17 Proposed Budget is \$1.2 million, an increase of \$9,000 or 0.8%, as compared to the FY16 Budget.
- \$1.1 million for **Wages and Salaries**, an increase of \$2,000 or 0.2%, as compared to the FY16 Budget, mainly for contractual increases, offset by lower salary for a new hire. The FY17 Proposed Budget includes funding for 13 positions, the same as FY16 Budget.
- \$26,000 for **Other Materials**, an increase of \$550 or 2.2%, as compared to the FY16 Budget.
- \$49,000 for **Other Services**, an increase of \$5,000 or 11.5%, as compared to the FY16 Budget, mainly for expansion of the MWRA's presence in the community and professional organizations. This budget supports the printing needs of the department, including State of the Harbor Report and the Annual Report.



Operations Division Budget

OPERATIONS DIVISION



FY17 Proposed Current Expense Budget						
OPERATIONS DIVISION						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WAGES & SALARIES	\$ 71,409,039	\$ 73,730,111	\$ 77,452,257	\$ 79,865,300	\$ 2,413,043	3.1%
OVERTIME	3,332,244	4,388,800	4,158,579	4,128,812	(29,767)	-0.7%
FRINGE BENEFITS	56,561	80,606	62,618	75,207	12,589	20.1%
CHEMICALS	10,226,458	9,749,142	9,790,848	9,985,755	194,907	2.0%
UTILITIES	23,309,214	20,974,683	23,058,796	22,303,797	(754,998)	-3.3%
ONGOING MAINTENANCE	24,216,104	23,826,321	24,506,090	25,031,217	525,128	2.1%
TRAINING & MEETINGS	135,493	130,079	172,400	195,725	23,325	13.5%
PROFESSIONAL SERVICES	1,941,662	1,871,719	2,514,247	2,592,563	78,316	3.1%
OTHER MATERIALS	4,586,539	4,930,576	4,973,563	4,932,519	(41,045)	-0.8%
OTHER SERVICES	18,155,052	18,395,102	19,515,512	19,524,931	9,419	0.0%
TOTAL	\$ 157,368,364	\$ 158,077,138	\$ 166,204,910	\$ 168,635,826	\$ 2,430,916	1.5%

FY17 Proposed Current Expense Budget						
OPERATIONS DIVISION by Department						
DEPARTMENT	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
OPERATIONS ADMINISTRATION	\$ 4,126,009	\$ 4,455,415	\$ 4,629,679	\$ 4,876,738	\$ 247,059	5.3%
OPERATIONS, ENGINEERING & CONSTRUCTION	136,808,083	136,314,899	142,823,561	144,715,966	1,892,405	1.3%
PROGRAMS, POLICY & PLANNING	16,434,272	17,306,823	18,751,670	19,043,123	291,453	1.6%
TOTAL	\$ 157,368,364	\$ 158,077,138	\$ 166,204,910	\$ 168,635,826	\$ 2,430,916	1.5%

The **Operations Division** provides wastewater and water system services including operations, maintenance, and treatment; environmental monitoring and laboratory testing and analyses; and engineering, construction, planning, and administration. MWRA's Chief Operating Officer (COO) leads this division.

The Operations Division is comprised of the following two key sections, which are lead by Deputy Chief Operating Officers (DCOO): Programs, Policy and Planning (P,P,&P) and Operations, Engineering, & Construction (O,E,&C). The DCOOs also provide support to the Chief Operating Officer on key MWRA operations, technical, policy, community coordination, permitting and public constituency matters. Additionally, the **Operations Administration Department** serves both sections and provides division-level oversight and general management support in the areas of finance, contract administration, and personnel. The Operations Administration Department budget also includes funds for MWRA vehicle purchases and division-wide memberships.

The **Programs, Policy & Planning Section** is comprised of the Toxic Reduction & Control, Environmental Quality (EnQual), Lab Services, and Planning departments. In total, the budgets for these programs represent 11% of the Operations Division's FY17 Proposed Budget and 8.3% of MWRA's FY17 Proposed Direct Expense Budget. This section focuses on the following:

- master planning, business planning, and strategic initiatives (such as system expansion)
- environmental programs and regulatory coordination
- water and wastewater quality testing and reporting
- divisional budget preparation and monitoring
- financial planning and analysis
- accounts payable and contract administration
- human resources management functions; and
- energy audits, reporting, program evaluation, and analysis.

Brief descriptions of the departments in this section are as follows:

- **The Toxic Reduction and Control (TRAC) Department** operates a multi-faceted program to minimize and control the inflow of hazardous or toxic materials into the MWRA sewer system. TRAC operates MWRA's Environmental Protection Agency (EPA-approved) Industrial Pretreatment Program.
- The **Environmental Quality Department (EnQual)** has two sections: EnQual-Water and EnQual-Wastewater (WW). EnQual-Water manages compliance with the reporting requirements of the MassDEP Drinking Water Regulations, as well as conducts and oversees the drinking water quality monitoring program. EnQual-WW manages compliance with the reporting requirements of MWRA's National Pollutant Discharge Elimination System (NPDES) permit. This unit analyzes environmental data and prepares reports on the quality of sewage influent and effluent and the water quality of Boston Harbor and its tributary rivers and Massachusetts Bay.
- The **Laboratory Services Department** supports various client groups in the Operations Division, the Department of Conservation and Recreation (DCR), and the MWRA member communities; providing field sampling, laboratory testing, and reporting services. Most of the testing is required

to meet the strict guidelines of regulatory programs and permits including the Safe Drinking Water Act (SDWA) and MWRA's NPDES permits.

- The **Planning and Coordination Department** provides planning, advocacy, and decision support services on policy, public health, regulatory, and operations matters regarding MWRA's potable and wastewater systems.

The **Operations, Engineering & Construction Section** is comprised of the Wastewater Treatment, Field Operations, and Engineering & Construction departments. In total, the budgets for these programs represent 86% of the Operations Division's FY17 Proposed Budget and 63% of MWRA's FY17 Proposed Direct Expense Budget. This section focuses on the following:

- operations and maintenance of MWRA's wastewater treatment facilities including DITP, Clinton Wastewater Treatment Plant, Residuals Pelletizing Facility, CSO facilities, and screenhouses
- operations and maintenance of MWRA's wastewater collection system including pipelines, pump stations, and other appurtenances
- operations and maintenance of MWRA's water treatment facilities including the Carroll Water Treatment Plant serving communities in the Boston metropolitan area and the Brutsch Water Treatment Plant serving communities in the Chicopee Valley Aqueduct (CVA) Water System communities
- operations and maintenance of the water distribution system including pipelines, pump stations, and valves
- operations and maintenance of the wastewater and water metering system, Operations Control Centers, and Supervisory Control and Data Acquisition (SCADA) system
- engineering and construction functions for the Operations Division and
- energy conservation, capacity, and efficiency maintenance and capital projects.

Brief descriptions of the departments in this section are as follows:

- The **Wastewater Treatment Department** operates and maintains the Deer Island Treatment Plant (DITP), Clinton Wastewater Treatment Plant, and Residuals Processing Facility (pelletization plant) at Fore River Staging Area (FRSA).
- The **Field Operations Department (FOD)** manages the wastewater pretreatment, water treatment, wastewater collection and water distribution functions, including the Carroll Water Treatment Plant (CWTP). This department is responsible for operating, maintaining, and metering both systems.
- The **Engineering and Construction Department** provides the following services to support the maintenance, repair, and rehabilitation of the wastewater and water systems: in-house engineering,

consultant management, drafting, surveying, construction management, and other technical assistance. The department also oversees implementation of the Combined Sewer Overflow (CSO) plan.

FY17 Goals:

- Plan, develop, implement, and operate efficient, reliable, and economical water treatment/delivery and wastewater transport/treatment systems.
- Ensure compliance with state and federal drinking water quality and wastewater discharge regulations including the Safe Drinking Water Act (SDWA), the Clean Water Act, and National Pollutant Discharge Elimination System (NPDES) permits.
- Plan and implement rehabilitation of existing facilities and construction of new facilities including pipelines, pump stations, storage facilities, and treatment facilities on schedules that allow for sufficient system capacity and performance.
- Dispose of wastewater treatment by-products in a cost-effective and environmentally sound manner.

FY17 Initiatives:

Operations, Energy, and New Facilities Start-ups:

- Continue to identify, assess, and implement initiatives to reduce energy demand and increase energy self-generation in MWRA's system, including the projects noted in MWRA's Memorandum of Understanding with Eversource. Pursue grant-funding and cost-sharing arrangements to defray costs of implementing these initiatives.
- Prepare for commencement of pilot, commercial food waste co-digestion project at Deer Island Treatment Plant in January 2017.
- Self-generate ~30% of the Deer Island Treatment Plant's (DITP) required power through optimization of power generation assets, including the wind turbines and the Steam Turbine Generation (STG) back pressure system.
- Continue to optimize new ultraviolet disinfection treatment process for MWRA's potable water system at the Carroll Water Treatment Plant and Brutsch Disinfection Facility.
- Operate new Spot Pond covered storage facility in water system for first full year.
- Continue to implement strategies for workforce succession in preparation for expected retirement of many MWRA employees in the upcoming five to ten years.

Engineering & Construction:

- Notice to Proceed for numerous contracts including the following major projects:
 - Water System
 - NIH Redundancy & Storage: Section 89/29 Redundancy – Construction Phase 2
 - SEH Redundancy Pipeline Section 111 Phase 3 Construction
 - Sections 89 & 29 Rehab - Design
 - Oakdale Highline Replacement
 - Weston Aqueduct Flow Control Valve
 - Wastewater System
 - Facility Asset Protection: Interceptor Renewal 1, Reading Ext Sewer – Construction
 - Facility Asset Protection: Sections 4, 5, 6, 186 - Study
 - DITP Facility Asset Protection: Expansion Joint Repair – Construction 3
 - DITP Facility Asset Protection: Misc VFD Replacements – Construction
 - DITP Facility Asset Protection: NMPS Motor Control Center Phase 2 – Design
- Substantially complete numerous CIP design and construction phases including the following:
 - Water System
 - Sudbury/Weston Aqueduct Repairs: Rosemary Brook Building Repair
 - Spot Pond Supply Mains Rehab: Section 4 Webster Ave Bridge Pipe Rehab – Design & Construction
 - Chestnut Hill Connecting Mains: Chestnut Hill Gatehouse Repairs
 - WASM Section 36 Valve
 - Wastewater System
 - Caruso Pump Station Improvements – Construction
 - Chelsea Screenhouse Upgrades
 - DITP Asset Protection NMPS & WTF Butterfly Valve Replacements
 - DITP Asset Protection Cryogenics Chillers Replacement

Maintenance:

- Optimize staff resources, overtime, service contracts, and as-needed design contracts to complete routine and major maintenance projects.
- Continue work on numerous major projects at Deer Island including facility repainting and coating repairs; Zurn boiler maintenance and repairs; electrical system maintenance; motor overhauls; HVAC unit replacement; PLC replacements; and critical equipment maintenance.
- Work on numerous projects in Field Operations including meter inspection and repairs; manhole rehabilitation; pipeline repair and replacement; invasives control in the water reservoirs; dam inspections and tree clearing; and water tank inspections and cleaning.

- Commence and complete periodic facility painting and coating projects at DITP and Clinton.

Environmental:

- Plan for implementation of requirements of the new National Pollutant Discharge Elimination System (NPDES) Permits for DITP (assume new permit is issued by January 2017) and Clinton Wastewater Treatment Plant (assume new permit in effect for all of FY17).
- Continue work on other harbor and outfall monitoring initiatives including: calculating revised thresholds, continuing to work with Department of Conservation and Recreation implementation of appropriate beach management practices in South Boston, and improving instrumentation on National Oceanic and Atmospheric Administration's (NOAA's) weather buoy.
- Plan for the new round of NPDES-required Local Limit testing in TRAC to reassess industrial discharge limits and commence the work after the Environmental Protection Agency (EPA) issues the new NPDES permits.
- Conduct invasive species removal and monitoring at water reservoirs.
- Continue implementation and monitor effects of reduced fluoride dosing in the water system per regulatory changes.
- Continue to develop and implement contaminant monitoring plans in the water system.

FY16 Mid-Year Accomplishments:

Operations, Energy, and New Facilities Start-ups:

- The Long-Term CSO Control Plan was declared to be substantially complete by the Court in December 2015.
- Assisted the Procurement Department with contracts to supply and deliver chemicals for the water and wastewater system facilities. Chemicals procured included soda ash, sodium hypochlorite, hydrofluorosilicic acid, ferric chloride, sodium bisulfite, aqua ammonia, and hydrogen sulfide.
- Received revenue for energy generated at numerous facilities including the following: hydroelectric \$321,000 from Oakdale Station, \$71,000 from Cosgrove Station, and \$11,000 from the Loring Road Pump Station; wind of \$121,000 from Charlestown Pump Station; and solar of \$53,000 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 and the non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits resulted in \$1.2 million in revenue

for the first six months of FY16. Deer Island also self-generated ~29% of the plant's total required power during that time period.

- Received \$44,000 in utility rebates for completed CEB-funded energy projects through the second quarter.
- Processed 99.9 average tons per day of sludge at the Pelletization Plant and disposed of 2,459 of grit and screenings through a contracted vendor.

Maintenance:

- The Operations Division spent \$10.8 million on maintenance of which \$6.2 million was for materials and \$1.6 million was for services.
- Procured and implemented numerous contracts for maintenance services, including the following;
 - Temporary flow monitoring and data collection at MWRA wastewater sites
 - Lab equipment maintenance services
 - Fire protection system services
 - Boiler and water heating equipment maintenance services
 - Overhead door maintenance services
- Procured maintenance-related materials including components for DI PICS; DI PLC control panel; DI replacement transformers; electrical hardware and supplies; and meter sensor replacements.
- Procured and implemented numerous contracts for maintenance projects including:
 - Installation of energy efficient lighting at numerous facilities
 - DI Lighting Improvements Phase 4 Exterior Lighting
 - Installation of energy-efficient LED exterior lighting at the CWTP
 - Installation, energy-efficiency LED interior lighting, Loring Rd Vault Chamber
 - Insulation repairs at DITP
- Completed numerous maintenance projects including the following:
 - Completed annual turnaround maintenance on Train #1 at Cryogenic Oxygen Facility at DITP
 - Performed preventive maintenance at East and West Odor Control facilities at DITP
 - Installed two dam seepage-monitoring weirs at Weston Reservoir
 - Completed annual half-plant shut-down for side A at CWTP
 - Repaired and replaced motor for odor control fan at Nut Island
- In water system, exercised 210 and replaced 7 mainline valves; exercised 111 and replaced 3 blow-off valves.
- In the wastewater system, inspected 17.27 miles and cleaned 19.73 miles of MWRA pipeline. Inspected more than 410 structures and rehabilitated 75 manholes. Also inspected 21, and cleaned 25 inverted siphon barrels.

Engineering, Construction, and Planning:

- Awarded contract and issued Notice to Proceed for numerous projects including the following:
 - Sections 89 & 29 Redundancy Construction Phase 1B
 - CWTP Existing Facilities Modifications – CP7
 - Alewife Brook Pump Station Rehab - Construction
 - Chelsea Screenhouse Upgrades ESDC
 - DITP Asset Protection Fire Alarm System Replacement Design
- Substantially completed numerous projects including the following:
 - Spot Pond Storage Facility: Design/ Build
 - Quabbin Aqueduct & WPS Upgrades - Design/CA/RI
 - Facility Asset Protection: PP/CF Pump and Gearbox Rebuilds
 - CSO Reserved Channel Sewer Separation: Construction
 - CSO Alewife Brook Sewer Separation: MWR003 Gate & Siphon: Construction 2
 - CSO Alewife Brook Sewer Separation: CAM004 Sewer Separation Construction

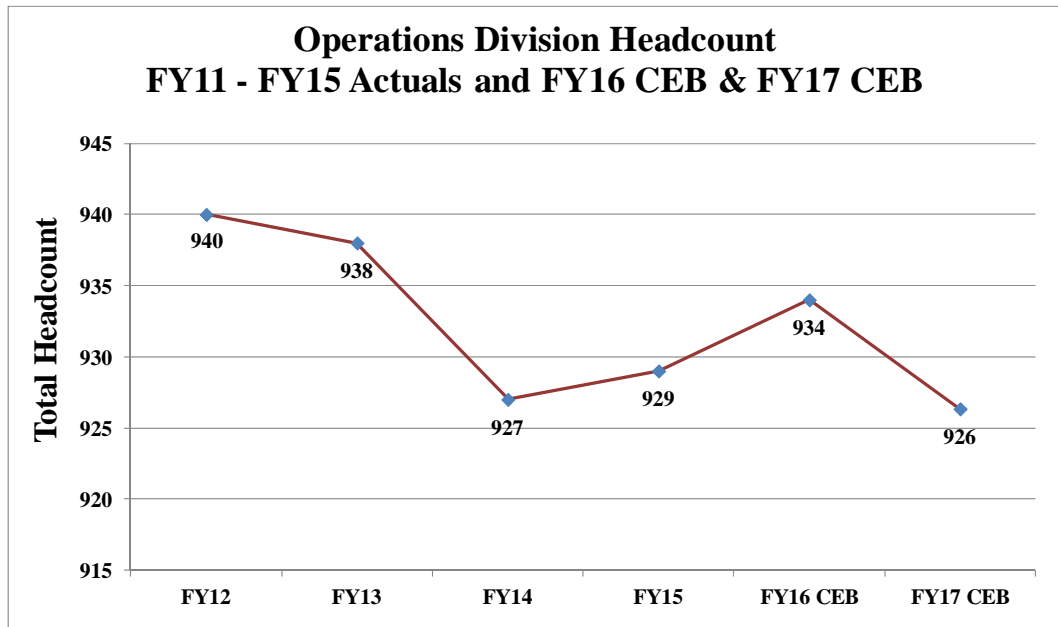
Environmental:

- The TRAC Department completed the following Environmental Protection Agency (EPA)-required work for significant industrial users: 96 inspections, 138 monitoring events, and 296 sampling of connections. This department also issued or renewed 165 permits to Significant Industrial Users (SIUs) and non-SIUs.
- At DITP, treated 99.7% of flow through secondary and met secondary permit limits at all times. Operated DITP without any NPDES Permit violations during FY16.
- EnQual 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 six technical reports, made monitoring results available on its website, and sent reports to government regulators, the Outfall Monitoring Science Advisory Panel and interested members of the public.
- Met all water quality and treatment standards for giardia in the drinking water system during FY16. Also, maximum turbidity results at Quabbin and Wachusett were within MassDEP standards.
- During FY16, the Department of Laboratory Services performed 137,000 tests including the annual Lead and Copper Rule testing and Massachusetts Bay water column testing for the Harbor and Outfall Monitoring program.

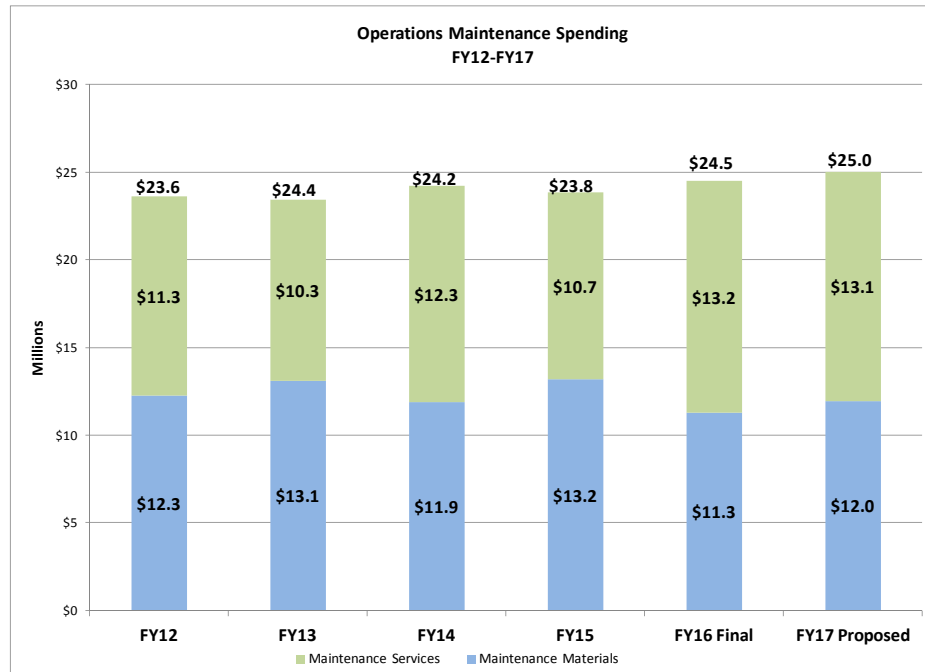
Budget Highlights:

- The FY17 Proposed Budget is \$168.6 million, which is \$2.4 million or 1.5%, more than the FY16 Budget.
- Line items that increase from the FY16 Budget include:

- The FY17 Proposed Budget of \$79.9 million for **Wages and Salaries** is an increase of \$2.4 million or 3.1% from the FY16 Budget, primarily due to wage increases associated with collective bargaining agreements and more filled positions expected in FY17 than in FY16 Budget. The FY17 Proposed Budget funds 923 filled full-time equivalent positions on average during the year versus fewer filled on average in FY16 Budget. The budget also includes \$779,000 for Stand-by Pay to ensure staffing availability and response during emergencies, \$221,000 for Interns, and \$113,000 for Temporary Employees to assist with peak workloads and special initiatives.



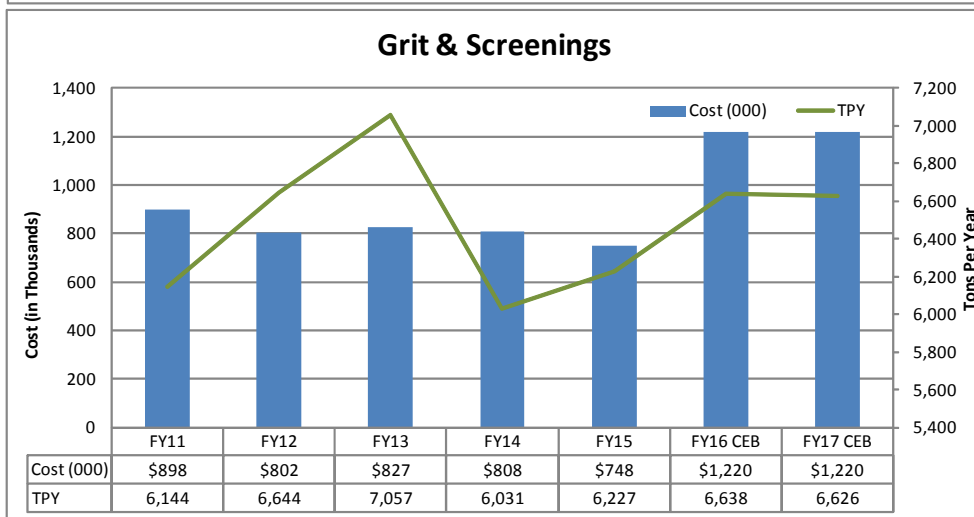
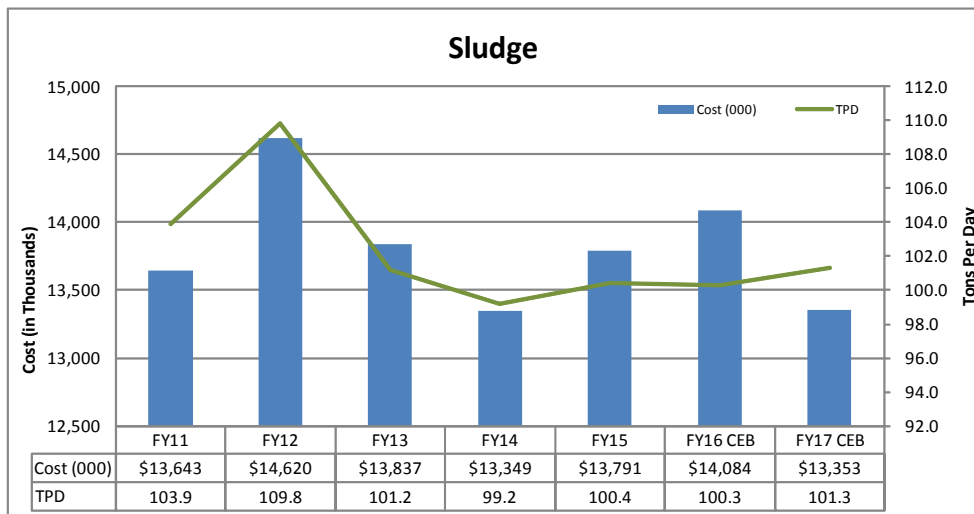
- The FY17 Proposed Budget for **Maintenance** is \$25 million, a net increase of \$525,000 or 2.1% from the FY16 Budget primarily due to changes in project priorities from year to year. The FY17 Proposed Budget includes \$13.1 million for services and \$11.9 million for materials. By maintenance area, the largest categories of spending for materials and services include \$11.5 million for plant and machinery; \$4.7 million for building and grounds; 3.2 million for specialized equipment; \$2.5 million for electrical; \$1.6 million for pipeline; and \$1.2 million for HVAC systems. The budget also funds special initiatives such as energy conservation projects in the Field Operations Department facilities; invasive plant control in the water reservoirs; painting and coating upkeep at the Clinton Wastewater Treatment Plant; and easement clearing on MWRA’s aqueducts. As shown below, Maintenance spending has been fairly consistent over the last few fiscal years.



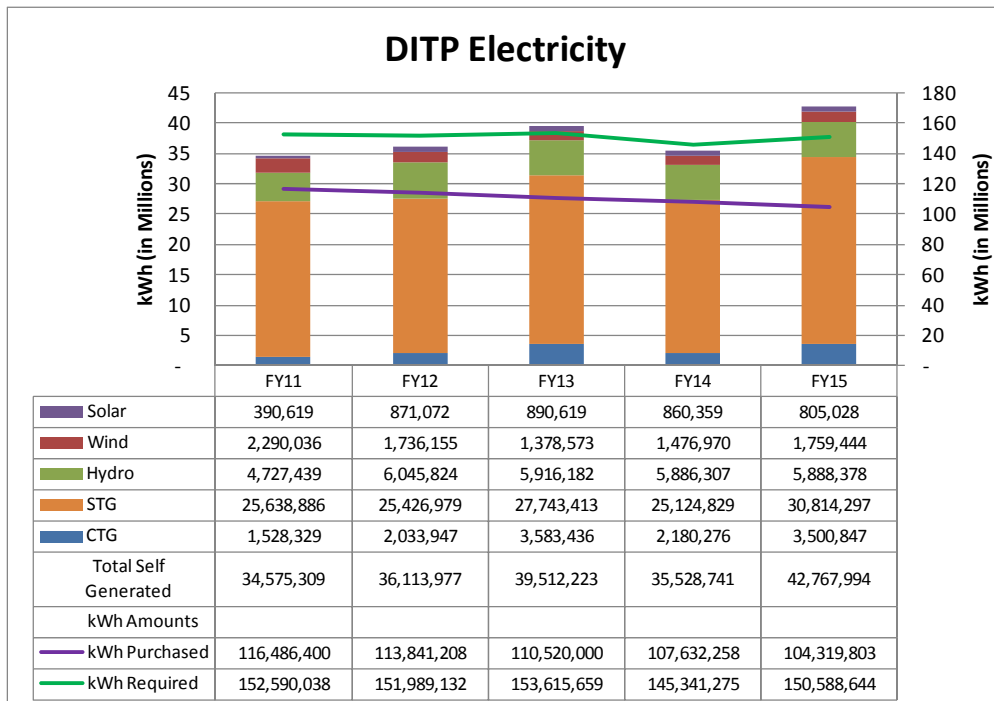
- The FY17 Proposed Budget of \$10 million for **Chemicals** includes \$5.7 million for disinfection and treatment in the water system and \$4.3 million for disinfection, treatment, and odor control in the wastewater system. The budget includes \$3.6 million for soda ash; \$2.4 million for sodium hypochlorite; \$812,000 for ferric chloride; \$578,000 for sodium bisulfite; \$443,000 for liquid oxygen; \$380,000 for hydrofluosilicic acid; \$355,000 for polymer; \$321,000 for aqua ammonia; and \$303,000 for sulfuric acid. The FY17 Proposed Budget is \$195,000 or 2.0% more than the FY16 Budget due to the net effect of price and usage adjustments based on recent trends, contracts, and market projections. The most significant change is the inclusion of funding for chemicals associated with treatment of enterococcus when the new DITP permit commences in January 2017. The FY17 Proposed Budget also reflects the continuation of reductions in fluoride usage in the water system due to regulatory changes.

- The FY17 Proposed Budget for **Professional Services** is \$2.6 million, including \$1.6 million for lab and testing services; \$617,000 for engineering services and \$323,000 for other services. Major items in the budget include \$1.4 million for Harbor and Outfall Monitoring; \$233,000 for as-needed engineering services to support CEB-funded projects; \$161,000 for Dam Safety Services; \$153,000 for outsourced testing by the Central Laboratory; \$95,000 for assistance in constructing an active directory for SCADA; \$75,000 for MWRA's FY17 contribution to the Mystic River Modeling project; \$70,000 for comprehensive reservoir-wide plant survey in the water system; and \$65,000 for invasive species control services in the reservoirs. The FY17 Proposed Budget is \$78,000 or 3.1% more than FY16 Budget mostly due to the addition of services for new initiatives such as the development of the SCADA directory, update of the TRAC Local Limits associated with the new DI NPDES permit, and the assessment of MWRA's cathodic protection program.

- The FY17 Proposed Budget of \$196,000 for **Training and Meetings** covers specialized training, attendance at industry conferences, and site visits as required to vendors and other plants. The FY17 Proposed Budget funds training for topics such as spill response and boom deployment; spill prevention and control; belt laser alignment; cyber security; and electrical voltage. The FY17 Proposed Budget is \$23,000 or 13.5% more than the FY16 Budget primarily due to increased need for workforce development associated with succession planning and the impacts of expected retirements.
- The FY17 Proposed Budget for **Other Services** is \$19.5 million, including \$13.4 million for sludge pelletization; \$2.3 million for space leases and rentals, including the Chelsea office facility and additional space in the area for equipment storage; \$1.2 million for grit and screenings removal and disposal; \$1.1 million for telecommunications services; \$463,000 for police details; and \$372,000 for memberships, dues, and subscriptions. The FY17 Proposed Budget is \$9,000 more than the FY16 Budget primarily due to reductions for contractual inflation for sludge pelletization services, offset by increases for the costs of SCADA data lines and the inclusion of funds for leasing additional storage space near the Chelsea Office facility.

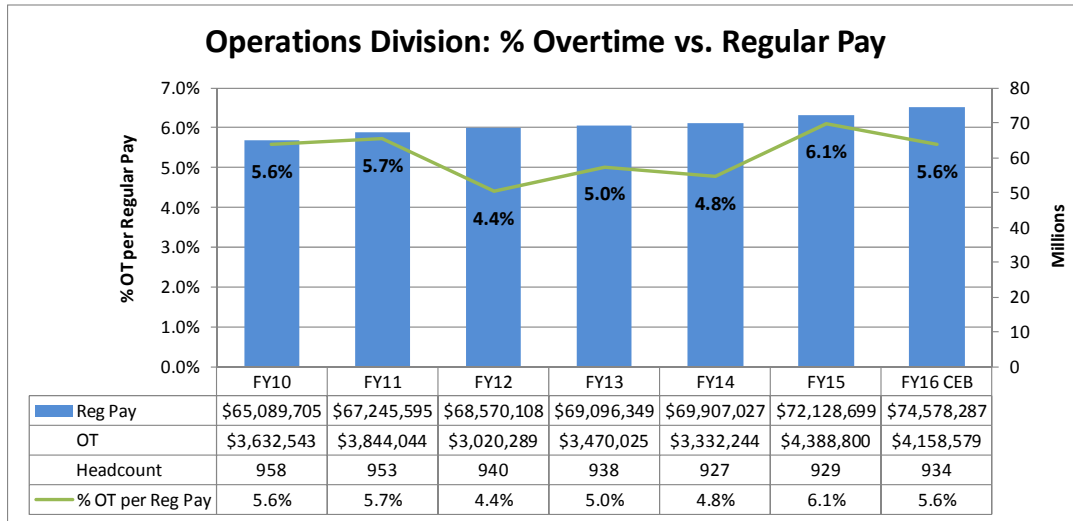


- Line items that decrease from the FY16 Budget include:
 - The FY17 Proposed Budget of \$22.3 million for **Utilities** includes \$16.6 million for electricity, \$2.8 million for diesel fuel, \$2.1 million for water, and \$590,000 for natural gas. The decrease of \$755,000 or 3.3% from the FY16 Budget is primarily due to projected price changes for electricity and diesel fuel based on market conditions and less water usage at DITP based on recent trends. The utility budget by department is \$12.4 million for Deer Island Treatment Plant, \$4.9 million for Wastewater Operations, \$4.2 million for Water Operations, \$515,000 for the Chelsea office and maintenance facilities, and \$226,000 for the Clinton Wastewater Treatment Plant.



- The FY17 Proposed Budget of \$4.9 million for **Other Materials** includes \$1.9 million for Vehicle Replacements; \$880,000 for Lab and Testing Supplies; \$449,000 for Vehicle Expenses (gas, tolls); \$402,000 for Health and Safety Supplies; \$395,000 for Equipment and Furniture; and \$389,000 for Work Clothes. The decrease of \$41,044 or 0.8% from the FY16 Budget is primarily due to decreases for equipment and furniture associate with the completion of purchases in FY16 for water quality monitoring equipment associated with contaminant monitoring initiatives. This is offset by an increase of \$200,000 for vehicle replacements to address the needs of an aging vehicle fleet.
- The FY17 Proposed Budget of \$4.1 million for **Overtime** is a net decrease of \$30,000 or 0.7% from the FY16 Budget. The budget includes \$1.9 million for emergencies and storms; \$1.2 million for planned work required on off-shifts and during periods of lower flows; \$964,000 for routine coverage of operations per prevailing collective bargaining agreements; and \$19,500 for training. The FY17 Proposed Budget includes \$333,000 of overtime for valve

shutdowns required to complete the DITP North Main Pump Station (NMPS) and Winthrop Terminal Facility Butterfly Valve Replacement CIP project. It also includes contractual wage increases. The net decrease reflects a reduction in overtime associated with the NMPS project due to fewer planned shutdowns in FY17, offset by increases in the Central Laboratory and the Chelsea Office facility in lieu of hiring temporary workers to handle off-shift work.



OPERATIONS ADMINISTRATION

FY17 Proposed Current Expense Budget OPERATIONS ADMINISTRATION						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 2,125,923	\$ 2,307,256	\$ 2,433,908	\$ 2,552,912	\$ 119,004	4.9%
OVERTIME	120	282	-	-	-	-
FRINGE BENEFITS	3	-	-	-	-	-
MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	15,580	10,288	4,700	6,500	1,800	38.3%
PROFESSIONAL SERVICES	(1,388)	78,738	200,000	120,001	(79,999)	-40.0%
OTHER MATERIALS	1,756,380	1,811,438	1,702,500	1,902,500	200,000	11.7%
OTHER SERVICES	229,391	247,413	288,571	294,825	6,254	2.2%
TOTAL	\$ 4,126,009	\$ 4,455,415	\$ 4,629,679	\$ 4,876,738	\$ 247,059	5.3%

The **Operations Administration Department** is comprised of the Office of the Chief Operating Officer (COO); the Office of the Deputy Chief Operating Officer (DCOO) of Program, Policy and Planning; and division-level support staff. The department's primary goal is to oversee, manage, and implement MWRA policies and procedures pertaining to the following functions: administration, labor relations, finance, contract administration, and general management.

FY17 Goals:

- Ensure delivery of reliable and cost-effective water and sewer services to customer communities.
- Ensure that water supply and wastewater collection and treatment preserve public health and protect natural resources.
- Provide overall management of the Operations Division and ensure adherence to all internal practices and applicable external policies and regulations.
- Continue to aggressively pursue renewable and sustainable energy projects to reduce the environmental impacts of daily operations, increase energy efficiencies, and reduce overall operating costs.

FY17 Major Initiatives:

- Continue to implement projects included in the Eversource Memorandum of Understanding (MOU).
- Continue to evaluate and implement the Co-Digestion Project at the Deer Island Treatment Plant.
- Make substantial progress, complete, and/or implement startup of major capital projects.
- In light of the number of likely retirements in the next five to ten years, prepare and implement strategies for succession planning and workforce development.
- Continue to evaluate and pursue options for the next phase of the Cross Harbor Cable.

FY16 Mid-Year Accomplishments:

- Funded first installment of agreement with United States Geological Survey (USGS) for modeling work coordinated through the Mystic River Watershed Association.
- Initiated and/or completed numerous projects noted in the Eversource MOU and submitted claims for utility rebates.
- The Long-Term CSO Control Plan was declared to be substantially complete by the Court in December 2015.
- Made significant progress on numerous projects including Spot Pond Storage Facility Design/Build.

Budget Highlights:

- The FY17 Proposed Budget is \$ 4.9 million, an increase of \$247,000 or 5%, from the FY16 Budget.
- \$2.6 million for **Wages and Salaries**, an increase of \$119,000 or 4.9%, from the FY16 Budget. The budget funds 27 filled positions, equal to 26.4 FTEs after adjusting for part-time employees.
- \$6,500 for **Training & Meetings**, an increase of \$1,800 or 38.3% from the FY16 Budget. Funding in this line item is for attendance at conferences for the COO and DCOO and Finance staff.
- \$120,000 for **Professional Services**, which is a decrease of \$80,000 or 40% from the FY16 BUDGET. The decrease is primarily associated with reduced funding for the Mystic River Modeling Project in accordance with the finalized agreement. The budget also includes \$45,000 for energy consulting services to support procurements and evaluation of projects.
- \$1.9 million for **Other Materials**, which is a increase of \$200,000 or 11.7% from the FY16 BUDGET primarily to address the needs of an aging fleet. The budget includes \$1.9 million for the replacement of older vehicles in MWRA's fleet. At an average cost of \$30,000 to \$35,000 per vehicle, the budget supports replacement of 54-62 vehicles which is approximately 11%-13% of the active fleet.
- \$295,000 for **Other Services**, an increase of \$6,000 or 2.2%, from the FY16 BUDGET. The budget covers Authority-wide memberships including the Water Research Foundation (WRF; formerly AWWARF), National Association of Clean Water Agencies (NACWA), Association of Metropolitan Water Agencies (AMWA), American Water works Association (AWWA), and the Boston Harbor Association (BHA) marine debris program.

OPERATIONS, ENGINEERING & CONSTRUCTION

Operations, Engineering, & Construction

Wastewater Treatment:

Deer Island

Residuals

Clinton

Field Operations:

Wastewater Operations

Water Operations & Maintenance

Metro Maintenance

Operations Support

FOD – Administration

Engineering & Construction

FY17 Proposed Current Expense Budget						
OPERATIONS, ENGINEERING & CONSTRUCTION						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WAGES & SALARIES	\$ 56,468,999	\$ 58,134,027	\$ 60,894,153	\$ 62,642,392	\$ 1,748,239	2.9%
OVERTIME	3,209,439	4,222,642	4,019,005	3,946,827	(72,178)	-1.8%
FRINGE BENEFITS	54,869	78,482	60,568	72,882	12,314	20.3%
CHEMICALS	10,226,458	9,749,142	9,790,848	9,985,755	194,907	2.0%
UTILITIES	23,281,525	20,951,802	23,031,591	22,279,297	(752,294)	-3.3%
ONGOING MAINTENANCE	23,752,689	23,269,390	23,931,994	24,403,874	471,880	2.0%
TRAINING & MEETINGS	100,373	100,706	140,200	146,600	6,400	4.6%
PROFESSIONAL SERVICES	490,979	329,896	563,927	756,519	192,592	34.2%
OTHER MATERIALS	1,699,515	1,722,903	1,575,432	1,610,484	35,052	2.2%
OTHER SERVICES	17,523,237	17,755,909	18,815,843	18,871,335	55,492	0.3%
TOTAL	\$ 136,808,083	\$ 136,314,899	\$ 142,823,561	\$ 144,715,966	\$ 1,892,405	1.3%

FY17 Proposed Current Expense Budget						
OPERATIONS, ENGINEERING & CONSTRUCTION by Programs						
FACILITY	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WASTEWATER TREATMENT	\$ 65,066,656	\$ 63,852,040	\$ 67,764,259	\$ 67,468,357	\$ (295,901)	-0.4%
FIELD OPERATIONS	64,566,350	65,308,951	67,330,902	69,222,533	1,891,631	2.8%
ENGINEERING & CONSTRUCTION	7,175,077	7,153,909	7,728,400	8,025,075	296,675	3.8%
TOTAL	\$ 136,808,083	\$ 136,314,899	\$ 142,823,561	\$ 144,715,966	\$ 1,892,405	1.3%

The Operations, Engineering & Construction Section is comprised of the Wastewater Treatment, Field Operations, and Engineering & Construction departments. In total, the budgets for these programs represent 86% of the Operations Division's FY17 Proposed Budget and 63% of MWRA's FY17 Proposed Direct Expense Budget.

The Deputy Chief Operating Officer of Operations, Engineering and Construction oversees this section, which focuses on the following:

- Operations and maintenance of MWRA's wastewater treatment facilities including DITP, Clinton Wastewater Treatment Plant, Residuals Pelletizing Facility, CSO facilities, and screenhouses
- Operations and maintenance of MWRA's wastewater distribution system including pipelines, pump stations, and other appurtenances
- Operations and maintenance of MWRA's water treatment facilities including the Carroll Water Treatment Plant serving communities in the Boston metropolitan area and the Brutsch Water Treatment Plant serving communities in the Chicopee Valley Aqueduct (CVA) Water System communities
- Operations and maintenance of the water distribution system including pipelines, pump stations, and valves
- Operations and maintenance of the wastewater and water metering system, Operations Control Centers, and Supervisory Control and Data Acquisition (SCADA) system
- Engineering and construction functions for the Operations Division; and
- Energy conservation, capacity, and efficiency maintenance and capital projects.

The Deputy Chief Operating Officer of Operations, Engineering and Construction also provides support to the Chief Operating Officer on key MWRA operations, technical, policy, community coordination, permitting and public constituency matters.

WASTEWATER TREATMENT

FY17 Proposed Current Expense Budget WASTEWATER TREATMENT						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 18,099,006	\$ 18,914,089	\$ 19,504,507	\$ 20,283,078	\$ 778,571	4.0%
OVERTIME	931,637	1,257,123	1,130,213	1,176,082	45,869	4.1%
FRINGE BENEFITS	17,017	26,236	17,743	18,343	600	3.4%
CHEMICALS	3,569,186	3,481,612	3,445,879	4,073,485	627,607	18.2%
UTILITIES	13,457,361	11,697,399	13,101,765	12,596,544	(505,221)	-3.9%
MAINTENANCE	13,720,757	12,976,875	14,148,609	13,707,179	(441,430)	-3.1%
TRAINING & MEETINGS	12,051	12,213	20,300	29,100	8,800	43.3%
PROFESSIONAL SERVICES	241,797	171,644	212,308	146,401	(65,907)	-31.0%
OTHER MATERIALS	581,671	599,711	568,700	601,925	33,225	5.8%
OTHER SERVICES	14,436,173	14,715,139	15,614,235	14,836,221	(778,014)	-5.0%
TOTAL	\$ 65,066,656	\$ 63,852,040	\$ 67,764,259	\$ 67,468,357	\$ (295,901)	-0.4%

FY17 Proposed Current Expense Budget WASTEWATER TREATMENT by Facility						
FACILITY	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
DEER ISLAND	\$ 48,453,665	\$ 46,817,125	\$ 49,921,101	\$ 50,762,530	\$ 841,429	1.7%
RESIDUALS	15,014,521	15,375,189	15,955,410	14,756,717	(1,198,693)	-7.5%
CLINTON	1,598,471	1,659,726	1,887,748	1,949,110	61,362	3.3%
TOTAL	\$ 65,066,656	\$ 63,852,040	\$ 67,764,259	\$ 67,468,357	\$ (295,901)	-0.4%

The **Deer Island Treatment Plant**, the **Residuals Management Program**, and the **Clinton Treatment Plant** comprise the Wastewater Treatment Department. Together, the budgets for these programs represent 40% of the Operations Division's FY17 Proposed Budget and 29.5% of MWRA's FY17 Proposed Direct Expense Budget.

Incoming wastewater from MWRA customer communities is piped to several headworks facilities where large objects are screened out before the influent is transmitted to Deer Island Treatment Plant through underground tunnels. At Deer Island, wastewater from the north system is pumped through chambers that remove grit and detritus for disposal in an off-island landfill. South system flows undergo preliminary treatment at the Nut Island headworks and are then pumped directly into the primary treatment facility, bypassing the grit removal chambers. The primary treatment facility consists of stacked clarifiers where scum rises to the top and the sludge settles to the bottom. Secondary reactors and clarifiers remove organic matter through biological and gravity treatment. Primary and secondary sludge and scum are thickened, anaerobically digested, and further thickened to reduce the volume of sludge before it is pumped through the Braintree-Weymouth tunnel to MWRA's Residuals Processing Facility at Fore River Staging Area (FRSA). Methane, a byproduct of anaerobic digestion, is used to fuel the plant's boilers, which produce steam to provide heat and generate electricity.

DEER ISLAND

FY17 Proposed Current Expense Budget DEER ISLAND TREATMENT PLANT						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 17,375,674	\$ 18,188,028	\$ 18,757,828	\$ 19,479,626	\$ 721,798	3.8%
OVERTIME	878,057	1,200,367	1,075,213	1,121,082	45,869	4.3%
FRINGE BENEFITS	16,203	25,501	16,743	17,343	600	3.6%
CHEMICALS	3,279,007	3,171,902	3,092,151	3,714,093	621,942	20.1%
UTILITIES	13,208,873	11,463,089	12,877,689	12,370,177	(507,512)	-3.9%
MAINTENANCE	12,809,096	12,004,627	13,240,052	13,236,665	(3,387)	0.0%
TRAINING & MEETINGS	11,694	12,213	16,600	25,600	9,000	54.2%
PROFESSIONAL SERVICES	228,024	122,390	172,500	130,000	(42,500)	-24.6%
OTHER MATERIALS	428,575	451,412	411,600	444,800	33,200	8.1%
OTHER SERVICES	218,462	177,596	260,725	223,145	(37,580)	-14.4%
TOTAL	\$ 48,453,665	\$ 46,817,125	\$ 49,921,101	\$ 50,762,530	\$ 841,429	1.7%

Program Description and Goals:

The **Deer Island Treatment Plant (DITP)** budget accounts for 30% of the Operations Division's FY17 Proposed Budget. DITP has a peak primary treatment capacity of 1.27 billion gallons per day (bgd) and peak secondary treatment capacity of 700 million gallons per day (mgd).

Wastewater influent from MWRA customer communities arrives at the plant through four underground tunnels. Pumps then lift the influent 80 to 150 feet, depending on the tunnel, to the head of the plant.

North system flows pass through grit channels and bar screens at the headworks that remove grit and screenings for disposal in an off-island landfill. South system flows are pre-treated for grit at Nut Island and the Braintree-Weymouth Intermediate Pump Station. Flow is routed to primary treatment clarifiers, which remove about half of the pollutants brought to the plant in typical wastewater (removes 50% of total suspended solids and up to 50% of pathogens and toxic contaminants). In the clarifiers, gravity separates sludge and scum from the wastewater.

In secondary treatment, reactors and clarifiers remove non-settleable solids through biological and gravity treatment. The biological process is a pure oxygen-activated sludge system, using microorganisms to consume organic matter that remain in the wastewater flow. Secondary treatment raises the level of pollution removal to over 85%. More than 100 tons of pure oxygen is manufactured each day at Deer Island's cryogenic facility to support the biological treatment process.

Sludge from primary and scum from both primary and secondary treatment is thickened in gravity thickeners. Sludge from secondary treatment is thickened in centrifuges. Polymer is used in the secondary sludge thickening process to increase its efficiency. Digestion occurs in the egg-shaped anaerobic digesters at the Deer Island Treatment Plant. There are a total of 12 digesters, each 90 feet in diameter and approximately 140 feet tall (128 ft liquid level). Microorganisms naturally present in the sludge work to break sludge and scum down into methane gas, carbon dioxide, solid organic byproducts, and water. Digestion significantly reduces sludge quantity. The methane gas produced in the digesters is used in the plant's on-site power generating facility to save operating costs by reducing consumption of fuel oil for heating and purchased energy. Digested sludge is pumped through the Nut Island inter-island tunnel and Braintree-Weymouth extension tunnel directly to the MWRA's Pelletizing Facility at Fore River, where it is further processed into a fertilizer product.

Organizational Structure:

The Deer Island Treatment Plant (DITP) has six major functional areas: Operations, Thermal Power Plant, Process Control, Maintenance, Capital Engineering, and Operations and Maintenance (O&M) Support.

- Operations staff manages the day-to-day operation of plant processing units, performs minor preventative maintenance activities, and oversees plant functions 24 hours per day, seven days per week.
- Thermal Power Plant staff manages and operates the Deer Island generation and thermal systems. Power Plant personnel provide 24 hour operation of the high-pressure, high temperature steam power plant. This facility is capable of producing up to 70 megawatts of emergency electrical power.
- Process Control manages and maintains the following programs in support of plant operations; real-time process instrumentation and control system (PICS), operational data system (OMS), plant performance monitoring and reporting programs, and regulatory compliance programs including all plant permits, water quality, and air quality. The Process Control Unit provides the technical expertise for plant unit operations and routinely performs process optimization studies to help increase performance and reduce operating costs.
- Maintenance performs preventive and predictive maintenance and corrective repairs on all equipment, utilizing a computerized maintenance management system (CMMS) to coordinate scheduling with Operations. Staff have developed the Reliability Centered Maintenance (RCM) program, which has improved plant performance by applying maintenance resources where they are most effective. RCM analyzes the operating systems with the objective of ensuring critical functions perform as required. Implementation of a preventive maintenance program using RCM helps reduce the cost of maintaining the plant and improves the efficiency by anticipating when maintenance will be required. An on-island warehouse, managed by Procurement Department staff, ensures there is adequate stock for maintenance repairs and plant operations.
- Capital Engineering provides technical support services for both the Operations and Maintenance Units. Staff is responsible for all aspects of plant engineering including developing, procuring, and implementing all service contracts, consultant designs, and capital improvement projects at Deer Island. This group also manages the on-island Technical Information Center, which provides services to the Deer Island Treatment Plant (DITP) community and external constituents, and ensures quick access to plant drawings and technical information for operational and maintenance needs.
- O&M Support Section is responsible for supporting the business needs of the plant. The Administration and Finance Unit provides financial and administrative support to meet daily operational needs of the plant. The Safety/Security Unit is responsible for ensuring a safe and healthful work environment for employees and minimizing MWRA's exposure to liability and property loss or damage.

The Deer Island Director's Office provides overall management for the plant plus policy direction and support in the areas of public access and community agreements.

Operating Assumptions

Deer Island's FY17 Proposed Budget assumes treatment of an average flow of 347 mgd based on ten years of historical data. The projected quantity of digested sludge to be pumped to FRSA (TSS basis) is 100.38 TPD. This is based on tonnage trends from recent years which reflect the increased digestion from the operation of an eighth digester.

Deer Island's FY17 Proposed Budget accounts for the impact of self-generation of electricity from the steam turbine generators, combustion turbine generators, hydroelectric generators, wind turbine generators, and photovoltaic panels. In total, these assets will provide approximately 30% of the total energy requirements.

Deer Island continues to comply with the conditions of the current National Pollutant Discharge Elimination System (NPDES) Permit which expired in FY06. Given the uncertainty regarding the timing of the permit renewal from the Environmental Protection Agency (EPA), Deer Island's FY17 Proposed Budget does not assume a new permit will be in effect until January 1, 2017. When the new permit is issued, it is anticipated that Deer Island's treatment process will be required to kill enterococcus in addition to fecal coliform to comply with the new regulations.

FY17 Goals:

- Meet or surpass environmental compliance standards for the Deer Island Wastewater Treatment Plant as required by the NPDES permit and air quality permits.
- Maintain DITP assets over the long term at the lowest possible life cycle cost and acceptable risk; consistent with customer, community, and regulatory support service levels.
- Commence and complete DITP's CIP projects on time and within budget.
- Continue to maximize energy efficiency, self-generation, and revenue.

FY17 Major Initiatives:

- Implement Co-digestion Pilot Program vendor and continue to implement program with the aim of start-up by January 2017.
- Continue to implement the North Main Pump Station and Winthrop Terminal Facility Butterfly Valve Replacement capital project which involves replacement of valves, magnetic flow meters, piping, actuators, and other parts. The FY17 Proposed Budget assumes an average of two plant shut-downs per month during lower flow periods for a total of 24 during the year to do the work associated with this project.
- Implement projects in CIP according to schedule including issuing Notice to Proceeds for key projects and phases such as Expansion Joint Repair Construction 3, Cathodic Protection Design, and NMPS Motor Control Center Phase 2 Design.
- Upgrade computerized maintenance management software to Maximo 7.6.

- Complete numerous major maintenance projects including replacement of electrical distribution substation equipment; modifications or upgrades to each CTG to increase reliability, and installation of scum mixer gearboxes and motors for primary and secondary scum systems.
- Complete projects and operational changes recommended by the Eversource DITP energy Audit.

FY16 Mid-Year Accomplishments:

- Met secondary permit limits at all times, treating on average more than 99% of flows with full secondary treatment.
- DITP received the National Association of Clean Water Agencies’ “Platinum Peak Performance Award” for 2015, which recognized that the plant had no permit violations in nine years.
- Provided approximately 29% of required power through self-generation.
- Put the backpressure turbine and a steam bypass valve into service to increase electrical energy production, resulting in 1.3 MW increase from the steam generators. Expect 4.5 kWh additional electrical production in FY16.
- Continue to implement the North Main Pump Station capital project involving replacement of all ten motors and VFDs in the NMPS. Close coordination is required with operations to execute the replacement while retaining needed plant capacity.
- Avoided ISO-NE peak hour demand by taking Deer Island off the grid and supplying plant power with the CTGs, therefore avoiding approximately \$500,000 in capacity charges for FY16.
- On average, more than 99.4% of all digester gas generated was utilized at the Thermal/Power Plant in FY16.
- Awarded Notice to Proceeds for key capital project phases including DSL Pump Replacement Phase 2 and Fire Alarm System Replacement Design.
- For the sixth straight year, staff met goal of 100% completion of all assigned Preventative Maintenance Work Orders. Also maintained availability of critical equipment remained at 99.7%, while maintaining a reasonable backlog of work and controlling levels of overtime.
- Completed numerous maintenance projects including replacement of the East and West Odor control HVAC cooling coils and other smaller HVAC coils, heat exchangers, and condensing units throughout the plant; replacement of thickened primary sludge pump plunger style pumps with less maintenance intensive progressive cavity pumps; and replacement of secondary reactor feed control valve actuators.
- Deer Island hosted more than 3,000 guests for tours of the facility.

Budget Highlights:

- The FY17 Proposed Budget is \$50.8 million, an increase of \$841,000 or 1.7%, over the FY16 Budget primarily due to wage increases and also additional chemicals required to treat enterococcus for six months associated with the commencement of the new permit.
- \$19.5 million for **Wages and Salaries**, an increase of \$722,000 or 3.8%, over the FY16 Budget primarily due to wage increases associated with collective bargaining agreements. The FY17 Proposed Budget funds on average 232 filled permanent positions. The FY17 Proposed Budget also includes \$196,000 for stand-by pay to support operational and maintenance needs primarily during storms and emergencies, and \$27,000 for interns.
- \$1.1 million for **Overtime**, an increase of \$46,000 or 4.3%, over the FY16 Budget primarily due to collective bargaining increases and adjustments to estimates based on historical averages. The FY17 Proposed Budget is based on multi-year historical trends and supports overtime required for operational coverage, critical maintenance projects, and regulatory requirements (i.e. inspections).
- \$3.7 million for **Chemicals**, an increase of \$622,000 or 20%, over the FY16 Budget. The FY17 Proposed Budget is based on multi-year historical usage trends and projected market prices, which are expected to be favorable in the next year. The FY17 Proposed Budget also reflects management's expectation that a new NPDES permit will be in effect as of January 2017, thus requiring more chemicals to treat enterococcus. The budget includes \$1.3 million for sodium hypochlorite, \$773,000 for ferrous chloride, \$320,000 for hydrogen peroxide, \$303,000 for activated carbon, \$339,000 for polymer, and \$118,000 for sodium hydroxide.
- \$12.3 million for **Utilities**, a decrease of \$508,000 or 3.9%, mainly due to projected decreases in diesel fuel pricing based on market assessments. The FY17 Proposed Budget includes \$9.3 million for electricity, \$1.35 million for diesel fuel, and \$1.6 million for water. The budget also incorporates usage reductions associated with implemented and planned energy efficiency projects such as the back pressure STG and lighting retrofits throughout the plant.
- \$13.2 million for **Maintenance**, a decrease of \$4,000 from the FY16 Budget. The FY17 Proposed Budget includes \$6.1 million for materials and \$7.1 million for services. Of the total, \$8.3 million or 63% is for plant and machinery services and materials, \$2.0 million is for electrical system maintenance, and \$1.6 million is for building and grounds work. The budget reflects project priorities with a particular emphasis on maintenance of critical equipment.
- \$130,000 for **Professional Services**, a decrease of \$42,500 or 24.6% from the FY16 Budget. The budget includes \$105,000 for as-needed engineering services to support priority maintenance projects and \$25,000 for environmental testing required as part of MWRA's air quality permit.
- \$445,000 for **Other Materials**, an increase of \$33,000 or 8% from the FY16 Budget primarily due to the use of multi-year historical averages as the basis for the FY17 Proposed Budget. The FY17 Proposed Budget includes \$160,000 for health and safety materials, \$98,000 for work clothes, \$68,000 for vehicles expenses (tolls, mileage, and gas), and \$44,000 for office supplies.
- \$223,000 for **Other Services**, a decrease of \$38,000 or 14%, from the FY16 Budget. The FY17 Proposed Budget includes \$44,000 for permit fees, \$62,000 for health and safety hazardous safety services, \$36,000 for telephones, \$34,000 for membership dues and subscriptions, \$15,000 for freight charges, and \$6,000 for printing services. The budget is based on historical averages for most items in this category.

RESIDUALS

FY17 Proposed Current Expense Budget RESIDUALS MANAGEMENT PROGRAM						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 115,594	\$ 130,260	\$ 130,161	\$ 140,720	\$ 10,559	8.1%
OVERTIME	-	-	-	-	-	-
FRINGE BENEFITS	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
MAINTENANCE	675,045	699,035	444,837	-	(444,837)	-100.0%
TRAINING & MEETINGS	357	-	3,400	3,200	(200)	-5.9%
PROFESSIONAL SERVICES	12,085	19,144	38,108	15,001	(23,107)	-60.6%
OTHER MATERIALS	6,402	15,844	10,100	10,125	25	0.2%
OTHER SERVICES	14,205,038	14,510,907	15,328,804	14,587,671	(741,133)	-4.8%
TOTAL	\$ 15,014,521	\$ 15,375,189	\$ 15,955,410	\$ 14,756,717	\$ (1,198,693)	-7.5%

Program Description and Goals:

The **Residuals Management Program** manages the processing and disposal of approximately 100-105 dry tons per day (on average per year) total suspended solids (TSS) of sludge from the anaerobic digestion process at Deer Island Treatment Plant (DITP), as well as the disposal of grit and screenings from all MWRA facilities. MWRA pumps liquid sludge from Deer Island through the Braintree-Weymouth cross-harbor tunnel to the Fore River processing facility where the sludge is dewatered, dried, and shipped by either rail or truck for use as fertilizer or to other appropriate disposal. MWRA is committed to the beneficial reuse of biosolids to the greatest extent practicable. MWRA seeks to dispose of all sludge and grit and screenings in a reliable, economical, and environmentally sensitive manner.

- MWRA contracts with the New England Fertilizer Company (NEFCo) to operate the sludge processing facility, and to market and distribute sludge products. A 15-year contract with NEFCo became effective March 1, 2001 and continued to December 31, 2015. After negotiations with NEFCo, MWRA approved a revised, five-year contract extension that commences in January 2016.
- A third-party independent condition assessment of the NEFCo facility noted that the facility was in excellent condition and recommended only minor modifications to several control system devices.
- The FY17 Proposed Budget is based on the assumption of 101.34 average tons per day (TPD; TSS basis). This includes a baseline of 100.38 average TPD per recent history which reflects improvements in digestion due to the use of an eighth digester. The assumption also includes an average of .95 TPD for the incremental sludge associated with the start-up and phase-in of the commercial food waste co-digestion project at DITP as of January 2017.
- Grit and screenings (minor residuals) from MWRA's headworks and certain pump stations are collected and disposed of in landfills. MWRA contracts with a third party operator for this service. Minor residuals are by-products of wastewater pre-treatment and primary/secondary treatment processes and include grit, screenings, and scum screenings.

FY17 Goals:

- Dispose of all sludge in a reliable and cost-effective manner consistent with all prevailing regulations and to maximize beneficial reuse of the processed pellets.
- Dispose of grit and screenings in a reliable, economical, and environmentally sensitive manner consistent with all prevailing regulations.
- Maintain and expand local (within Massachusetts) beneficial use of MWRA's processed pellets.

FY17 Initiatives:

- Oversee the NEFCo contract to ensure successful pelletization and distribution of an average of 101.34 TPD of sludge.
- In conjunction with NEFCo, continue implementation of the extended contract and initiate all planned capital projects scheduled for 2017.
- Evaluate and expand marketing efforts for Bay State Fertilizer.
- Oversee the contractual disposal of an estimated 6,626 tons of grit and screenings.

FY16 Mid-Year Accomplishments:

- NEFCo successfully processed, pelletized, and distributed an average of 100 TPD of sludge.
- MWRA sold 10 tons of Bay State Fertilizer through retail outlets and distributed 19.5 tons of pellets to public sector clients.
- MWRA's contractor disposed of 2,459 tons of grit and screenings.

Budget Highlights:

- The FY17 Proposed Budget is \$14.8 million, a decrease of \$1.2 million or 7.5%, from the FY16 BUDGET.
- \$141,000 for **Wages and Salaries**, which funds one permanent position and also stand-by pay to provide coverage for emergencies during off-shifts. This department also receives on-going management oversight and staff support from other departments of the MWRA including Deer Island, Treasury, and Operations Administration.
- No budgeted funds for **Maintenance**, a decrease of \$445,000 from the FY16 Budget due to a change in MWRA's budgeting and accounting treatment for NEFCo's capital projects in the next phase of the extended contract. The contract includes a list of expected projects by year but as of January 2016, MWRA will fund these projects through the Capital Improvement Program (CIP) budget since the work meets MWRA's capitalization criteria for MWRA assets.
- \$15,000 for **Professional Services** which is a \$23,000 decrease from the FY16 Budget. The reduction is primarily due to the shift of funding to the CIP for NEFCo's design and contract management services that support capital work. This is offset by an increase due to the inclusion of funding for bi-annual stack testing in FY17 per regulatory requirements.

- \$14.6 million for **Other Services**, a decrease of 741,000 or 4.8% from the FY16 Budget. The FY17 Proposed Budget primarily funds the **Sludge Pelletization** services provided through a contract with NEFCo. The FY17 Proposed Budget includes \$13.4 million for sludge processing, which is a \$732,000 or 5.2 % decrease as compared to the FY16 Budget due to lower projected inflation rates for components of the contract. Projected FY17 sludge tonnage of 101.34 average tons per day (TPD) is slightly more (on average +.95 TPD) than the FY16 Budget assumption due to the impacts of the commercial food waste co-digestion project expected to commence in January 2017. In addition, this line item also covers Grit and Screenings disposal of \$1.2 million, which is level-funded with the FY16 Budget.

CLINTON

FY17 Proposed Current Expense Budget						
CLINTON WASTEWATER TREATMENT PROGRAM						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 607,738	\$ 595,801	\$ 616,518	\$ 662,732	\$ 46,214	7.5%
OVERTIME	53,581	56,756	55,000	55,000	-	0.0%
FRINGE BENEFITS	814	735	1,000	1,000	-	0.0%
CHEMICALS	290,179	309,710	353,728	359,393	5,665	1.6%
UTILITIES	248,488	234,310	224,076	226,367	2,291	1.0%
MAINTENANCE	236,616	273,213	463,720	470,514	6,794	1.5%
TRAINING & MEETINGS	-	-	300	300	-	0.0%
PROFESSIONAL SERVICES	1,688	30,110	1,700	1,400	(300)	-17.6%
OTHER MATERIALS	146,694	132,454	147,000	147,000	-	0.0%
OTHER SERVICES	12,673	26,637	24,706	25,405	699	2.8%
TOTAL	\$ 1,598,471	\$ 1,659,726	\$ 1,887,748	\$ 1,949,110	\$ 61,362	3.3%

Program Description and Goals:

The Clinton Wastewater Treatment Program provides advanced sewage treatment services to the Town of Clinton and the Lancaster Sewer District. MWRA assumed formal operational responsibility for the Clinton plant in 1987. Since then MWRA has designed and constructed new primary, secondary, and advanced treatment facilities which incorporated rehabilitated portions of the existing plant with new construction. The new facilities, designed to meet all current and projected National Pollutant Discharge Elimination System (NPDES) discharge standards, were completed in 1992.

The plant provides secondary treatment using an activated sludge process in combination with advanced nutrient removal and dechlorination. The major facilities include headworks, primary settling tanks, digesters, sludge processes, trickling filters, aeration tanks, secondary tanks, and a chemical addition building. The plant discharges its effluent into the South Nashua River in accordance with the discharge limits of the facility's NPDES permit which limits effluent flow to 3.01 mgd. The plant has a potential peak flow rate of 12 mgd and a 6 mgd peak 24-hour flow rate. Residual materials are pressed and transported to an MWRA-owned landfill for disposal. Staff also performs regular monitoring of the landfill site.

The FY17 Proposed Budget reflects the fourth full fiscal year of operation of the Clinton aeration system efficiency improvements and redundant pumping at the influent and intermediate lift stations. These improvements were completed in 2013. Staff commenced the projects based on a consultant study that recommended installing fine bubble diffusers in three of the six secondary aeration tanks and removing the existing mechanical mixers to obtain a better oxygen transfer rate while reducing electricity consumption. In FY12, the project scope was expanded to include the installation of four permanent submersible auxiliary pumps to increase pumping capacity during high flow conditions in the plant. It also included the installation of SCADA to control the system, collect data for storage, and reporting on select processes. The redundant pumps enable MWRA to avoid the cost of renting additional pumps which were required four times in the past. Further, the new submersible pumps are energy efficient and significantly reduce the plant's energy consumption. National Grid, in early 2013, allotted a grant for \$177,000 for this work which became available at completion.

The FY17 Proposed Budget assumes the requirements of the new NPDES permit will be in full effect for the whole year. The new permit requires year around limits for phosphorus discharge, which impacts the

use of Ferric Chloride. The supply of Ferric Chloride for FY17 will cost more than the previous contract because of a factory shutdown in the supply chain. The FY17 Proposed Budget includes estimates for numerous maintenance projects including \$250,000 for periodic painting and coating of facilities and equipment due to corrosion.

The FY17 Proposed Budget does not include funds for the operational impact of the Clinton Digester Cleaning and Rehabilitation Capital projects. The project is scheduled to substantially finish in April 2017. Clinton's two digesters are approximately 20% filled with compacted grit which is limiting their efficiency. The project calls for emptying, cleaning, and rehabilitating the tanks, installing a 36 inch influent gate, which would allow for throttling back on the plant flow during high flow conditions, and concrete repairs throughout the plant. This work may impact plant operations during wet weather emergencies/severe weather, thus increasing overtime and the timing of CEB maintenance projects. If this occurs, MWRA will identify available funds within the FY17 Proposed Budget and will absorb any additional expenses.

FY17 Goals:

- Meet or surpass environmental compliance standards for Clinton Treatment Plant as required by the NPDES permit.
- Maintain Clinton Treatment Plant assets over the long term at the lowest possible life cycle cost and acceptable risk; consistent with customer, community, and regulatory support service levels.
- Move forward with design and construction of major Clinton Infrastructure Rehabilitation and Renewal Projects.
- Continue to maximize energy efficiency through audits and implementation of recommendations.

FY17 Initiatives:

- Commence and complete the painting and coating of the plant facilities and equipment.
- Substantially complete the Phosphorus Reduction Construction CIP Project by summer of 2017.
- Implement enhanced phosphorus control at the Clinton Wastewater Treatment Plant to comply with the requirements of the new NPDES permit.
- Substantially complete the Clinton Roofing Rehabilitation CIP Project which is expected to complete by February 2017.

Budget Highlights:

- \$663,000 for **Wages and Salaries**, an increase of \$46,000 or 7.5%, from the FY16 Budget. The FY17 Proposed Budget funds eight permanent positions, including one part-time clerical position that was previously budgeted as a temporary employee. The increase from FY16 Budget to FY17 Proposed Budget reflects wage increases from collective bargaining plus the expectation that all positions will be filled all year in FY17. Wage & Salaries represent 34% of the budget.

- \$55,000 for **Overtime** - The FY17 Proposed Budget is based on historical trends. Overtime is used for critical maintenance work and to meet the 24 hour, 7 day per week emergency coverage requirement.
- \$359,000 for **Chemicals**, an increase of \$6,000 or 1.6%, from the FY16 Budget due primarily to usage adjustments based on actual experience and price adjustments based on current or expected contracts. Chemicals are used for sludge processing and disposal and wastewater treatment. The FY17 Proposed Budget assumes the new NPDES permit will be in effect for the full year. Chemicals represent 18% of the budget.
- \$226,000 for **Utilities**, an increase of \$2,000 or 1.0%, from the FY16 Budget. The budget includes \$171,000 for electricity, \$45,000 for fuel oil, and \$10,000 for water. Electricity is based on an average of FY14 and FY15 actual usage because they represent the effect of a fully operational aeration system. Utilities represent 12% of the FY17 Proposed Budget.
- \$471,000 for **Maintenance**, an increase of \$7,000 or 1.5%, from the FY16 Budget due to the inclusion of a multi-year, non-routine, major painting project. The FY17 Proposed Budget includes \$250,000 for painting to address issues with the aerated grit tank as well as \$70,000 for major projects based on the most current rolling priority list. The remainder of the budget is for routine materials and services. Maintenance represents 24% of the FY17 Proposed Budget.
- \$147,000 for Other **Materials**, level funded to the FY16 Budget. The Other Materials budget includes \$135,000 for clean fill for the landfill operation.
- \$25,500 for **Other Services**, an increase of \$700 or 2.8%, from the FY16 Budget. The FY17 Proposed Budget includes \$13,000 for permit fees, \$5,000 for telephones, and \$3,000 for railroad easement expenses.

FIELD OPERATIONS

FY17 Proposed Current Expense Budget						
FIELD OPERATIONS						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WAGES & SALARIES	\$ 31,301,802	\$ 32,197,907	\$ 33,802,022	\$ 34,475,870	\$ 673,848	2.0%
OVERTIME	2,234,679	2,906,531	2,822,827	2,704,780	(118,047)	-4.2%
FRINGE BENEFITS	37,726	52,103	42,325	54,039	11,714	27.7%
CHEMICALS	6,657,272	6,267,530	6,344,969	5,912,270	(432,699)	-6.8%
UTILITIES	9,824,164	9,254,403	9,929,826	9,682,754	(247,072)	-2.5%
ONGOING MAINTENANCE	10,022,329	10,292,373	9,783,385	10,696,695	913,310	9.3%
TRAINING & MEETINGS	83,156	73,028	111,000	107,000	(4,000)	-3.6%
PROFESSIONAL SERVICES	249,182	158,251	351,618	610,118	258,500	73.5%
OTHER MATERIALS	1,088,945	1,091,844	971,637	975,509	3,872	0.4%
OTHER SERVICES	3,067,096	3,014,980	3,171,293	4,003,499	832,206	26.2%
TOTAL	\$ 64,566,350	\$ 65,308,951	\$ 67,330,902	\$ 69,222,533	\$ 1,891,631	2.8%

FY17 Proposed Current Expense Budget						
FIELD OPERATIONS by Programs						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WASTEWATER OPERATIONS	\$ 11,915,070	\$ 11,752,934	\$ 12,666,643	\$ 12,519,429	\$ (147,214)	-1.2%
WATER OPERATIONS & MAINT	27,634,871	27,560,341	28,605,001	28,754,777	149,776	0.5%
METRO MAINTENANCE	15,476,388	16,140,065	16,038,602	16,365,474	326,872	2.0%
OPERATIONS SUPPORT	4,680,275	4,793,945	4,865,057	5,797,403	932,346	19.2%
FOD ADMIN	4,859,745	5,061,666	5,155,599	5,785,450	629,851	12.2%
TOTAL	\$ 64,566,350	\$ 65,308,951	\$ 67,330,902	\$ 69,222,533	\$ 1,891,631	2.8%

The primary goal of the **Field Operations Department (FOD)** is to provide high quality, uninterrupted water delivery and wastewater collection services to MWRA communities. The department is responsible for the treatment, transmission, and distribution of water from the Quabbin and Wachusett reservoirs to community water systems. It also manages the collection, transport, and screening of wastewater flow from MWRA communities to the Deer Island Treatment Plant. FOD consists of five operating units: Wastewater Operations, Metropolitan Maintenance, Water Operations and Maintenance, Operations Support, and Administration.

Wastewater Operations operates MWRA's wastewater transport facilities, including four continuously staffed Headworks facilities; 12 fully automated pumping stations; and six Combined Sewer Overflow (CSO) facilities which are similarly unstaffed. The wastewater system is monitored and controlled from the operations control center (OCC) in MWRA's Chelsea facility.

Water Operations and Maintenance is responsible for the treatment and delivery of approximately 198 million gallons per day (three year average mgd) of water from the Quabbin and Wachusett reservoirs to the community water systems. The water system encompasses a service area from Chicopee in the western part of the state to Lynnfield, Wakefield, Marblehead, Norwood and Canton in the metropolitan area. This unit operates and maintains MWRA's western waterworks facilities, including the Carroll Water Treatment Plant, the MetroWest Tunnel, the Brusch Water Treatment Plant, the Cosgrove Intake Facility, the Norumbega Reservoir, and the covered storage facilities. There are two operations centers that provide for monitoring and control of the water system on a 24-hour per day basis. The Metropolitan Operations and Control Center (OCC) is located at MWRA's Chelsea office facility and the Western Operations Center is located at the Carroll Water Treatment Plant.

Metropolitan Maintenance is responsible for the maintenance of MWRA's wastewater and water systems and facilities within the Route 128 area. Staff maintain pipelines, valves, interceptors, pumps, facility equipment, buildings, and grounds. Metropolitan Maintenance staff maintain a waterworks network of approximately 300 miles of water mains, 4,955 valves, 18 miles of deep rock tunnels, twelve pump stations, eight tunnel shafts, twelve distribution storage tanks, and a wastewater network of 240 miles of wastewater interceptors and appurtenances, twelve pump stations, four headworks, and six CSO facilities. This unit also performs TV inspections of the wastewater interceptor system and leak detection. In addition, this unit maintains 179 revenue water meters, 26 master water meters, 187 revenue wastewater meters, and 35 other wastewater monitoring sites.

Operations Support provides technical support to the Field Operations Department (FOD) in two key areas. Engineering staff coordinate all engineering issues related to the operation of the water and wastewater systems. The SCADA unit is responsible for the maintenance of the water and wastewater Supervisory Control and Data Acquisition (SCADA) systems.

FOD Administration provides financial, administrative, planning, and policy oversight functions for the entire Field Operations Department.

FY17 Goals:

Wastewater Operations

- Meet all operational and regulatory performance standards and requirements.
- Promote the use of technology throughout Wastewater Operations to maximize staff productivity and ensure information is readily available to support decision making.
- Provide efficient and cost effective operation of the MWRA's wastewater system.

Water Operations and Maintenance

- Operate and maintain the water supply and treatment facilities to provide an adequate supply of properly treated drinking water to meet all operational and regulatory performance requirements.
- Supply water to customer communities at the expected pressure.
- Continue to maximize staff productivity and efficiency for the maintenance of these facilities.
- Coordinate the operation of these facilities with on-going construction projects such as the Wachusett Aqueduct Pump Station.
- Minimize lag time for leak repair.
- Exercise 1,100 main line valves and 370 blow off valves.

Metropolitan Maintenance

- Continue to maximize staff productivity and efficiency for the maintenance of these facilities.
- Ensure that necessary maintenance and support are provided to meet the operational performance standards and regulatory requirements for all of MWRA's facilities in the metropolitan Boston communities.
- Optimize the use of Maximo, MWRA's computerized maintenance management system, to ensure cost-effective maintenance of facilities and equipment.

Operations Support

- Maximize availability and operations of SCADA system to support operations of MWRA's wastewater and water systems.

FY17 Major Initiatives:

Wastewater Operations

- Expand the use of Maximo where appropriate.
- Constructively apply technology to improve crew efficiency and crew accountability.
- Expand the use of the computerized tracking system to ensure daily and adequate inspection of MWRA's facilities

Water Operations and Maintenance

- Perform system upgrades at the Carroll Water Treatment Plant to replace outdated equipment and to improve efficiency during low demand periods.
- Make modifications and repairs to dams and appurtenances to meet the requirements of the Office of Dam Safety.
- Continue the invasives removal work at Wachusett, Sudbury, and Chestnut Hill reservoirs.
- Survey the MWRA water system for leaks.

Metropolitan Maintenance

- Exercise close supervision of the metro maintenance, equipment maintenance, TV inspection, and process control programs and meet performance goals in all areas as tracked in MWRA's monthly Yellow Notebook.
- Continue to review and revise operating procedures.

Operations Support

- Pilot test Verizon Wireless network on SCADA system.
- Roll out Multi Protocol Label Switching network.
- Implement data diode system on SCADA production network.

FY16 Mid-Year Accomplishments:

Wastewater Operations

- Wastewater Operations staff participated in 11 planned North Main Pump Station Shutdowns and four shutdowns of the Winthrop Terminal.
- Staff attended Chemical Receiving Training, focusing on the proper procedures of receiving chemicals and fuel oil, including ensuring adequate capacity in receiving tanks, testing chemicals and reviewing paperwork.

Metropolitan Maintenance

- Replaced seven main line valves and retrofitted three blow-off valve sites.
- Identified and repaired over 14 leaks, most with the pipelines remaining in service.

- Overall valve operability is 92% to 100%, a result of continued valve exercising, repair, and replacement.
- Assisted ten customer communities with valve, leak detection, and water quality issues.

Water Operations and Maintenance

- Provided temporary water supply to Lynn through November.
- Activated Cell 2 of the new Spot Pond Storage Tank on November 19, 2015.
- Completed the installation of two dam seepage-monitoring weirs at Weston Reservoir.
- Completed the annual half-plant shutdown for Side A of the Carroll Water Treatment Plant, cleaned primary contactors and storage tanks, replaced rupture discs on the primary contactors, back pressure valves on chemical feed systems, and UV Lamps that have reached the end of the service life
- Continued invasives removal work in the Stillwater Basin, Sudbury Reservoir, and Chestnut Hill Reservoir.

Metropolitan Maintenance

- Staff preformed 410 manhole inspections.
- Cleaned and maintained 19.73 miles of the MWRA's sewer system
- Inspected 21 siphon barrels and cleaned 25 siphon barrels.

Operations Support:

- Outfitted the Pressure Reducing Valve (PRV) at Shaft 9A with SCADA Control, providing two sources of automated control to the new Spot Pond Tanks.
- Operations Engineering continued training MWRA Staff on the City Tunnel and City Tunnel Extension Emergency Action Plans. Conducted tours to several shafts to familiarize staff with the locations and the equipment at each site.

Budget Highlights:

- The FY17 Proposed Budget is \$69.2 million, an increase of \$1.9 million or 2.8%, from the FY16 Budget.
- \$34.5 million for **Wages and Salaries**, an increase of \$674,000 or 2%, from the FY16 Budget mainly due to wage increases associated with collective bargaining agreements. The Wages and Salaries line item accounts for 50% of the FY17 Proposed Budget and funds 429 positions after applying a discount rate to reflect the likely pace of hiring for positions that become vacant. Of the remaining budget, \$446,000 is for stand-by pay to ensure support for operational and maintenance needs during wet weather and emergencies and \$99,000 is for interns to provide support in several areas including Operations Engineering and SCADA.
- \$2.7 million for **Overtime**, a decrease of (\$118,000) or (4.2%) from the FY16 Budget. The budget, which reflects collective bargaining increases, includes \$1.2 million for emergency related overtime; \$915,000 for planned overtime; and \$598,000 for operational coverage needs. The budget for planned

overtime is decreasing significantly due to fewer shut-downs planned in FY17 to complete the North Main Pump Station (NMPS)/ Winthrop Terminal Facility Butterfly Replacement project.

- \$5.9 million for **Chemicals**, of which \$5.6 million is for water treatment and \$251,000 is for wastewater treatment. The FY17 Proposed Budget is \$433,000 or 6.8% lower than the FY16 Budget due to decreases of (\$340,000) in Soda Ash, (\$13,000) in Fluoride and (\$29,000) in Aqua Ammonia primarily as a result of contract price decreases. Sodium Bisulfite decreases (\$69,000) as a result of the reduced need to quench ozone post addition of UV treatment. Carbon Dioxide decreases (\$12,000) based on previous years actuals. Since FY14, improvements by Town of Framingham have lowered the hydrogen sulfide levels in the system, resulting in lower dosing of Bioxide and the discontinuation of use of VX-456 for a budget decrease of (\$17,000). Budget increases by \$42,000 for Sodium Hypochlorite primarily as a result of contract price increases.
- \$9.7 million for **Utilities**, a decrease of (\$247,000) or (2.5%), from the FY16 Budget. The FY17 Proposed Budget includes \$7.1 million for electricity, \$1.5 million for diesel fuel, \$590,000 for natural gas, \$488,000 for water and \$73,000 for propane. Electricity decreases by (\$121,000) based primarily due to lower expected winter generation rates. Diesel decreases by (\$187,000) which is a combination of a (\$291,000) price decrease and a \$103,000 volume increase based on three year average use. Water decreases (\$27,000) primarily due to use at Wastewater facilities. Propane decreases by (\$15,000) due to predicted lower pricing offset by slight volume increase. Natural Gas increases by \$104,000 based on higher price estimates based on market projections plus volume increases at the IPS and JCWTP complex.
- \$10.7 million for **Maintenance**, an increase of \$913,000 or 9.3% from the FY16 Budget. The FY17 Proposed Budget includes \$4.8 million in day-to-day needs, \$3.6 million for services, \$1.7 million in major projects, and \$608,000 for energy initiatives. Some of the major projects planned for the FY17 Proposed Budget include:

Manhole Rehabilitation Contract	\$360,000
Invasives Control - Stillwater Basin – DASH	\$250,000
Replacement 30" Flow Control Valve at Weston Aqueduct	\$150,000
Deep Shoring Panels for Trench Safety	\$100,000
Spare Rotating Assembly at Caruso	\$100,000
Annual tank cleaning	\$100,000

- \$107,000 for **Training and Meetings**, a decrease of (\$4,000) or (3.6%), from the FY16 Budget which covers training required for work duties, health and safety compliance, cyber-security and SCADA technical training, and job-related licensures and certifications.
- \$610,000 for **Professional Services**, an increase of \$259,000 or 73.5%, from the FY16 Budget. The FY17 Proposed Budget includes \$462,000 for engineering services, which is made up of \$133,000 for as-needed engineering services to support CEB-funded maintenance projects; \$161,000 for a multi-year dam safety contract; \$50,000 to assess and enhance Cathodic Protection infrastructure; \$95,000 for security enhancements for the SCADA system; and \$23,000 for evaluation of spill prevention, control, and countermeasure plans. Additionally, the Professional Services budget also includes \$70,000 for an annual macrophyte survey at the reservoirs; \$65,000 for water quality assurance

services for macrophyte harvesting; and \$10,000 for energy audits at various facilities. The increase from FY16 Budget to FY17 Proposed Budget is primarily due to new initiatives including the cathodic protection and SCADA security projects.

- \$976,000 for **Other Materials**, an increase of \$4,000 or 0.4% from the FY16 Budget. The FY17 Proposed Budget includes \$338,000 for vehicle expenses for gas, mileage reimbursements, and tolls; \$268,000 for work clothes; and \$220,000 for health and safety supplies.
- \$4.0 million for **Other Services**, an increase of \$832,000 or 26%, from the FY16 Budget. The FY17 Proposed Budget includes \$2.3 million for annual lease payments for the Chelsea office building; \$992,000 for telephones, and \$448,000 for police details. The increase from FY16 Budget to FY17 Proposed Budget is primarily due to increasing costs of high speed data lines and procurement of additional storage and laydown space for the Chelsea facility.

ENGINEERING AND CONSTRUCTION

FY17 Proposd Current Expense Budget ENGINEERING AND CONSTRUCTION							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 7,068,191	\$ 7,022,031	\$ 7,587,624	\$ 7,883,445	\$ 295,821	3.9%	
OVERTIME	43,123	58,989	65,965	65,965	-	0.0%	
FRINGE BENEFITS	126	143	500	500	-	0.0%	
MAINTENANCE	9,603	142	-	-	-	-	
TRAINING & MEETINGS	5,166	15,466	8,900	10,500	1,600	18.0%	
PROFESSIONAL SERVICES	-	-	1	-	(1)	-100.0%	
OTHER MATERIALS	28,899	31,349	35,095	33,050	(2,045)	-5.8%	
OTHER SERVICES	19,969	25,790	30,315	31,615	1,300	4.3%	
TOTAL	\$ 7,175,077	\$ 7,153,909	\$ 7,728,400	\$ 8,025,075	\$ 296,675	3.8%	

The **Engineering and Construction Department (ECD)** manages and coordinates the planning, design, and construction of system improvements that ensure a safe and adequate water supply and a reliable wastewater collection and treatment. Staff is organized into three units including Wastewater Engineering, Water Engineering, and Construction.

The department provides in-house engineering, consultant management (during the facilities planning, environmental review, design, and engineering services during construction stages of capital projects), drafting, surveying, construction management, and other technical assistance required for the maintenance, repair, and rehabilitation of wastewater and waterworks systems.

The **Wastewater Engineering Unit** manages all wastewater design and engineering projects including Combined Sewer Overflow (CSO) engineering activities as well as specialized technical services in electrical, structural, mechanical, and civil engineering disciplines.

The **Water Engineering Unit** manages all water design and engineering projects. The unit also maintains the Design Information Services Center (DISC), which provides computer-aided design and drafting (CADD) services.

The **Construction Unit** provides contract management and resident inspection on all MWRA water and wastewater construction and rehabilitation projects, with the exception of Deer Island Treatment Plant.

FY17 Goals:

- In accordance with the prevailing CIP, plan and implement rehabilitation of existing facilities and construction of new facilities including pipelines, pump stations, storage facilities, and treatment facilities on schedules that allow for sufficient system capacity and performance.
- Complete activities necessary to comply with future (Jan 2018 and Dec 2020) Federal Court milestones related to CSO post-construction monitoring and performance assessment.

FY17 Major Initiatives:

- Award contracts and issue Notice to Proceed for numerous contracts including the following major phases (based on the Proposed FY17 CIP):
 - Water System
 - Winsor Power Station – Final Design
 - Oakdale High Line Replacement
 - Weston Aqueduct Flow Control Valve
 - Chestnut Hill Gatehouse Repairs
 - NIH Redundancy Sections 89 & 29 Construction Phase 2
 - NIH Redundancy Sections 89 & 29 Rehab – Design
 - Central Monitoring System Waterworks SCADA/PLC Upgrades
 - Wastewater System
 - Facility Asset Protection Interceptor Renewal 1 Reading Extension Sewer Construction
 - Facility Asset Protection Prison Point Rehab Design
 - Facility Asset Protection Delauri Pump Station Screens & Security
 - Facility Asset Protection Cambridge Branch Sections 23, 24, 26, 27 Study
 - Facility Asset Protection Interceptor Renewal 3, Dorchester Design
- Substantially complete numerous contracts including the following major phases (based on Proposed FY17 CIP):
 - Water System
 - Spot Pond Storage Facility Fells Reservoir Microwave Tower Replacement Construction
 - Sudbury/Weston Aqueduct Repairs Rosemary Brook Building Repair
 - Long Term Redundancy Sudbury Aqueduct MEPA Review
 - Spot Pond Supply Mains Rehab Section 4 Webster Ave Bridge Pipe Rehab – Design & Construction
 - Chestnut Hill Connecting Mains Gatehouse Repairs
 - WASM Section 36/W11/S 9 –A11 Valve
 - Central Monitoring System Quabbin Power Communication & Security – Construction
 - Waterworks Facility Asset Protection Beacon Street Line Repair Construction
 - Wastewater System
 - Corrosion and Odor Control NI System-wide Odor Control Evaluation
 - Facility Asset Protection Prison Pt Pump and Gearbox Rebuilds ESDC
 - Facility Asset Protection Caruso Pump Station Improvements Construction
 - Facility Asset Protection Chelsea Screenhouse Upgrades

- Complete the following regarding the Combined Sewer Overflow plan:
 - Renew Charles River and Alewife Brook/Mystic River CSO varaince extensions for the period 2016-19
 - Develop scope of services for court-manadated 3-year CSO performance assessment
 - Continue to administer CSO financial assistance agreements with BWSC and City of Cambridge
 - Continue to peform final eligibility reviews of completed CSO community construction contracts

FY16 Mid-Year Accomplishments:

- Awarded contracts and/or issued Notice to Proceed for numerous phases including the following major phases (based on the Proposed FY17 CIP):
 - Alewife Brook Pump Station Rehab Construction
 - Facility Asset Protection Chelsea Screenhouse Upgrades ESDC
 - Long Term Redundancy Wachusett Aqueduct Pump Station Construction
 - Cathodic Protection of Distribution Mains Testing Evaluation Program
 - NIH Redundancy & Storage Sections 89 & 29 Redundancy Phase 1B
 - CWTP Existing Facilities Modifications – CP7
- Substantially completed numerous contracts including the following major phases (based on Proposed FY17 CIP):
 - Spot Pond Storage Facility Design/Build
 - Facility Asset Protection PP/CF Pump and Gearbox Rebuilds
 - MWR003 CSO Gate, Floatables Control and Rindge Avenue Siphon Relief – Construction
 - CSO Reserved Channel Sewer Separation – BWSC Construction
 - CSO CAM004 Sewer Separation – Cambridge Construction

Budget Highlights:

- The FY17 Proposed Budget is \$8 million, an increase of \$297,000 or 3.8% compared to the FY16 Budget.
- \$7.9 million for **Wages and Salaries**, an increase of \$296,000 or 3.9% compared to the FY16 Budget, mainly due to base salary increases from union raises, internal promotions and new hires. Wages and Salaries represent 98.2% of the FY17 Proposed Budget and includes funding for 74 full-time equivalent positions on average during the year.
- \$66,000 for **Overtime**, level funded to the FY16 Budget. The FY17 Overtime budget is based on planned projects for FY17 and it includes increases due to collective bargaining agreements. Overtime covers resident inspection at construction sites after regular work hours to ensure monitoring of construction projects. Overtime is also used for unplanned design or survey needs, attendance at evening public meetings, and meeting deadlines.

- \$10,500 for **Training & Meetings**, an increase of \$1,600 or 18%, compared to the FY16 Budget. Training funds cover attendance at conferences and technical seminars. In FY17, more staff will attend training and out of state conferences as part of MWRA's workforce development efforts.
- \$33,000 for **Other Materials**, a decrease of \$2,000 or -5.8%, compared to the FY16 Budget. The FY17 Proposed Budget is based on historical spending. In FY17, vehicle expenses were reduced to reflect lower historical spending on tolls and gas cards. The budget covers vehicle expenses, office supplies, health and safety supplies, and survey equipment.
- \$32,000 for **Other Services**, an increase of \$1,300 or 4.3% compared to the FY16 Budget. Funding increased to align memberships/dues with historical spending. Funding in this line items supports printing/duplicating, telephone expenses, specialized copier services, memberships and dues, and police details.

PROGRAMS, POLICY, & PLANNING

Programs, Policy & Planning

TRAC
ENQUAL
Lab Services
Planning

FY17 Proposed Current Expense Budget						
PROGRAMS, POLICY & PLANNING						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WAGES & SALARIES	\$ 12,814,117	\$ 13,288,828	\$ 14,124,196	\$ 14,669,995	\$ 545,799	3.9%
OVERTIME	122,684	165,876	139,574	181,985	42,411	30.4%
FRINGE BENEFITS	1,689	2,124	2,050	2,325	275	13.4%
CHEMICALS	-	-	-	-	-	-
UTILITIES	27,689	22,881	27,205	24,500	(2,705)	-9.9%
ONGOING MAINTENANCE	463,415	556,931	574,096	627,343	53,247	9.3%
TRAINING & MEETINGS	19,540	19,085	27,500	42,625	15,125	55.0%
PROFESSIONAL SERVICES	1,452,070	1,463,086	1,750,320	1,716,043	(34,277)	-2.0%
OTHER MATERIALS	1,130,644	1,396,234	1,695,631	1,419,535	(276,097)	-16.3%
OTHER SERVICES	402,424	391,779	411,098	358,771	(52,327)	-12.7%
TOTAL	\$ 16,434,272	\$ 17,306,823	\$ 18,751,670	\$ 19,043,123	\$ 291,453	1.6%

FY17 Proposed Current Expense Budget						
PROGRAMS, POLICY & PLANNING by Program						
PROGRAM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
TOXIC REDUCTION & CONTROL	\$ 3,588,160	\$ 3,764,566	\$ 3,921,724	\$ 4,027,400	\$ 105,676	2.7%
ENVIRONMENTAL QUALITY	4,143,529	4,275,976	5,105,192	4,911,933	(193,260)	-3.8%
LAB SERVICES	5,621,316	5,932,398	6,246,851	6,563,128	316,277	5.1%
PLANNING	3,081,268	3,333,883	3,477,903	3,540,662	62,759	1.8%
TOTAL	\$ 16,434,272	\$ 17,306,823	\$ 18,751,670	\$ 19,043,123	\$ 291,453	1.6%

The Programs, Policy & Planning Section is comprised of the Toxic Reduction & Control, Environmental Quality (EnQual), Lab Services, and Planning departments. The Environmental Quality Department has two units; EnQual-Wastewater and EnQual-Water Quality Assurance (water system). The Planning Department also has two units; Planning and Meter Data. In total, the budgets for these programs represent 11% of the Operations Division's FY17 Proposed Budget and 8.3% of MWRA's FY17 Proposed Direct Expense Budget.

The Deputy Chief Operating Officer of Programs, Policy, and Planning oversees this section, which focuses on the following:

- Master planning, business planning, and strategic initiatives (such as system expansion);
- Environmental programs and regulatory coordination;
- Water and wastewater quality testing and reporting;

- Divisional budget preparation and monitoring;
- Financial planning and analysis;
- Accounts payable and contract administration;
- Human resources management functions; and
- Energy audits, reporting, program evaluation, and analysis.

The Deputy Chief Operating Officer of Programs, Policy, and Planning also provides support to the Chief Operating Officer on key MWRA operations, technical, policy, community coordination, permitting, and public constituency matters.

TOXIC REDUCTION AND CONTROL

FY17 Proposed Current Expense Budget TOXIC REDUCTION AND CONTROL							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 3,391,080	\$ 3,582,311	\$ 3,712,278	\$ 3,764,537	\$ 52,259	1.4%	
OVERTIME	58,252	62,997	71,568	73,185	1,617	2.3%	
FRINGE BENEFITS	1,173	1,221	1,200	1,200	-	0.0%	
UTILITIES	-	-	-	-	-	-	
MAINTENANCE	23,213	3,034	21,500	11,500	(10,000)	-46.5%	
TRAINING & MEETINGS	-	-	-	3,000	3,000	-	
PROFESSIONAL SERVICES	-	-	-	50,000	50,000	-	
OTHER MATERIALS	105,581	109,971	107,178	115,978	8,800	8.2%	
OTHER SERVICES	8,861	5,032	8,000	8,000	-	0.0%	
TOTAL	\$ 3,588,160	\$ 3,764,566	\$ 3,921,724	\$ 4,027,400	\$ 105,676	2.7%	

The Toxic Reduction and Control (TRAC) Department operates a multi-faceted program to minimize and control the inflow of hazardous or toxic materials into the MWRA sewer system. TRAC operates MWRA's Environmental Protection Agency (EPA) approved Industrial Pretreatment Program and is responsible for all associated activities which include conducting inspections (approximately 700 annually), issuing permits (300 annually), conducting sampling (more than 2,000 events annually), and carrying out enforcement activities (approximately 400 annually). The program tracks more than 1,400 permitted facilities and 4,000 gas/oil separators. TRAC uses a software application to manage an extensive amount of industrial data on analytical test results, compliance status, and facility sampling and permitting requirements.

FY17 Goals:

- Regulate the level of toxic inflows into the MWRA sewerage system by inspecting, permitting, and monitoring industrial users.
- Ensure compliance with MWRA and Federal regulations by issuing appropriate enforcement actions as outlined in the Enforcement Response Plan.

FY17 Major Initiatives:

- Staff will complete regulatory review of the local limits applicable to the industrial users in the Clinton service area under the requirements of the National Pollution Discharge Elimination System (NPDES) permit renewal process for the Clinton Wastewater Treatment Plant.
- TRAC staff will utilize the Pre-treatment Information Management System (PIMS) software to schedule and track work, as well as to draft permits and track permit requirements. Sampling required by permits is entered into the PIMS system by permittees' contract laboratories. This electronic reporting system is subject to EPA's Cross Media Electronic Reporting Rule (CROMERR) and as such, needs to be upgraded to meet the requirements of the rule. TRAC staff are working with MWRA's MIS staff to ensure that the PIMS system meets these requirements.

FY16 Mid-Year Accomplishments:

- MWRA's Incentive and Other Charges Program recovers a substantial portion of MWRA's costs of inspecting, monitoring, and permitting industrial sewer users. TRAC's annual bills to sewer use discharge permit holders were issued on December 2, 2015. The amount invoiced totaled \$1,985,672. Permittees have 30 days to pay and/or appeal the charges.
- Through mid-year FY16, the TRAC conducted 96 annual Significant Industrial User (SIU) inspections required by EPA, 459 oil/water separator inspections, and 152 inspections of septage hauling companies and receiving sites. Staff issued 165 permits to industrial users during the period including 50 permits issued to SIUs.
- Through mid-year FY16, the Monitoring group conducted approximately 674 SIU and 64 Non SIU sampling events as required by EPA and the monitoring plan. Additionally, 1,309 events were sampled for non-industrial sampling events (e.g. emergencies, Combined Sewer Overflow, Clinton NPDES permit, Carroll Water Treatment Plant NPDES permit, Oakdale and Cosgrove NPDES permit) as well as other events.

Budget Highlights:

- The FY17 Proposed Budget is \$4.0 million, an increase of \$106,000 or 2.7%, from the FY16 Budget.
- \$3.8 million for **Wages & Salaries**, an increase of \$52,000 or 1.4% from the FY16 Budget primarily due to collective bargaining increases. The FY17 Proposed Budget funds 42 positions.
- \$12,000 for **Ongoing Maintenance**, a decrease of \$10,000 from the FY16 Budget. This funds sampling equipment, materials, and maintenance of equipment used in sampling industrial discharges at permitted industries. The decrease reflects the transfer of responsibility of a computer maintenance contract to MIS.
- \$50,000 for **Professional Services**, an increase of 100% for funding for a review of Metropolitan Boston Local Limits. This study will commence after the permit is issued by January 2017.
- \$116,000 for **Other Materials**, an increase of \$9,000 or 8.2%, from the FY16 Budget. This increase primarily reflects the shift of funding for work clothes to the TRAC budget since the department will no longer roll-up into the Field Operations Department budget. Funding in this line item mainly supports lab and testing supplies and health and safety materials.
- \$8,000 for **Other Services**, level funded from the FY16 Budget. This funds printing costs for regulations, public advertising of industrial users in Significant Noncompliance, and police details for sampling work done in public streets.

ENVIRONMENTAL QUALITY

FY17 Proposed Current Expense Budget ENVIRONMENTAL QUALITY						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WAGES & SALARIES	\$ 2,664,297	\$ 2,734,691	\$ 2,967,883	\$ 3,142,645	\$ 174,762	5.9%
OVERTIME	2,734	3,708	4,800	4,800	-	0.0%
FRINGE BENEFITS	11	25	200	200	-	0.0%
CHEMICALS	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
ONGOING MAINTENANCE	24,265	97,896	50,000	50,000	-	0.0%
TRAINING & MEETINGS	3,406	4,709	15,000	22,625	7,625	50.8%
PROFESSIONAL SERVICES	1,292,785	1,290,537	1,565,775	1,510,863	(54,912)	-3.5%
OTHER MATERIALS	34,430	35,065	389,080	60,330	(328,750)	-84.5%
OTHER SERVICES	121,601	109,346	112,454	120,470	8,016	7.1%
TOTAL	\$ 4,143,529	\$ 4,275,976	\$ 5,105,192	\$ 4,911,933	\$ (193,260)	-3.8%

FY17 Proposed Current Expense Budget ENVIRONMENTAL QUALITY by Program						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
ENQUAL	\$ 2,722,517	\$ 2,715,087	\$ 3,018,389	\$ 2,950,623	\$ (67,766)	-2.2%
WATER QUALITY ASSURANCE	1,421,012	1,560,889	2,086,803	1,961,309	(125,494)	-6.0%
TOTAL	\$ 4,143,529	\$ 4,275,976	\$ 5,105,192	\$ 4,911,933	\$ (193,260)	-3.8%

The **Environmental Quality Department** (EnQual) has two sections: EnQual-Water and EnQual-Wastewater (WW). EnQual-Water manages compliance with the reporting requirements of the MA Department of Environmental Protection Drinking Water Regulations, as well as conducts and oversees the drinking water quality monitoring program. Activities include maintaining the Contaminant Monitoring System (CMS) and a mobile S::CAN unit for as-needed sampling in the communities. The group also conducts an algae monitoring program, responds to customer complaints, and reviews system water quality data. EnQual-WW manages compliance with the reporting requirements of MWRA's National Pollutant Discharge Elimination System (NPDES) permits. The group must submit permit reports to state and federal regulators, the science advisory panel and its subcommittees, and several libraries, and post many of these reports on its Harbor and Bay web pages. EnQual-WW also manages environmental data and monitors and reports on the quality of sewage influent and effluent; Boston Harbor and its tributary rivers, and Massachusetts Bay.

FY17 Goals:

EnQual-Water

- Develop and implement a Contaminant monitoring program, which includes a 24/7 Contaminant response program, a reservoir monitoring system at Wachusett, alarms, consequence management procedures, on-call staffing, and a mobile WQ trailer.
- Respond to MassDEP and EPA Regulatory changes regarding drinking water quality monitoring (e.g., new MassDEP regulatory updates, UCMR4, etc)

- Participate in training programs to communities to support response to drinking water quality complaints, improve compliance with regulations, and support overall coordination.

EnQual-Wastewater

- Develop and manage a monitoring program for Boston Harbor and Mass Bay, reflecting relevant current concerns and long-term interests of the area.
- Provide technical and scientific guidance in the development of the EPA-required CSO performance assessment.
- Respond to EPA and MassDEP NPDES regulatory changes and program initiatives, including electronic reporting requirements and any new permits.

FY17 Major Initiatives:

EnQual-Water

- Develop and train staff on emergency response procedures and contaminant response procedures for reservoir or distribution system events. Also train staff in Incident Command System (ICS) protocols, procedures, and practices to aid in integration of service in the case of an emergency event.
- Monitor algal toxins in drinking water and adapt the program to the rapidly changing regulatory landscape of this current issue.

EnQual-Wastewater

- Explore modification of the Ambient Monitoring Plan to better address issues of emerging concern involving potential impacts of the outfall. This involves working with regulators and their Outfall Monitoring Science Advisory Panel (OMSAP) to review the goals and monitoring questions underlying the Ambient Monitoring Plan, which is required by DITP's NPDES permit.
- Working with staff from Planning and Operations Support, plan CSO performance assessment, including ongoing water quality monitoring. This is the next phase of the Long-term CSO Control Plan, which calls for three years of assessment before 2020 to ensure that the goals of the plan are met. Such monitoring is required by water quality standards variances for the Charles and Mystic Rivers require.
- In FY17, EnQual-WW will procure services for the next three years of ambient monitoring. Monitoring carried out by environmental consultants is supported by laboratory analyses of many of the samples by the Department of Laboratory Services. This core monitoring is supplemented with special studies, co-funded by other agencies including the Provincetown Center for Coastal Studies, NOAA Sea Grant, and others. These special studies extend MWRA's core monitoring in Cape Cod Bay, or explore monitoring technology development, or other topics related to MWRA's activities.
- Staff are working with researchers from the University of Maine and Northeastern Regional Association of Coastal and Ocean Observing Systems (NERACOOS) to provide five-year funding for the NERACOOS program, including an oceanographic buoy in the Massachusetts Bay partially

funded by MWRA. This funding plan would mean substantial reductions in MWRA's level of support starting in FY17.

- To respond to public interest and improve timeliness of accurate reporting, EnQual-WW will continue to develop a system to more quickly gather accurate SSO location and volume data.
- If a new final permit is issued for the Clinton Advanced Wastewater Treatment Plant in FY17, EnQual-WW staff will develop procedures to meet any new or changed reporting requirements.

FY16 Mid-Year Accomplishments:

EnQual-Water

- Replaced and enhanced monitoring capabilities on the Wachusett Reservoir. This included new profiling buoys with both water quality and petroleum sensor technology, a towable petroleum sonde, and both water quality and petroleum handheld sondes. Staff are working with MA DCR to design, procure, install, and activate a year-round, continuous monitoring shed at the Route 12 Bridge, which will provide both routine water quality information and potential contaminant detection.
- Implemented a 24/7 monitoring and response program for Contaminant Monitoring System (CMS) alarms.
- Successfully relocated the process lab and six staff to a temporary location at the Interim Corrosion Control facility in Marlborough. This was necessary to allow for roof replacement at the Southboro facility.
- Supported major projects including the Lynn transition to MWRA water and activation of the Spot Pond tanks in Stoneham.
- All DEP-required drinking water sampling and reporting was successfully completed in FY16 to date.

EnQual-Wastewater

- Permits – Submitted permit renewals for industrial stormwater at wastewater facilities, and reported required stormwater monitoring data for DITP. Submitted routine monthly, quarterly, and annual reports, and required notifications under Part II of permits, DITP blending order, and Clinton copper order. Submitted successful applications for NACWA Peak Performance awards for DITP and Clinton. Submitted annual interpretive report summarizing Ambient Monitoring studies in CY14 as required in the DITP NPDES permit.
- Several new draft or final EPA regulations required review and analysis of impact on MWRA. These included draft permits for municipal stormwater and for application of pesticides, as well as a proposed phosphorus Total Maximum Daily Load for the Mystic River. Analyzed historical wastewater and receiving water bacteria data to identify potential issues in complying with possible future permit limits. Based on data collected with MWRA assistance to DCR's beach monitoring program, Mass. Department of Public Health decided not to change the State marine beach posting

limits to more stringent limits recommended by EPA, which would have increased beach postings without any benefit to public health.

- A new web page with near-real-time reporting of sanitary sewer overflows was created, with its first public notification on January 17; a real-time reporting page for CSO treatment facilities is currently in production and is expected to be finalized in March 2016.
- Posted "fact sheets" for each harbor beach on the web providing context for interpreting water quality data. Initiated project to study microbial source tracking at Tenean Beach. Completed and published a report on CSO receiving water monitoring required by the Charles River and Mystic River water quality standards variances, as well as receiving water quality sections of annual report to the court on the Long Term CSO Control Program. Working with DLS, planned a modified sampling program for 2016 to support the CSO variances and CSO LTCP Assessment. In January, introduced improved procedures for reviewing and loading harbor field data.
- Conducted required ambient monitoring including triennial fish/shellfish sampling and tissue analyses. The very low summer Contingency Plan threshold for a nuisance algae species in summer samples was exceeded; this was not an outfall discharge impact. There were no other Contingency Plan threshold exceedances.
- All NPDES-required reporting was successfully completed in FY16 to date.

Budget Highlights:

- The FY17 Proposed Budget is \$4.9 million, a decrease of \$193,000 or 3.8%, from the FY16 Budget.
- \$3.1 million for **Wages & Salaries**, essentially level-funded with FY16 budgeted spending. The budget funds 33 positions.
- \$50,000 for **Ongoing Maintenance**, to fund parts and maintenance for the drinking water Contaminant Monitoring System and S::CAN drinking water analysis equipment.
- \$1.5 million for **Professional Services**, a decrease of \$55,000, or 3.5% from the FY16 Budget. This difference is due to reductions in the payment to the University of Maine for use of the Cape Ann buoy; and fewer as-needed task orders budgeted in the Harbor and Outfall monitoring (HOM) contracts. The FY17 Proposed Budget includes \$1.2 million for laboratory testing and analysis in support of MWRA's HOM Program, including Cape Cod Bay monitoring, and \$300,000 for contracts for the following activities which are co-funded through cost-sharing or cost-reduction agreements:
 - o UMass Amherst special study on railroad contaminants in the Wachusett Reservoir
 - o University of Maine's buoy off Cape Ann; instruments measuring algae and other water-quality indicators
 - o Bays Eutrophication Model maintenance
 - o Study of satellite imaging to measure water quality.

The FY17 Proposed Budget continues to reflect approximately \$840,000 in annual savings due to the reduction in scope of HOM monitoring that took place in 2011 through 2013 based on favorable findings of many years of monitoring data and regulatory approval.

- \$60,000 for **Other Materials**, a decrease of \$329,000 from the FY16 Budget. This reduction is because the equipment to support security-related initiatives in the water system are covered in the FY16 Budget but do not need to be funded again in FY17.
- \$120,000 for **Other Services**, an increase of \$8,000 over the FY16 Budget. This funds professional memberships and the Verizon contract related to the Contaminant Monitoring System. The proposed budget increase is mainly due to an anticipated increase in Verizon communication costs.

LABORATORY SERVICES

FY17 Proposed Current Expense Budget LABORATORY SERVICES							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 4,200,693	\$ 4,249,159	\$ 4,543,349	\$ 4,790,802	\$ 247,453	5.4%	
OVERTIME	61,699	99,170	61,706	104,000	42,294	68.5%	
FRINGE BENEFITS	505	873	600	875	275	45.8%	
UTILITIES	27,689	22,881	27,205	24,500	(2,705)	-9.9%	
MAINTENANCE	248,489	201,737	307,396	327,350	19,954	6.5%	
TRAINING & MEETINGS	5,176	3,679	4,000	7,000	3,000	75.0%	
PROFESSIONAL SERVICES	156,185	169,449	181,445	152,080	(29,365)	-16.2%	
OTHER MATERIALS	827,126	1,097,396	1,028,498	1,067,452	38,953	3.8%	
OTHER SERVICES	93,753	88,054	92,652	89,069	(3,583)	-3.9%	
TOTAL	\$ 5,621,316	\$ 5,932,398	\$ 6,246,851	\$ 6,563,128	\$ 316,277	5.1%	

The goal of the **Department of Laboratory Services (DLS)** is to provide high quality and responsive laboratory services to MWRA's water and wastewater treatment programs, including the Department of Conservation and Recreation (DCR) and the MWRA member water and wastewater communities. This includes timely and cost-effective laboratory tests to meet the strict testing guidelines required by all regulatory programs and permits, including the Safe Drinking Water Act (SDWA), Clean Water Act, and National Pollutant Discharge Elimination System (NPDES) permits. The Department supports these functions at five locations: Chelsea, Southboro, Quabbin, the Central Laboratory at the Deer Island Treatment Plant (DITP), and the Clinton Wastewater Treatment Plant. Testing supports drinking water transmission and treatment processes, wastewater operations and process control at Deer Island and Clinton, NPDES compliance, Massachusetts Bay outfall monitoring, Toxic Reduction and Control (TRAC), and wastewater residuals. DLS also conducts the Boston Harbor monitoring program that involves regular sampling for nutrients, bacteria, and water quality parameters throughout Boston Harbor. Laboratory staff track and analyze results for submission to the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP).

Most MWRA laboratory testing is done in-house. Certain highly specialized or low volume tests are outsourced, such as tests for dioxins and radioactivity.

FY17 Goals:

The DLS performance goals are:

- > 95% of lab results completed on-time.
- < 9 days average turnaround time.
- > 98% of quality control tests within specifications.
- Complete targeted laboratory work consistent with staffing level (goal 100%).

FY17 Major Initiatives:

- **Ethics Training** - Expand laboratory ethics and data integrity training to meet upcoming MassDEP laboratory certification requirements.
- **NPDES Permits** - Provide laboratory data and consulting to wastewater operations and EnQual on

Clinton or Deer Island draft or final NPDES permits.

- **Electronic Laboratory Notebook (ELN)** - Implement ELN software on wireless tablet computers at three of the water quality laboratory locations.
- **Laboratory Renovation Projects** - Two major projects continue in FY17; renovation of the roof and the HVAC system at Southboro Lab and also replacement of the HVAC system and fume hoods at the Central Laboratory.

FY16 Mid-Year Accomplishments:

DLS continued to provide high-quality, responsive, timely, and cost-effective laboratory services to our clients in compliance with strict testing guidelines required by all regulatory programs and permits, including the Safe Drinking Water Act and NPDES permits. DLS's performance versus key goals in the first half of FY16 was as follows:

- 97% of lab results were completed on time versus goal of > 95%
- Turnaround time averaged 6.0 days versus goal of < 9 days
- 98.3% of quality control tests were within specifications versus goal > 98%
- Completed 104% of targeted laboratory work (goal 100% of budget).

Several projects and activities in FY16 are noteworthy including;

- **LIMS Developments** - Implementing the paperless Electronic Laboratory Notebook (ELN) approach, instead of paper logbooks, at the three Water Quality Labs.
- **Unregulated Contaminant Monitoring Rule 3 (UCMR3)** - This project is nearing completion by the contract lab. EPA has recently proposed UCMR4, which is expected to start in 2018.
- **Mobile Laboratory** – Mobile Lab standby coverage has just begun. Training is in process for five additional people to operate the Mobile Lab instruments.

Budget Highlights:

- The FY17 Proposed Budget is \$6.6 million, an increase of \$316,000 or 5.1% from the FY16 Budget, primarily in Wages and Salaries, Overtime, Other Materials, and Maintenance.
- \$4.8 million for **Wages and Salaries**, an increase of \$247,000 or 5.4% from the FY16 Budget due to wage increases and the inclusion of more positions in FY16 based on the Lab's projected needs. The FY17 Proposed Budget funds 57 positions.
- \$25,000 for **Utilities**, a decrease of \$3,000 or -9.9% from the FY16 Budget. This funding covers the purchase of gases and cryogenic liquids used for various laboratory instruments.

- \$327,000 for **Maintenance**, an increase of \$20,000 or 6.5% from the FY16 Budget. This includes Lab equipment maintenance, repairs, and calibration for major lab instruments and once a year preventive maintenance for all ovens, water baths, incubators, refrigerators, freezers, chillers, meters, sensors, microscopes, thermometers, and balances. The increase is primarily due to the anticipated moving of instruments from the Lab to trailers during the Central Lab HVAC/fume hood replacement project.
- \$7,000 for **Training and Meetings**, an increase of \$3,000 or 75% from the FY16 Budget. The funding covers EPA Environmental Laboratory Advisory Board (ELAB) Forum on Lab Accreditation/National Environmental Monitoring Conference and the Association of Public Health Laboratories (APHL) annual meeting. Included several new conferences and seminars to keep staff technically knowledgeable.
- \$152,000 for **Professional Services**, a decrease of \$29,000 or -16.2% from the FY16 Budget. Funding in this line item supports laboratory and testing analysis services the department uses to contract out a variety of complex and/or low volume tests. Outside laboratories are used for emergencies, second opinions, capacity constraints, and unavailability of specialized equipment or economic justification. The decrease is due to the end of the UCMR3 project, which is completely contracted out, partially offset by an increase for outside lab testing during the Central Lab HVAC/fume hood replacement project.
- \$1.1 million for **Other Materials**, an increase of \$39,000 or 3.8% from the FY16 Budget primarily for increased projected needs in FY17. This line item includes \$719,000 for laboratory supplies and \$300,000 for laboratory instrument replacements.
- \$89,000 for **Other Services**, a decrease of \$4,000 or 3.9% from the FY16 Budget. This primarily covers boat rental service on an as-needed basis, boat dockage for two boats, removal of hazardous waste, and courier service for shipping samples between laboratories.

PLANNING

FY17 Proposed Current Expense Budget						
PLANNING						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
WAGES & SALARIES	\$ 2,558,047	\$ 2,722,668	\$ 2,900,686	\$ 2,972,012	\$ 71,326	2.5%
OVERTIME	-	-	1,500	-	(1,500)	-100.0%
FRINGE BENEFITS	-	5	50	50	-	0.0%
CHEMICALS	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
ONGOING MAINTENANCE	167,447	254,264	195,200	238,493	43,293	22.2%
TRAINING & MEETINGS	10,958	10,697	8,500	10,000	1,500	17.6%
PROFESSIONAL SERVICES	3,100	3,100	3,100	3,100	-	0.0%
OTHER MATERIALS	163,507	153,802	170,875	175,775	4,900	2.9%
OTHER SERVICES	178,209	189,348	197,992	141,232	(56,760)	-28.7%
TOTAL	\$ 3,081,268	\$ 3,333,883	\$ 3,477,903	\$ 3,540,662	\$ 62,759	1.8%

FY17 Proposed Current Expense Budget						
PLANNING by Program						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to FY17	
PLANNING	\$ 2,143,315	\$ 2,350,379	\$ 2,381,898	\$ 2,438,378	\$ 56,480	2.4%
METER DATA	937,953	983,504	1,096,005	1,102,284	6,279	0.6%
TOTAL	\$ 3,081,268	\$ 3,333,883	\$ 3,477,903	\$ 3,540,662	\$ 62,759	1.8%

The **Planning Department** provides regulatory, public policy, and public health advocacy for MWRA's drinking water and wastewater programs. It provides decision support on planning, policy and operations matters, using a range of technical and analytical tools. Staff administers financial assistance programs to improve the infrastructure of member communities and to promote water conservation, and manages the wholesale meter data necessary for water and sewer billing. The Department integrates staff efforts and coordinates MWRA activities related to system and capital planning, infrastructure renewal, and watershed management (in conjunction with the Commonwealth's Department of Conservation and Recreation; DCR); strategic business planning; agency-wide performance measurement; and industry research. The Department's primary responsibilities are as follows:

Mapping, Modeling, and Data Analysis - Technical staff develops and maintains the Geographic Information Systems (GIS) for the water and wastewater systems, including integration of field and engineering records into GIS for access by planning, engineering, and operations staff. Provides demand analysis and forecasting of water and wastewater flows for master planning and system operations; models reservoir operations and performs drought forecasting and planning; evaluates system expansion requests; and develops and maintains water and wastewater system models in support of master planning, system operations, and optimization. Staff assists in developing agency wide summaries of energy and greenhouse gas emission efficiency improvements.

System Planning and Renewal - Staff with expertise in engineering and planning are responsible for water and wastewater system master planning, infrastructure needs assessment, and capital project development. This work is done in coordination with staff across MWRA. Key work includes:

- Reviews water and wastewater system expansion requests, water supply agreements, and emergency

water withdrawal requests;

- Assists with project siting decisions, environmental reviews, and permitting, including assessing impacts on MWRA facilities from other agencies' projects;
- Develops strategies for reducing long-term emergency risks; and
- Prepares plans for mitigating the risk of a range of hazards (i.e. climate change and sea level rise) on MWRA facilities and systems.

Regulatory and Policy Matters - Staff work with various regulatory entities to advocate for cost-effective rule setting that protects the environment and promotes public health. Senior staff members also actively work with industry associations and other groups with agendas consistent with MWRA's to advance regulations that make environmental and economic sense. Senior staff conduct strategic policy research on a broad range of topics. Staff also conduct public health research and reports on potable water quality through production of the annual regulatory-required Consumer Confidence Report (CCR). Staff also coordinates with DCR on watershed protection initiatives.

Community Support Program - Staff are responsible for the development, implementation, and reporting on Inflow/Infiltration (I/I) reduction policy; oversight of and reporting on MWRA leak detection and demand management programs; and reporting on the portions of MWRA's NPDES permit related to demand management and flow limitation activities. Staff administers community assistance programs including sewer Inflow/Infiltration financial and technical assistance, water pipeline rehabilitation financial assistance, water distribution systems technical assistance, water leak detection technical assistance, and water conservation programs.

Meter Data – Staff maintains 179 revenue water meters, 26 master water meters, 187 revenue wastewater meters and 35 other wastewater monitoring sites. This unit collects meter data for operational and revenue generating purposes from the water and wastewater systems.

FY17 Goals:

- Provide cost-effective and timely mapping, modeling, data analysis, and regulatory review services to support decision-making on operational, planning, environmental, regulatory, and infrastructure issues.
- Direct and manage MWRA's planning processes including master planning, business planning, water system expansion planning, and climate change adaptation and mitigation efforts.
- Oversee and manage MWRA's financial assistance and technical community support programs primarily in the areas of sewer I/I control/reduction, water system improvement, and water leak detection/demand management.
- In conjunction with the Office of the Executive Director and Public Affairs, serve as the Operations Division's lead on regulatory and policy matters potentially affecting MWRA's water and wastewater systems.
- Effectively manage water and wastewater metering data collection and analysis, to support Rates and Budget Department's allocation of MWRA rate revenue requirements.

FY17 Major Initiatives:

- Complete scope development, coordinate within MWRA and with Advisory Board, and procure consultant services for wastewater meter upgrade project.
- Provide computer modeling support for major capital programs including, North System Pumping Station Valve Replacement, Metropolitan Tunnel Redundancy Project, and CSO evaluation
- Complete reports on sea level rise adaptation, green house gas tracking and energy efficiency efforts, and develop and maintain a sustainability section on MWRA's web page.
- Update the MWRA wastewater maps, and produce an updated atlas. Participate in efforts to update selected water record plans and real estate records.
- Begin the process of updating the Water and Wastewater Master Plan with extensive coordination across all MWRA Departments.

FY16 Mid-Year Accomplishments:

- Completed updated wastewater metering maps for every community to support meter upgrade project.
- Distributed \$10 million in grants and interest-free loans to member sewer communities with a FY16 Budget target of \$26 million in total distributions.
- Distributed \$12 million in Local Water System Assistance Program interest-free loans to member water communities with a FY16 Budget target of \$20 million in total distributions.
- Managed the Community Leak Detection Task Order Contract with 16 separate leak detection surveys completed for member communities.

Budget Highlights:

- The FY17 Proposed Budget is \$3.5 million, an increase of \$63K or 1.8%, from the FY16 Budget. The Planning Department includes funding for two sub cost centers: the Planning Unit and the Meter Data Unit.
- \$3 million for **Wages and Salaries**, an increase of \$71,328 or 2.5%, from the FY16 Budget. This funding supports 30 permanent positions or 29.6 full-time equivalent positions after adjusting for part-time employees. The FY17 Proposed Budget also includes \$10,000 for two summer interns to assist with GIS work and policy research.
- \$238,000 for **Maintenance**, a increase of \$43,2963 or 22.2%, from the FY16 Budget. The FY17 Proposed Budget has \$82,000 in Special Equipment Services for water meter flow testing, \$148,000 for wastewater meter verification and wastewater community testing temporary metering, and \$8,000 for telog software maintenance.

- \$10,000 for **Training and Meetings**, a increase of \$1,500 or 17.6% from the FY16 Budget. The budget covers participation in training and conferences primarily focused on water quality regulations and geographic information systems.
- \$3,000 for **Professional Services**, which is level funded with the FY16 Budget and covers costs associated with the translation of the Consumer Confidence Report (CCR) and also programming of the GIS user interface.
- \$176,000 for **Other Materials**, an increase of \$4,900 or 2.9% compared to the FY16 Budget primarily due to anticipated postage increases. This line item includes funding of \$150,000 for postage and mailing of the CCR, \$15,000 for water conservation kits, \$10,000 for mapping supplies, \$2,000 for office supplies, \$1,000 for vehicle expenses, and \$900 for work clothes for the employees in our Meter Data section.
- \$141,000 for **Other Services**, a decrease of (\$56,760) or 28.7% compared with the FY16 Budget. The reduction is primarily due to the lower cost of telephones resulting from the transition to one service for all meters. The funding also includes \$60,000 for printing of the CCR, \$10000 for printing water conservation and other informational brochures, and \$3,300 for Memberships and Dues for department employees.



Law Division Budget

LAW DIVISION

Law

Legal Reviews
Litigation
Court Order Compliance
Environmental
Regulation

FY17 Proposed Current Expense Budget LAW DIVISION						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 1,553,270	\$ 1,642,863	\$ 1,751,658	\$ 1,737,889	\$ (13,769)	-0.8%
OVERTIME	-	572	-	-	-	-
TRAINING & MEETINGS	3,438	787	1,000	1,000	-	0.0%
PROFESSIONAL SERVICES	90,548	88,186	116,000	116,000	-	0.0%
OTHER MATERIALS	5,160	4,892	5,984	5,984	-	0.0%
OTHER SERVICES	23,625	26,653	25,947	25,947	-	0.0%
TOTAL	\$ 1,676,041	\$ 1,763,952	\$ 1,900,589	\$ 1,886,820	\$ (13,769)	-0.7%

The Law Division provides legal counsel to the Board of Directors, the Executive Director, and staff on compliance with federal and state laws, regulations, court cases, and administrative orders. Staff also handle and provide assistance with respect to litigation matters, real estate matters, labor/employment issues, procurement, and construction issues. The General Counsel interprets the MWRA Enabling Act and provides advice on conflict of interest and Code of Conduct issues. Division attorneys monitor the work of outside counsel when it is necessary to retain such services.

Law Division staff, though usually representing MWRA in a defensive posture, also work with Operations Division staff to effectuate cost recovery claims for design errors and omissions. In addition, the Law Division assists in the early resolution of contractor and vendor claims prior to litigation so as to resolve them as favorably and early as possible thereby reducing or eliminating litigation costs and interest payable.

FY17 Goals:

- Timely and cost effective resolution of legal disputes involving MWRA, through litigation or alternative means of dispute resolution.
- High quality legal services to support the business and operational needs of MWRA in the areas of real estate, labor and employment, regulatory compliance, litigation, construction, and business law.
- Advocacy of MWRA interests in new and developing regulatory issues.
- Continue to exhaust all opportunities to shift cost of legal representation to insurers and indemnitors and to litigate insurance coverage disputes as they arise, all in the interest of cost savings.

FY16 Mid-Year Accomplishments:

- Provided Litigation support to Operations (Engineering & Construction) in defending claims for extension of time and extra compensation made by Bay State Regional Contractors for its work at Gillis Pump Station.
- Provided on-going Litigation support to Operations (Deer Island) on claims for additional compensation for Deer Island clarifier tank sludge collection components rehabilitation, including work on fact and expert discovery in preparation to be ready to try the case if not settled.
- Provided Litigation support in defense of wrongful termination claim of former employee first at MCAD and now in Superior Court;
- Provided on-going Litigation support to Operations (Deer Island) re: claims in Superior Court and before the MA Department of Public Utilities against Eversource and its subsidiary Harbor Electric Energy Company re: MWRA's lack of liability for cross-harbor cable protection expenses; obtained agreement with Army Corps of Engineers (ACoE) re: MWRA not to be a co-permittee on next ACoE permit, and not to have responsibility for cable protection work or future maintenance dredging, nor exposure for stipulated penalties.
- Provided review and approval of four DCR watershed parcel acquisitions.
- Provided assistance to Procurement Department re: Fall River Electrical bid dispute.
- Provided assistance to Finance Division re: review of documentation for implementation of investment of MWRA OPEB Trust monies in Commonwealth's SRBT Fund.

Budget Highlights:

- The FY17 Proposed Budget is \$1.9 million, a decrease of \$14,000 or 0.7%, as compared to FY16 Budget.
- \$1.7 million for **Wages and Salaries**, a decrease of \$14,000 or 0.8%, as compared to FY16 Budget, mainly due to one less position, offset by contractual increases. The FY17 Proposed Budget funds 16 positions, one position less than FY16 Budget.



Administration Division Budget

ADMINISTRATION DIVISION

Administration

Director's Office
Facilities Management
Fleet Services
Human Resources
MIS
Procurement
Real Property

FY17 Proposed Current Expense Budget ADMINISTRATION						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 11,913,368	\$ 11,939,698	\$ 12,930,096	\$ 13,365,542	\$ 435,447	3.4%
OVERTIME	66,975	130,645	60,714	62,964	2,250	3.7%
FRINGE BENEFITS	18,017,803	18,244,973	19,264,138	20,517,402	1,253,264	6.5%
WORKERS' COMPENSATION	2,311,448	2,307,123	2,343,000	2,274,190	(68,810)	-2.9%
UTILITIES	87,533	98,846	106,026	114,229	8,203	7.7%
MAINTENANCE	4,906,970	3,942,483	3,727,532	4,789,699	1,062,167	28.5%
TRAINING & MEETINGS	176,073	226,456	202,516	201,991	(525)	-0.3%
PROFESSIONAL SERVICES	534,899	491,663	611,602	934,903	323,301	52.9%
OTHER MATERIALS	1,331,179	1,074,880	1,112,602	1,175,226	62,624	5.6%
OTHER SERVICES	3,023,997	3,304,073	3,283,134	3,377,442	94,308	2.9%
TOTAL	\$ 42,370,243	\$ 41,760,840	\$ 43,641,359	\$ 46,813,588	\$ 3,172,229	7.3%

FY17 Proposed Current Expense Budget ADMINISTRATION by Department						
DEPARTMENT	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
ADMIN DIRECTOR'S OFFICE	\$ -	\$ -	\$ 133,720	\$ 154,051	\$ 20,331	15.2%
HUMAN RESOURCES	22,520,179	22,797,542	23,846,451	25,107,112	1,260,661	5.3%
MIS	10,325,125	10,162,225	10,744,786	12,281,092	1,536,305	14.3%
FACILITIES MANAGEMENT	2,376,064	2,312,496	2,286,889	2,488,404	201,516	8.8%
FLEET SERVICES	1,947,022	1,775,292	2,017,345	2,043,269	25,925	1.3%
PROCUREMENT	4,550,834	4,064,066	3,949,577	4,096,721	147,144	3.7%
REAL PROPERTY / ENVIRONMENTAL MGMT	651,020	649,218	662,592	642,939	(19,653)	-3.0%
TOTAL	\$ 42,370,243	\$ 41,760,840	\$ 43,641,359	\$ 46,813,588	\$ 3,172,229	7.3%

The **Administration Division** is responsible for managing the support service 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.

FY17 Goals:

- Manage and coordinate the Authority's support service functions.
- Minimize MWRA's exposure to financial loss stemming from contractor and vendor activities by reviewing risk exposure and establishing contract insurance requirements and monitoring contractors for compliance.
- Maintain effective relationships with the unions representing the MWRA workforce while protecting and enhancing management flexibility. Ensure that collective bargaining objectives are met, support MWRA initiatives by designing and implementing appropriate labor relations strategies, create an environment that fosters safety consciousness and productive work, maximize the number of early returns to work by employees who have incurred on-the-job injuries or illnesses, and aggressively manage the Workers' Compensation Program to reduce costs.
- Acquire the real property needed to complete MWRA's major capital projects in a timely and cost-effective manner; manage the disposition of surplus real property in an efficient manner; and provide staff and others with current information regarding MWRA's real property rights.

FY17 Initiatives

- Continue the implementation of the Strategic IT Study.
- Upgrade employment application program to enhance applicant database and expedite critical hiring.

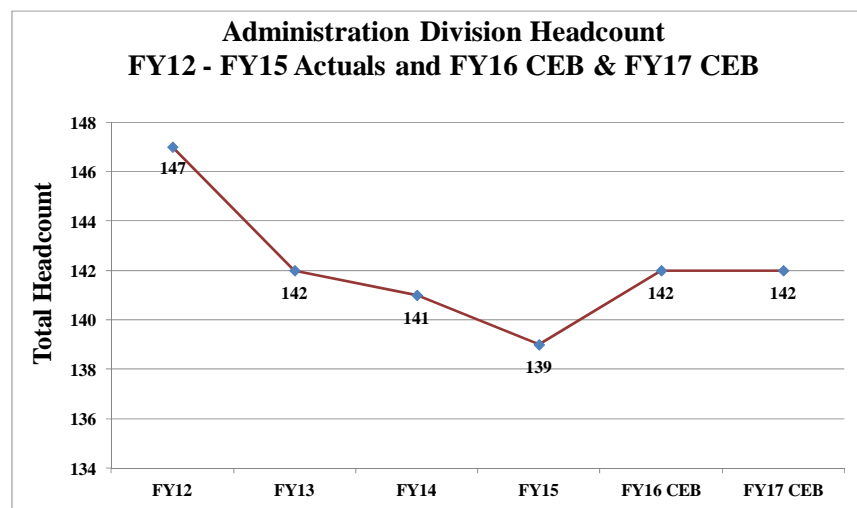
FY16 Mid-Year Accomplishments:

- Continued to work with the landlord to implement facility improvements as provided in our lease agreements for CNY headquarters.
- Developed specifications for replacement vehicles or pieces of equipment of which the majority of these units will utilize alternative fuel, consistent with the Authority's goal of purchasing environmentally friendly products.
- The Authority continues to fuel diesel powered vehicles/equipment with bio-diesel. The MWRA is rated as one of the largest bio-fuel users by the Massachusetts Alternative Fuel Coalition (MAFC).
- Continued implementation of Automated Vehicle Locator (AVL) Tracking System in MWRA vehicles.
- Completed a variety of technical training to MWRA employees including Confined Space Entry, Wind Turbine Tower Climbing Safety, Spill Containment, Practical Project Management, Signal Person Training and OSHA 8-Hour Annual Refresher training.
- Began collecting the required acknowledgement of the State Ethics Commission's Summary of the Conflict of Interest Law from all employees.

- Competitively bid CY14 Renewable Energy Portfolio Standard certificates which resulted in FY15 revenues of \$330,000 (Class II). In addition, received FY15 revenues of \$1.0 million from forward marketing of CY14 (Class I and Solar) Renewable Portfolio Standards (RPS) certificates.
- Awarded the following major contracts in FY15: DITP Cryogenics Chillers Replacement; Quabbin Power, Communication and Security Improvements Design; DITP Clarifier Rehab Phase II Design; Construction WASM 36; Gate, Siphon and Floatables Controls 003; Boston Low Service Beacon Street Line Design; DITP Thermal Power Plant BMS System Upgrade; VFD Additions DITP Secondary Oxygen Reactor Batteries A, B and C, and North Main Pump Station – Winthrop Terminal Facility ESDC/REI ; Instrumentation Systems Services; Fore River Railroad Mainline Adjustment Design; Security Equipment Maintenance and Repair; NPDES Compliance; Leak Detection Survey Services; Section 4 Webster Ave. Pipe and Utility Bridge Replacement; Maximo Upgrade; Adams St. Grade Crossing and Cattlepass Bridge, Upgrades to Chelsea Screen House, Southborough Water Quality Laboratory Upgrades; Electric Power Profile Accounts; Insurance Renewal.
- Advertised or received bids/proposals/statements for the following: Reading Extension Sewer Rehabilitation Design; Section 4 Webster Ave. Pipe and Utility Bridge Replacement; Maximo Upgrade; Adams St. Grade Crossing and Cattlepass Bridge; Upgrades to Chelsea Creek Screen House; Upgrades to Chelsea Screen House ESDC; Nut Island Headworks Odor Control Evaluation; Electric Power Profile Accounts; Insurance Renewal; DITP Fuel Oil System Upgrade; Alewife Brook Pump Station Rehabilitation; Electric Power DITP; Wachusett Aqueduct Pump Station.
- Recycled 1,240 batteries, 7.43 tons of paper, 1220.36 tons of scrap metal (includes stainless steel and aluminum), and 2,480 pounds of brass and copper, generating \$64,000 in revenues.

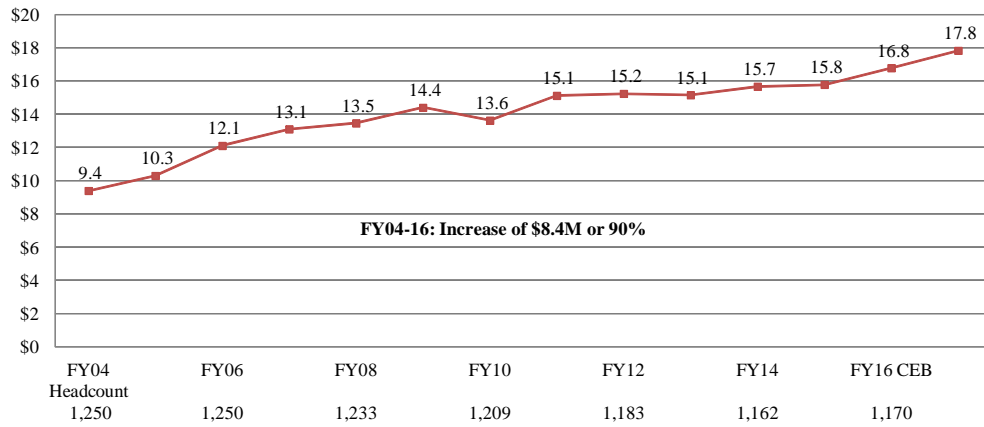
Budget Highlights:

- The FY17 Proposed Budget is \$46.8 million, an increase of \$3.2 million or 7.3%, from FY16 Budget.
- \$13.4 million for **Wages and Salaries**, an increase of \$435,000 or 3.4% mainly due for contractual increases. The FY17 Proposed Budget funds 142 positions, the same as FY16 Budget.



- \$63,000 for **Overtime**, an increase of \$2,000 or 3.7% from FY16 Budget.
- \$20.5 million for **Fringe Benefits**, an increase of \$1.3 million of 6.5% from FY16 Budget. The main reason for the increase is the continuing hike in health insurance cost.

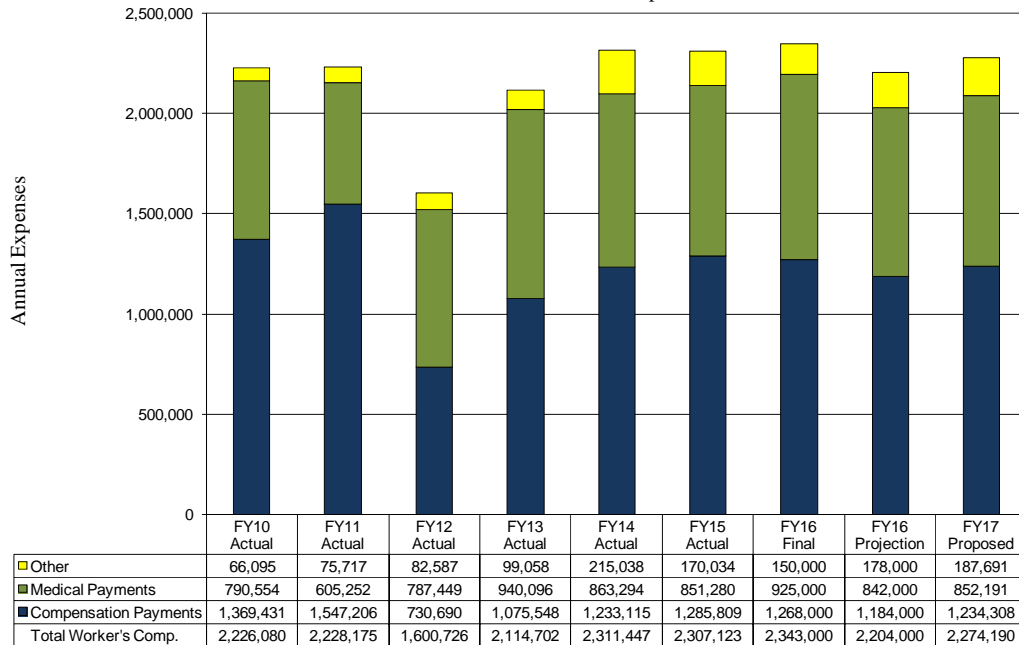
**Health Insurance Spending
(In Millions)**



Fiscal Year	Headcount
FY04	1,250
FY06	1,250
FY08	1,233
FY10	1,209
FY12	1,183
FY14	1,162
FY16 CEB	1,170

- \$2.3 million for **Workers' Compensation**, a decrease of \$69,000 or 2.9% from FY16 Budget. The Workers' Compensation is determined by using a three-year average of actual and projected spending.

**Workers' Compensation Expenses
FY10 - FY15 Actual, FY16 Final, and Proposed FY17**



- \$114,000 for **Utilities**, an increase of \$8,000 or 7.7% due to increased electricity pricing.

- \$4.8 million for **Maintenance**, an increase of \$1.1 million or 28.5% from FY16 Budget due to increased software upgrade/replacements and higher annual software maintenance costs.
- \$202,000 for **Training**, a decrease of \$1,000 or 0.3% from FY16 Budget. The training budget supports the training needs of the division, particularly the MIS department.
- \$935,000 for **Professional Services**, an increase of \$323,000 or 52.9% from FY16 Budget. The FY17 Proposed Budget includes Professional Development and Technical Training, Workers' Compensation Claims Administration and Legal Services, Arbitrators and Arbitration Expenses, Medical Evaluation Services, Employee Assistance Program, and for Specialized Investigation Services.
- \$1.2 million for **Other Materials**, an increase of \$63,000 or 5.6% over FY16 Budget. Included in the Other Material funding is \$478,000 for the divisional computer hardware needs, \$451,000 for vehicle expenses mainly fuels, and \$115,000 for office supplies.
- \$3.4 million for **Other Services**, an increase of \$94,000 or 2.9% from FY16 Budget. Funding in FY16 Budget mainly covers Space/Lease Rentals for the Charlestown Navy Yard Headquarters of \$1.7 million and Telecommunications expenses for all facilities and security data lines of \$1.0 million.

DIRECTOR'S OFFICE

FY17 Proposed Current Expense Budget ADMINISTRATION DIVISION DIRECTOR'S OFFICE						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ -	\$ -	\$ 133,720	\$ 153,727	\$ 20,007	15.0%
TRAINING & MEETINGS	-	-	-	-	-	-
OTHER MATERIALS	-	-	-	-	-	-
OTHER SERVICES	-	-	-	324	324	-
TOTAL	\$ -	\$ -	\$ 133,720	\$ 154,051	\$ 20,331	15.2%

The **Administration Division Director's Office** oversees a multitude of functions that support the daily operations and ensure the implementation of the Authority's long-term goals and strategies.

The Director's Office is responsible for the centralized support functions of procurement, human resources, management information systems, fleet services, facilities management, and real property and environmental management. Additionally, the Director's Office ensures that transactions comply with all rules, regulations, Authority policies and procedures, and contract terms.

FY17 Goals:

- Manage and coordinate the Authority's support service functions.
- Guide and coordinate division activities to support MWRA's goals and objectives.
- Continuously improve processes and performance for greater efficiency.

Budget Highlights:

- The FY17 Proposed Budget is \$154,000, an increase of \$20,000 or 15.2%, from FY16 Budget.
- \$154,000 for **Wages and Salaries**, an increase of \$20,000 or 15%, from FY16 Budget mainly for cost of living adjustments. The FY17 Proposed Budget supports one position, the same as FY16 Budget.

FACILITIES MANAGEMENT

FY17 Proposed Current Expense Budget FACILITIES MANAGEMENT							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 421,954	\$ 426,512	\$ 430,356	\$ 489,370	\$ 59,014	13.7%	
OVERTIME	28,724	44,493	24,154	24,154	-	0.0%	
FRINGE BENEFITS	8	85	-	-	-	-	
UTILITIES	85,250	96,780	103,526	111,729	8,203	7.9%	
MAINTENANCE	148,881	11,618	30,900	30,900	-	0.0%	
TRAINING & MEETINGS	-	-	-	-	-	-	
PROFESSIONAL SERVICES	8,700	-	7,500	7,500	-	0.0%	
OTHER MATERIALS	56,879	57,118	55,750	55,750	-	0.0%	
OTHER SERVICES	1,625,668	1,675,890	1,634,703	1,769,001	134,298	8.2%	
TOTAL	\$ 2,376,064	\$ 2,312,496	\$ 2,286,889	\$ 2,488,404	\$ 201,516	8.8%	

The **Facilities Management Department** provides a range of support services to MWRA staff located at the Charlestown Navy Yard (CNY).

Facilities Management is responsible for coordinating site management activities at CNY. Staff institute maintenance procedures, respond to facilities requests from building occupants, coordinate workspace planning, provide office furnishings, and develop and implement appropriate measures to ensure the safety of MWRA staff and protect and preserve MWRA assets.

In addition, staff provides administrative and office support services that facilitate the efficient use of MWRA resources. These responsibilities include providing and managing the motor pools at Chelsea and CNY, general office equipment repairs, transportation, mail, and courier services. Staff coordinates MWRA parking programs and corporate Massachusetts Bay Transportation Authority (MBTA) pass programs.

FY17 Goals:

- Provide a safe and well-maintained working environment for all MWRA staff at CNY and provide appropriate space for staff by coordinating workspace planning, design, and furniture acquisitions.
- Maintain the CNY facility to prevent loss or deterioration of MWRA assets.
- Implement facility programs in conjunction with MWRA recycling and resource conservation efforts.
- Support efforts to limit the fleet size while meeting operational needs by providing reliable motor pool and transportation services.

FY16 Mid-Year Accomplishments:

- Continued to work with the landlord to implement facility improvements as provided in our lease agreements for CNY headquarters.

- In conjunction with MIS, continued to look at ways to maximize efficiency of day-to-day office equipment such as printers, copiers, and facsimile machines.

Budget Highlights:

- The FY17 Proposed Budget is \$2.5 million, an increase of \$202,000 or 8.8%, as compared with the FY16 Budget.
- \$489,000 for **Wages and Salaries**, an increase of \$59,000 or 13.7%, as compared to FY16 Budget, mainly for contractual increases and one additional position. The FY17 Proposed Budget supports eight positions, one more than FY16 Budget.
- \$112,000 for **Utilities**, an increase of \$8,000 or 7.9%, as compared to FY16 Budget, mainly due to increased electricity pricing.
- \$1.8 million for **Other Services**, an increase of \$134,000 or 8.2%, as compared to FY16 Budget. This item includes funding for rental and operating costs for CNY headquarters facility and the Marlboro Records Center and Warehouse space.

FLEET SERVICES

FY17 Proposed Current Expense Budget FLEET SERVICES						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 733,745	\$ 735,492	\$ 781,860	\$ 820,086	\$ 38,226	4.9%
OVERTIME	6,711	8,728	13,000	11,000	(2,000)	-15.4%
FRINGE BENEFITS	8	120	250	250	-	0.0%
UTILITIES	2,283	2,066	2,500	2,500	-	0.0%
MAINTENANCE	629,236	559,977	710,000	701,500	(8,500)	-1.2%
TRAINING & MEETINGS	42,000	38,850	42,000	42,000	-	0.0%
PROFESSIONAL SERVICES	-	-	-	-	-	-
OTHER MATERIALS	532,507	429,160	466,135	464,334	(1,801)	-0.4%
OTHER SERVICES	532	900	1,600	1,600	-	0.0%
TOTAL	\$ 1,947,022	\$ 1,775,292	\$ 2,017,345	\$ 2,043,269	\$ 25,925	1.3%

The **Fleet Services Department** manages and maintains MWRA's motor vehicle and equipment fleet. The goal of the Fleet Services Department is to maintain MWRA's vehicle and equipment fleet to minimize downtime and extend the life of the assets. Fleet Services also manages the Chelsea fuel facility, the gas card program and the development and processing of specifications for new vehicles and equipment.

FY17 Goals:

- Continue to cost effectively maintain the Authority's fleet of vehicles and equipment.
- Integrate more alternative fueled vehicles into the authority's fleet.
- Continue to install idle reduction devices in all authority vehicles to comply with state and federal regulations.
- Install rear safety reflective tape (Chevrons) on all authority vehicles.

FY16 Mid-Year Accomplishments:

- Developed specifications for new replacement vehicles and equipment of which the majority of these units will utilize alternative fuel, consistent with the Authority's goal of purchasing environmentally friendly products.
- The Authority continues to fuel diesel powered vehicles/equipment with bio-diesel. MWRA is being rated as one of the largest bio-fuel users by the Massachusetts Alternative Fuel Coalition (MAFC).
- Prepared documentation for the surplus sale of vehicles and equipment and worked with the Procurement Department for the auction and disposal of the vehicles/equipment.
- Continued to work with MIS & Operations staff on the Maximo system upgrade which includes a transportation module specifically designed for a fleet environment.

Budget Highlights:

- The FY17 Proposed Budget is \$2.0 million, an increase of \$26,000 or 1.29%, as compared to FY16 Budget.
- \$820,000 for **Wages & Salaries**, an increase of \$38,000 or 4.9%, as compared to FY16 Budget mainly for contractual increases. The FY17 Proposed Budget supports 11 positions, the same as FY16 Budget.
- \$702,000 for **Ongoing Maintenance**, a decrease of \$9,000 or 1.2%, as compared to FY16 Budget. The budget includes funds for automotive materials and services to maintain MWRA's vehicle fleet.
- \$464,000 for **Other Materials**, a decrease of \$2,000 or 0.4%, as compared to FY16 Budget. The FY17 Proposed Budget includes funds for vehicle/equipment fueling which is based on historical fuel usage and current pricing. Fleet Services procures bulk fuels from state contracts while continuing to meet all governmental alternative fuel directives. It should be noted that the volatility of fuel pricing could impact this line item.

HUMAN RESOURCES

FY17 Proposed Current Expense Budget HUMAN RESOURCES						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 1,841,890	\$ 1,784,493	\$ 1,802,571	\$ 1,757,302	\$ (45,269)	-2.5%
OVERTIME	71	209	-	-	-	-
FRINGE BENEFITS	18,017,283	18,243,431	19,263,888	20,516,852	1,252,964	6.5%
WORKERS' COMPENSATION MAINTENANCE	2,311,448	2,307,123	2,343,000	2,274,190	(68,810)	-2.9%
TRAINING & MEETINGS	4,703	4,119	3,263	3,263	-	0.0%
PROFESSIONAL SERVICES	311,329	435,440	399,102	522,403	123,301	30.9%
OTHER MATERIALS	19,542	11,095	16,845	20,820	3,975	23.6%
OTHER SERVICES	13,913	11,632	17,782	12,282	(5,500)	-30.9%
TOTAL	\$ 22,520,179	\$ 22,797,542	\$ 23,846,451	\$ 25,107,112	\$ 1,260,661	5.3%

The **Human Resources Department** is comprised of three units:

The **Employment, Compensation, Benefits and HRIS Unit** coordinates and oversees all external recruitment and selection activities including hiring, lateral transfers, and promotions to meet the business needs of MWRA; develops and coordinates MWRA compensation and benefits strategies and programs; and ensures the proper processing and recording of personnel actions. The compensation function also ensures that all MWRA employees possess the necessary licenses and certifications required for their positions. The **Labor Relations Unit** is responsible for fulfilling MWRA's collective bargaining and contract administration obligations under Massachusetts' public sector collective bargaining law, its workers' compensation responsibilities, and its responsibilities for employee occupational safety and health. The **Training Unit** develops, coordinates, delivers, and evaluates MWRA technical and professional development training programs and other programs designed to improve employee knowledge, skills, productivity, and the quality of workplace interaction. In addition, the Human Resources Department includes the Centralized Fringe Benefits cost center, which includes the budget for fringe benefits for all MWRA employees as well as for mandatory payments for unemployment expenses and Medicare.

FY17 Goals:

- Attract and retain a qualified high-performance workforce, hire and promote qualified minority, female, and veteran employees, and offer a competitive total compensation package (salary and benefits) to all employees.
- Maintain effective relationships with the unions representing the MWRA workforce while protecting and enhancing management flexibility. Ensure that collective bargaining objectives are met, support MWRA initiatives by designing and implementing appropriate labor relations strategies, create an environment that fosters safety consciousness and productive work, maximize the number of early returns to work by employees who have incurred on-the-job injuries or illnesses, and aggressively manage the Workers' Compensation Program to reduce costs.

FY17 Initiatives:

- Upgrade employment application program to enhance applicant database and expedite critical hiring.
- Design and implement a standard new Employee orientation program.
- Implement 2nd phase of new employee orientation 2-3 months after hire.
- Develop additional specialized recruitment sources to attract women, minorities, and veterans for difficult to fill positions including expanding social network recruiting capabilities.
- Expand supervisory, professional, and career development training programs necessary to support succession planning initiatives including developing additional job shadowing training programs.
- Implement Leadership Development initiatives.
- Develop a model to establish a knowledge transfer program for each department.
- Negotiate new contracts for dental insurance and Employee Assistance Program (EAP).
- Continue to develop and expand summer intern program.
- Provide training and guidance to MWRA managers in the areas of leave management, sick time use, time and attendance issues, and matters of employee conduct issues.
- Investigate complaints of violations of MWRA policies and Code of Conduct as necessary.

FY16 Mid-Year Accomplishments:

- Continued to support the agency's efforts in developing and implementing succession planning activities in anticipation of an increase in retirements over the next several years.
- Selected vendor to upgrade employment application program; in design phase.
- Redesigned employee orientation program for newly hired employees.
- Investigated complaints of violations of MWRA policies and Code of Conduct as necessary.
- Completed a variety of professional and technical training to MWRA employees including Confined Space Entry, Hoisting License Mandatory Refresher Training, Wastewater & Water Operator Exam Prep, Wastewater OJT, OSHA 10-Hour Construction Safety, Supervisory Development, Business Writing, Vehicle Maintenance, CDL Drug & Alcohol Awareness, Workzone Safety, Spot Pond Start-up, ASCE Managing the Design Process & ASCE Buried Pipe, Blueprint Reading, Lockout/Tagout, Electrical Safety, CPR First Aid, Underground Storage Tanks, Hands-on Microbiology, Chemistry for

Water & Wastewater, Environmental Compliance Strategies and Sampling for NPDES Permits & Process Control. Recertified 70 employees as Flaggers.

- Negotiated new contracts for dental insurance and Employee Assistance Program (EAP).

Budget Highlights:

- The FY17 Proposed Budget is \$25.1million, an increase of \$1.3 million 5.3% as compared to FY16 Budget.
- \$1.8 million for **Wages and Salaries**, a decrease of \$45,000 or 2.5%, as compared to FY16 Budget mainly due to one less position than FY16 Budget, offset by contractual increases. The FY17 Proposed Budget includes funding for 18 positions, one less than in FY16 Budget.
- \$20.5 million for **Fringe Benefits**, an increase of \$1.3 million or 6.5%, as compared to FY16 Budget. The FY17 Proposed Budget includes \$17.8 million for health insurance, \$1.4 million for Medicare, \$1.1 million for dental insurance, \$161,000 for unemployment insurance, and \$40,000 for tuition reimbursement.
- \$2.3 million for **Workers' Compensation**, a decrease of \$69,000 or 2.9%, as compared to FY16 Budget. The Human Resources Department is responsible for the management of this program and the coordination with the third-party administrator and legal counsel.
- \$522,000 for **Professional Services**, an increase of \$123,000 or 30.9%, as compared to FY16 Budget. The FY17 Proposed Budget includes \$279,000 for Professional Development and Technical Training, \$109,000 for Workers' Compensation Claims Administration and Legal Services, \$56,000 for Arbitrators and Arbitration Expenses, \$45,000 for Medical Evaluation Services, \$21,000 for the Employee Assistance Program, and \$13,000 for Specialized Investigation Services.

MANAGEMENT INFORMATION SYSTEMS (MIS)

FY17 Proposed Current Expense Budget MANAGEMENT INFORMATION SYSTEM							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 4,943,896	\$ 5,048,011	\$ 5,561,979	\$ 5,781,418	\$ 219,439	3.9%	
OVERTIME	20,617	45,758	2,810	2,810	-	0.0%	
FRINGE BENEFITS	378	893	-	-	-	-	
MAINTENANCE	3,299,537	3,078,530	2,986,632	4,057,299	1,070,667	35.8%	
TRAINING & MEETINGS	121,798	179,569	146,528	146,528	-	0.0%	
PROFESSIONAL SERVICES	212,705	56,223	200,000	400,000	200,000	100.0%	
OTHER MATERIALS	599,185	453,031	459,272	511,972	52,700	11.5%	
OTHER SERVICES	1,127,010	1,300,210	1,387,565	1,381,065	(6,500)	-0.5%	
TOTAL	\$ 10,325,125	\$ 10,162,225	\$ 10,744,786	\$ 12,281,092	\$ 1,536,305	14.3%	

The **MIS Department** provides MWRA with the information processing services necessary to carry out its mission. Applications in use range from financial to operational, and enhance MWRA's ability to access data and improve internal controls, reporting, and management performance. In addition to computing and telephony systems, the department also provides library and records management services.

FY17 Goals:

The goal of the MIS department is to support more than 1,100 MWRA users, including those at the Charlestown Navy Yard (CNY), Chelsea, Deer Island, Southboro, Carroll Water Treatment Plant, and other remote sites, by ensuring that:

- Automated business services delivered increase the efficiency of MWRA's business processes and improve the effectiveness of the staff while maintaining system security and integrity;
- Existing applications, operating systems, hardware, and network resources are cost-effectively maintained, supported, upgraded, and replaced;
- Future changes for Information System reflect management priorities and are consistent with the MWRA Master Plan and the Five-year IT Strategic Plan; and
- Information Technology Service Management is implemented to improve customer satisfaction and improved efficiencies in delivering services.

FY17 Initiatives:

Information Technology Management Program

This program is intended to improve the Information Technology (IT) organization and the oversight processes for selecting, implementing and operating IT solutions throughout the MWRA. The FY17 initiatives are as follows:

- Establishment of a MWRA Software Development Life Cycle (SDLC) with the appropriate policies, procedures, standards, tools, and techniques to efficiently and transparently deliver development efforts on time and within budget.
- Implement a set of policies, procedures, standards, tools, and techniques which employs the best practices for Information Technology Service Management (ITSM).
- In parallel with the ITSM effort, MIS will continue re-organizing to better deliver services. This will include updating job descriptions to reflect the changing technologies and the methods of delivery, re-aligning the organization to match the ITSM and SDLC best practices, and focusing on how technology can be used to increase efficiency of staff and improve the effectiveness of the Authority's business processes.

Application Improvement Program

This program, along with associated projects, continue MWRA's efforts to update and enhance a wide range of applications to improve efficiencies of business processes and effectiveness of the staff while ensuring the availability and integrity of the MWRA's data resources. This program relates to 136 applications with 242 modules that support various business functions across the Authority. Sixty-six percent of these modules are commercially available off the shelf packages.

Administration and Finance Initiatives

- ***e-Discovery:*** A component of Enterprise Content Management (ECM) is underway with the pilot design and implementation of both the Enterprise Vault system archiving application and the Clearwell identification and collection electronic discovery application. These applications will provide the MWRA with rigorous and efficient electronic archiving, disposal processes that will improve the ability to meet the requirements associated with public records requests and litigation document/discovery production, and the accessibility of documents throughout the Authority.
- ***e-Construction:*** A component of ECM, the MWRA will initiate an e-Construction project to improve communication and make construction management practices more efficient. e-Construction is a paperless construction administration delivery process that includes electronic submission of all construction documentation by all stakeholders, electronic document routing/approvals (e-signature), and digital management of all construction documentation in a secure environment allowing distribution to all project stakeholders through mobile devices.
- ***e-Procurement Implementation:*** This project focuses on the implementation of the Contract Management module from Infor Global Solutions. The focus in FY17 will be on Professional Services contracts.
- ***Enterprise Resource Planning (ERP) System Upgrades:*** During FY17, upgrades are scheduled for the e-procurement applications infrastructure, Mobile Supply Chain Management (MSCM), and the Business Software, Inc. Tax Factory application. In addition, a

comprehensive ERP Upgrade plan will be developed.

Compliance Management Initiatives

- ***Electronic Laboratory Notebook (ELN):*** The objective of this project to replace all paper log books with ELN. Drinking water (phase one) paper log books will be replaced with ELN by the end of first quarter FY2017. Wastewater (phase two) paper log books will be replaced with ELN by the end of FY2019.
- ***Pretreatment Information Management System (PIMS) Business Cycle Enhancements:*** The objective of this project is to update the existing application and deliver new functionality in PIMS well in advance of the next TRAC business cycle for the MWRA's Pretreatment Program.
- ***PIMS CROMERR Compliance:*** The current PIMS application is not compliant with EPA's Cross-Media Electronic Reporting Regulation (CROMERR) requirements. CROMERR requirements were reviewed to determine which PIMS modules need to be enhanced. Required modifications can be done partially by the vendor and partially by MIS utilizing EPA's shared services. MIS is working on an agreement with the vendor to obtain the WebSMR source code. Modification to the PIMS application will begin as soon as the source code is received.

System Integration and Data Warehousing Initiatives

- ***Geographic Information System (GIS) Integration:*** The purpose of the GIS Integration projects is to integrate the GIS spatial technology into business and operational applications and to determine an overall strategy for delivering spatial real-time dashboards for managing the MWRA infrastructure. The focus of these projects will be to provide field staff with web-based mapping applications. The data collected by these staff will be instantly available to management staff via the dashboard applications.
- ***Management Dashboards & Reporting:*** These projects consolidate administrative management dashboards and reporting tools to assist in management of the day-to-day operations and to provide data to assist in Authority-wide decision making.

Operations Management Initiative

- ***Computerized Maintenance Management System (CMMS) Enhancements:*** The system is used to manage maintenance activities for Water and Wastewater assets. The MWRA Board of Directors approved the award of the Maximo Upgrade from 5.2 to 7.6 in FY15 Q4; the project is expected to be completed in FY17 Q4. This effort includes:
 - Completing the upgrade
 - Consolidating DI and FOD systems into one
 - Implementing four new modules

- Implementing Control Desk Module as a replacement for Service Desk
- **PI:** The MWRA uses PI to monitor important operating parameters of assets in the field and also facility assets at DITP and CWTP. The current system is running on “end-of-life” hardware and server operating system (OS). The PI upgrade will monitor the same assets as the old system with much improved functionality and performance. The new system is a multi-tier configuration with servers for the database and application, and desktops for the Processbook and datalink client tools. The new system will be upgraded to a 64 bit OS within a virtual environment and provides high availability features.
- **Telog:** An update to the Telog Enterprise system was applied. This update provides real-time access of Telog meters to OCC operators and metering staff. Over 150 PI flow, pressure, and gradient tags have been updated to support the migration of Telog meters to wireless communications. The project was completed FY16 Q2.

Information Security Program

This program focuses on the strength, resiliency, and sustainability of MWRA’s cyber security practices for its data and computing-related assets. The program also monitors for and protects against penetrations, intrusions, and malicious actions from both internal and external threats. The projects associated with this program continue to assess, implement, and improve MWRA’s information security protections, including recommendations to improve each IT system’s security profile. The following are the FY2017 projects under this program:

- ***Phase 2 of the Information Security Program Implementation***
- ***Secure Media Destruction Program Improvements***

Technology Infrastructure Improvement Program

The MWRA currently owns and operates 1,350 desktops, 226 laptops, 203 servers, 20 Wide Area Network Circuits and associated equipment. It also manages in excess of 18 Terabytes (TB) of data of which 7 TBs are stored in 148 database schemes and an additional 11 TB of unstructured data are stored on file shares. This program will assess and implement consolidated and optimized versions of these core IT infrastructure elements as utility-like services and commodities. Furthermore, it will look to improve and optimize data management practices including: storage, backup, and archive and purge processes and technologies. The following projects are currently under way:

- ***Server Consolidation and Virtualization:*** Continuation of “Green Data Center” initiatives, including virtualizing more physical servers and reducing the variety of application infrastructure component versions and manufacturers (like web servers, application servers, and database servers).
- ***Network Convergence:*** Explore new technologies for future implementation considerations including new networking technologies for upcoming network upgrade, web and mobile platforms for business and information services, and Voice-Over-IP (VOIP) for communications.

- **Campus Wide WIFI:** The MWRA has pockets of wireless access points in Vehicle Maintenance, Warehouse, and Laboratory Services. These systems have limited access, are administered independently, and have no redundancy. The design approach for Campus Wide WIFI is to provide a resilient wireless network at all of the MWRA locations where it is cost effective, can be centrally managed, and that provides redundancy.
- **Voice-Over-IP (VOIP):** The existing legacy PBX phone systems are approaching the end of support and product life. VOIP is a mature technology and a core component of Unified Communications. Explore VOIP technologies for solution set that offers existing PBX functionality as a minimum.
- **Network Storage Improvements:** Plan for the migration and implementation for consolidation of new storage requirements for archiving, and implement e-discovery services.
- **Distributed Antenna System (DAS):** The Verizon external cellular coverage at Deer Island is poor. A design was completed to improve the reception. MWRA will implement this design in FY17.
- **Office Automation Refresh Program:** Desktop, mobile, printers, MFD etc.
- **Workforce Mobilization:** Explore new technologies and hardware platforms to improve efficiencies in business process while in the field. Target business units for this initiative are Engineering and Construction, Water and Wastewater Operations, and Maintenance.
- **Central Data Repository:** This effort will include the development of a comprehensive Data Model that can act as a single central data repository for all MWRA applications. This effort will begin in FY2017 and will be an ongoing process going forward.
- **Enterprise Application Integration (EAI):** This effort will establish a dynamically scaling Enterprise Service Bus (ESB) technology product, implemented as Integration Platform for select MWRA applications This will standardize data flow/data exchange format and integrate disparate MWRA applications to the ESB and hence to the Central Data Repository.

FY16 Mid-Year Accomplishments:

Information Technology Management Program

- **Information Technology Steering Committee:** As the first step in establishing IT governance, the Business-IT project prioritization committee was established. It is made up of senior staff representing the Authority's Divisions. The committee meets monthly to assess project progress and set priorities for which applications/business functionality will be worked on next.
- **MIS Reorganization:** With the hiring of a Manager of Application & System Development and other PCR amendments being approved by the Board, MIS has begun the organizational

transformation recommended in the 5 year Strategic Plan. The reorganization is now 48% complete.

Application Improvement Program

- ***Archiving & e-Discovery Project:*** MIS staff participated in a project kickoff conference with VERITAS who requested that MIS run analyzer tools to collect data on the Exchange and File Systems. Workshops were held in December with the consultant and the design pilot groups with the main goal of preparing the draft business policies for archiving Exchange emails and File System folders to a central repository, Enterprise Vault. A Solution Design Workshop was held in January for the infrastructure design and a solution design document draft has been developed by the vendor and is currently being reviewed by MIS.
- ***e-Procurement - Strategic Sourcing and Contracts Management:*** Enabled bid bond functionality with Surety2000 to prepare for the first Chapter 30 (C30) and Chapter 149 (C149) Construction Contract Events. Staff was trained on how to put these events online and the first C30 and C149 (no sub-bidders) sourcing events were posted with successful Contract award and generation. Chapter 149 contracts with Sub-bids are ready for go-live and a mock event will be conducted and is being scheduled. Conducted training for: a) contract invoice entry (non-retainage) for AP staff in anticipation of first live NPS invoice; b) subcontractor payments, supplier diversity, and view-only access to sourcing events for AACU staff.
- ***Miscellaneous Lawson Support:*** Supported first successful payroll of FY16 which incorporated benefit and organizational changes including pay raises and new sick time plan for temporary employees. Began working on a solution for new Federal Affordable Care Act (ACA) that requires IRS 1095c forms for all employees. Worked with the AACU vendor to produce a newly required Veterans' report and updated Lawson to produce the report. The program that produces the Health Insurance Coverage data for the 1095c forms for employees was modified to support the new Federal requirements; created a file for a new form printing vendor (Valli Systems) for final 1095c processing and mailing. Completed development and implementation of new warehouse window issuing and scanning functionality for Mobile Supply Chain Management at the Chelsea and DI Warehouses. To support the change in the bank used for the Purchase Card program, staff conducted numerous tests of passing data between the MWRA and the Bank of America (BOA) and staff manually downloaded live BOA-posted files from the BOA Business-to-Business (B2B) portal successfully and validated data content. Automation of this process is now underway.
- ***Talent Acquisition Application:*** After reviewing Talent Acquisition (Job Application) products offered by 3rd party vendors, selected ApplicantPro for the vendor-hosted job applicant tracking application. MIS and HR held several WebEx sessions with ApplicantPro to begin the design and implementation of the job application and on-boarding hiring processes. Staff are continuing to make template additions and configuration changes based on business decisions. In addition, staff from HR, AACU and MIS have had dedicated meetings that focused on reports including gap analysis and custom reporting needs.

- ***Library Upgrade Project:*** Inmagic Presto replaces several legacy MWRA Library applications with one commercial-off-the-shelf (COTS) application. Inmagic supports integrated management of print and electronic resources and provides a single web interface for searching across multiple internal and third party information assets. Staff has begun mapping and data migration from multiple databases into the new schema. Operations and Maintenance manuals at various site locations will be searchable alongside the Reports that are in the Library collection. Currently converting MWRA's unique/idiosyncratic book cataloging to the Library of Congress standards using free internet tools, and rearranging books under this new classification. Upon our request, the Water Research Foundation (WRF) provided abstracts and links to enhance retrieval of the 700+ of their reports to be included in the MWRA's new catalog. Currently refining Reports and Subscription data and completed the physical move of the MWRA reports and the legal reference materials and will be moving on to repositioning the books consistent with the new cataloging standard.
- ***Everbridge Mass Communication and Notification Subscription System:*** The self registration/subscription services module was implemented Q2 and allows visitors to mwra.com to register for notifications such as construction project updates. The Employee and Community Notifications modules were implemented in Q3 and replace both the current vendor solution, Communicator!NXT, and an internally developed solution, MWRA R911.
- ***Records Management System Replacement Project:*** The MWRA needs to replace the legacy Records Management application, InfoStar, used by the Records Center, DI Technical Information Center (TIC), and E&C to ensure application operability, respond to Internal Audit findings, support legal and regulatory compliance requirements, safeguard vital information, and minimize litigation risks. Staff documented workflows for the Records Center and met with TIC team to review workflows for handling Construction Submittals, shop drawings, and other workflow processes. Also met with E&C to review all the Access databases (12) used to track drawings and other related information. Implement the Infostar replacement may occur in three phases: 1) Marlboro Boxed Records Phase (MWRA, DI, Walnut Hill, and MetroWest); 2) DI TIC Active Physical Records Management Phase; and 3) Physical Drawings phase. Use cases to be developed including two for Phase One (box level, folder level) and one for each part of Phase Two and Three. Because different departments use InfoStar for different purposes, a single solution may not be appropriate to meet all users' requirements.
- ***Tiscor InspectNTrack:*** In addition to the existing inspection routes (groups) for DI, CWTP, Wastewater, Headworks and Metro Ops., staff added a new route, Maintenance Auditing, that allows five managers to audit inspection routes and replaces the paper based Audit forms used by Managers/Supervisors. The new route contains 47 auditing sub routes. Created a report that showed water meter readings collected by operators. The report contains meter reading data at all Wastewater sites from the TISCOR database. Created individual questions for each water meter and set Hi/Low limits for each water meter reading for data validation.
- ***Portia Upgrade:*** Began parallel implementation of the Portia upgrade for Treasury staff users. Users will run the new version and the legacy version for the next several months. Met with

the Portia consultant and key users to review implementation requirements for two new modules, Cash Management and the Automated Import Module (AIM).

- ***Amicus Attorney Upgrade:*** Successfully upgraded the Legal Case Management application Amicus Attorney to the 2015 version. The upgrade included installation of software on a new virtual server and on staff PCs.
- ***Payroll Timesheet Enhancements:*** Based on requests from the Payroll department, completed a design for enhancements to the timesheet adjustment approval process and obtained user signoff; the enhancements allow for additional approvals beyond supervisory approval. The new enhancements were developed and deployed to the development server and are awaiting user acceptance before deploying to the production environment.
- ***GIS:*** Completed the deployment of web-based mapping application for Waterworks, Sewerage, Real Property and EnQual. Web-based mapping dashboards have been developed for SSO events and Wachusett Reservoir contamination events. Web-based application with GPS capabilities have been deployed to assist field staff in location of waterworks and sewerage infrastructure assets. In concert with these are specialized applications and a newly updated general purpose web-based GIS viewer. This viewer is available on all MWRA issued devices. These initiatives were completed in FY16 Q3.
- ***Computerized Maintenance Management System (CMMS) Enhancements:*** The Maximo Upgrade from 5.2 to 7.6 was initiated in Q1 of FY16 the project is expected to be completed in FY17 Q4. To date the following items have been delivered:
 - Best Practices Report
 - Education Program
 - Requirements Validation and Solution Design – Maximo Asset Management
 - Maximo – Infor/Lawson Interface Design
 - Maximo to PI Interface Design
 - Requirements Validation and Solution Design – Calibration Module
 - Application Environment Assessment
- ***Electronic Laboratory Notebook (ELN):*** In FY16 some 43 log books have been reviewed, designed and either eliminated or coded for the drinking water laboratories. Phase one is 87% complete.

Information Security Program

- ***Phishing Drill:*** An email Phishing drill was conducted in October to establish a baseline for user awareness. The drill results demonstrated fewer than average employees who took the bait when compared to similar DHS findings, but higher than expected, identifying the need for additional user awareness training. As a result, End User Security Awareness Computer Based Training has been purchased. This training incorporates a series of security modules and will be launched in FY16Q3 to be completed by the end of the 2016 calendar year.

- **Authority Mobile Application Delivery Implementation:** A Proof of Concept environment has been built in support of the Mobile Application Delivery platform. 58 iPads and 164 iPhones are being managed with the required, associated Mobile Device Management platform. Nine applications have been identified for mobile application delivery, and are being tested by appropriate subgroups of mobile device users.
- **Secure File Delivery Implementation:** A Proof of Concept environment has been built in support of Secure File Delivery. 50 employees have been setup to use and are actively testing the Secure File Delivery software from desktops, laptops, and mobile devices. A job aid and a quick reference guide have been finalized and will be posted to PipeLine.
- **Managed Security Services:** Contract #7499 was awarded to NWN Corporation. This project upgrades and or replaces all “end of life” Information Security (IS) technology types and provides information security monitoring services for all MWRA IS technologies for 3 years.

Technology Infrastructure Improvement Program

- **Print, Fax, Scan and Copy:** Installed new multi-function devices (MFDs) throughout MWRA facilities consolidating services (Print, FAX, Scan, Copier) onto one platform. Purchase 24 MFDs to replace expiring leases.

Budget Highlights:

- The FY17 Proposed Budget is \$12.3 million, an increase of \$1.5 million or 14.3%, as compared to FY16 Budget.
- \$5.8 million for **Wages and Salaries**, an increase of \$219,000 or 4%, as compared to FY16 Budget, due for contractual increases. The FY17 Proposed Budget includes funding for 56 positions, the same as FY16 Budget.
- \$4.1 million for **Ongoing Maintenance**, an increase of \$1.1 million or 35.8%, as compared to FY16 Budget mainly due to a combination of new software (i.e., Microsoft Application Upgrades), Managed Security Service Provider (MSSP) security contract, drop down maintenance costs from CIP projects after warranties expired, and increases for various license and software maintenance agreements. Maintenance spending is for license and maintenance fees to support administrative, operations, and database applications used by MWRA staff.
- \$400,000 for **Professional Services**, an increase of \$200,000 or 100%, as compared to FY16 Budget. Funding will support the improvement efforts for Water Quality Reporting System upgrade, Lawson Maximo Interface, PI Maximo Interface, CROMERR Implementation, and security system monitoring services.
- \$512,000 for **Other Materials**, an increase of \$53,000 or 11.5%, as compared to FY16 Budget. Increases mainly due to the purchase of mobile devices for the workforce.

- \$1.4 million for **Other Services**, a decrease of \$7,000 or 0.5%, as compared to FY16 Budget. Funding of \$1.0 million for facility and security data lines, leases for multi-purpose copiers, faxes, and scanners, and Automatic Vehicle Locator (AVL) services.

PROCUREMENT

FY17 Proposed Current Expense Budget PROCUREMENT							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 3,538,806	\$ 3,566,438	\$ 3,767,018	\$ 3,896,371	\$ 129,353	3.4%	
OVERTIME	10,852	31,457	20,750	25,000	4,250	20.5%	
FRINGE BENEFITS	126	444	-	300	300	-	
UTILITIES	-	-	-	-	-	-	
MAINTENANCE	829,315	292,358	-	-	-	-	
TRAINING & MEETINGS	7,147	2,379	7,725	6,200	(1,525)	-19.7%	
PROFESSIONAL SERVICES	-	-	-	-	-	-	
OTHER MATERIALS	122,819	124,420	113,700	121,700	8,000	7.0%	
OTHER SERVICES	41,769	46,570	40,384	47,150	6,766	16.8%	
TOTAL	\$ 4,550,834	\$ 4,064,066	\$ 3,949,577	\$ 4,096,721	\$ 147,144	3.7%	

The **Procurement Department** includes three units. The **Purchasing Unit** operates a competitive purchasing system for the procurement of materials, goods, and non-professional services in accordance with MWRA policies and procedures. The **Contract Management Unit** reviews, drafts, and negotiates contracts, amendments, and change orders for all professional, non-professional, and construction services contracts. Staff directs the bid, review, and selection process, and maintains a contracts database. The **Materials Management Unit** manages an Authority-wide inventory control and management system for better control, storage, distribution, and accounting of MWRA's inventory. The unit manages three regional warehouses/distribution centers that support all MWRA activities.

FY17 Goals:

- Procure materials, equipment, supplies, construction, professional, and non-professional services in a timely, efficient, and openly competitive process in accordance with MWRA policies and procedures, including those related to meeting affirmative action goals.
- Maintain centralized, efficient, and cost-effective management of spare parts and operating supplies inventory.
- Provide timely and high quality services to initiating divisions to enable MWRA programs to meet their public, production, and schedule responsibilities.
- Maintain a recycling program in order to contain MWRA operating costs by removing recyclable materials from the waste stream.
- Continue implementing electronic procurement for contract bids, which will significantly reduce the amount of paper processing, with a focus on electronic bidding for Chapter 149 construction projects with filed sub-bids and professional services contracts.
- Review policies and procedures for procurement of services.

- Continue staff procurement training.
- Continue staff participation in Maximo upgrade efforts and Lawson-Maximo Interface redesign, including data conversation and data migration.

FY16 Mid-Year Accomplishments:

- Competitively bid CY15 Class II Renewable Energy Portfolio Standard (RPS) certificates which resulted in FY16 revenues of \$152,000. In addition, received FY16 revenues of \$734,000 from forward marketing of CY15 Class I and Solar Carve-Out II RPS certificates.
- Awarded the following major contracts in FY16: Chelsea Screen House Upgrades ESDC/RI; Nut Island Headworks Odor Control, HVAC and Energy Management Systems Evaluation; Fire Alarm System Services – Metro Boston and Central and Western MA; Boiler and Water Heater Services; Elevator Maintenance and Repair – Various Locations and Deer Island Treatment Plant; Deer Island Treatment Plant Fire Alarm System Replacement Design and ESDC; Section 56 General Edwards Bridge Crossing Feasibility Study; Bond Counsel Services; Letter of Credit and Direct Floating Rate Revolving Loan to Replace Commercial Paper Notes; Electric Power Deer Island Treatment Plant; Electric Power Interval Accounts; Workers’ Compensation Third Party Administrator Services; Thermal Power Plant Fuel Oil System Upgrade Deer Island Treatment Plant; Wachusett Aqueduct Pumping Station; Northern Intermediate High Pipeline Project Section 110 Reading and Woburn; Technical Assistance Consulting Services for John J. Carroll Water Treatment Plant; NEFCO Contract Renewal; Alewife Brook Pump Station Rehabilitation; Heat Loop Expansion Joint Replacement – DITP, Phase 2; Digested Sludge Pump Replacement – DITP, Phase 2; Quabbin Power and Security Improvements; Metropolitan Operations Paving.
- Advertised or received bids/proposals/statements for the following: Energy Advisory Services; Prison Point CSO Discharge Piping Rehabilitation; Groundskeeping – Metro Boston; Deer Island Treatment Plant North Main Pump Station Motor Control Center Design; Deer Island Treatment Plant Switchgear Replacement; Deer Island Treatment Plant Sodium Hypochlorite/Sodium Bisulphate Tank Rehabilitation; Barge Transported Pre-processed Source Organics; Caruso Pump Station Improvements; Winthrop Terminal Variable Frequency Drive and Synchronous Motor Replacement Deer Island Treatment Plant; Investment Banking Services (Underwriters); Managed Security Services Provider; Agency-wide Technical Assistance Contracts; Clinton Wastewater Treatment Plant Phosphorous Reduction Facility; Hatchery Pipeline and Hydroelectric Project; Sudbury Aqueduct Siphon Buildings Repair and Stabilization.
- Continued to work with DITP, Field Operations, and utility companies to establish energy conservation programs at DITP and FOD facilities, using the Green Communities Act, the utilities’ municipal programs, and other programs. Continued to seek environmentally friendly products, including recycled toners, batteries, copy paper, hybrid vehicles, and bio-fuels. Continued to dispose of surplus scrap metal materials in an environmentally sound manner.
- Continued development of an electronic procurement bidding process for construction and non-professional services contracting based upon Lawson Strategic Sourcing. Commenced electronic bidding of Chapter 30 construction contracts and Chapter 149 construction contracts with no filed sub-bids.

- Processed 4,585 purchase orders in first half of FY16 for a total of \$31,163,832.
- Moved the Authority's Purchasing Card Program to Bank of America NA, through the Commonwealth of Massachusetts State Blanket Agreement PRF44designatedOSC. MWRA will now receive an annual rebate based on the total Commonwealth P-Card purchasing spends. At the current State rebate percentage, with MWRA's annual spend of approximately \$500,000, MWRA will realize an annual rebate which is estimated to be at least \$7,000 while also eliminating all per card fees that are charged by the current vendor. All staff will be transitioned to the Bank of America card by the end of the fiscal year.
- Procured the Authority's vehicle purchases at the beginning of Fiscal Year 2016; including 30 vehicles procured through the use of a "Reverse Auction" format.
- Purchased 294,000 gallons of ultra-low-sulfur, #2 diesel fuel for the Deer Island Thermal/Power Plant in September, 2015 at a cost of \$1.6483/gallon, which is \$1.1017/gallon lower than the FY16 budgeted price of \$2.7500/gallon.
- Continued regular meetings with Deer Island, Chelsea, and MIS staff to foster better communication between MWRA departments and the Purchasing Unit.
- Established an online vehicle and equipment auction process that brought in \$170,451 in revenue during the first and second quarter of FY 16.
- Recycled 270 batteries, 15.67 tons of paper, 130.12 tons of scrap metal and 3,840 pounds of stainless steel, brass and copper, generating \$12,593 in revenues.

Budget Highlights:

- The FY17 Proposed Budget is \$4.1 million, an increase of \$147,000 or 3.7%, from FY16 Budget.
- \$3.9 million for **Wages and Salaries**, an increase of \$129,000 or 3.4%, from FY16 Budget mainly for contractual increases. The FY17 Proposed Budget supports 44 positions, the same as FY16 Budget.
- \$122,000 for **Other Materials**, an increase of \$8,000 or 7%, from FY16 Budget mainly due to historical spending trends. This line item mainly supports centralized office supply purchases.
- \$47,000 for **Other Services**, an increase of \$7,000 or 16.8%, from FY16 Budget mainly due to historical spending trends. This funding supports Advertising and Printing/Duplicating for contract documents and specifications.

REAL PROPERTY AND ENVIRONMENTAL MANAGEMENT

FY17 Proposed Current Expense Budget							
REAL PROPERTY / ENVIRONMENTAL MANAGEMENT							
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17		
WAGES & SALARIES	\$ 433,078	\$ 378,752	\$ 452,592	\$ 467,269	\$ 14,677	3.2%	
OVERTIME	-	-	-	-	-	-	
TRAINING & MEETINGS	425	1,540	3,000	4,000	1,000	33.3%	
PROFESSIONAL SERVICES	2,165	-	5,000	5,000	-	0.0%	
OTHER MATERIALS	247	56	900	650	(250)	-27.8%	
OTHER SERVICES	215,105	268,871	201,100	166,020	(35,080)	-17.4%	
TOTAL	\$ 651,020	\$ 649,218	\$ 662,592	\$ 642,939	\$ (19,653)	-3.0%	

The **Real Property and Environmental Management Department** negotiates the purchase or lease of real estate and land necessary to support MWRA's capital projects and operations and manages the disposition of surplus real property. Staff participates in site selection and negotiates acquisitions or easements. In addition, staff has developed and is maintaining the Real Property database, the compilation of more than 100 years of easements and land rights for the water and sewer systems. Department staff manages environmental regulatory compliance at MWRA facilities and also provide special expertise and assistance to MWRA staff regarding air quality and hazardous material issues. Assistance includes management of oil and hazardous materials site assessment and remediation, air emission permit negotiations, and preparation and submittal of quarterly/annual monitoring reports.

FY17 Goals:

- Acquire the real property needed to complete MWRA's major capital projects in a timely and cost-effective manner; manage the disposition of surplus real property in an efficient manner; and provide staff and others with current information regarding MWRA's real property rights.
- Manage the centralized environmental management program, providing technical assistance regarding hazardous waste management, air quality compliance, and related issues during all phases of MWRA projects as well as monitor and provide assistance in maintaining environmental regulatory compliance at MWRA facilities.

FY17 Initiatives:

- Reevaluate actual hazardous waste generation rates at all applicable MWRA facilities in order to confirm appropriate MassDEP generator status with the goal of reducing compliance fees and any unnecessary reporting requirements.
- Coordinate implementation of the anticipated air quality operating permit renewal for the Deer Island Treatment Plant.

FY16 Mid-Year Accomplishments:

- Provided ongoing real estate planning and services to acquire additional space to support the Chelsea facility including site search (RFP development, issuance, and review of proposals), appraisals, market research and outreach. Reviewed impacts to MWRA lease due to Silver Line expansion.
- Provided real estate services for FRSA (licenses) and for Deer Island (appraisal of abutting land).
- Managed nine (7) permit agreements (five at Turkey Hill and two at Walnut Hill). Coordinated with Operations for approval of the equipment changes and improving the invoicing system for maintenance reimbursements. Total revenue for the seven agreements is \$436,000 of which MWRA and the host community each receive half.
- Provided real estate support to Operations and Public Affairs for issuance 8m permits to 1) private entities requesting use of MWRA controlled land and to 2) cities and towns applying to the aqueduct trails program. Managed fee assessment for long-term 8M permits on MWRA fee controlled land. 8M fees for these agreements total approximately \$69,000 per year.
- Provided real estate services (appraisal, negotiation, plan review) for: Carroll Water Treatment Plant (CWTP) security entrance renovations (easement acquisitions and grant of license to City of Marlborough and temporary easement acquisition from private owner); Chelsea Headworks Renovation (acquisition of fee interest from City of Chelsea; and Section W11/Section 36, Medford, (acquisition of easements from 2 private property owners) .
- Provided strategic and technical support in concert with MIS and Planning's (GIS) group to hire consultant to develop a new and upgraded Real property data base system. Updated over 75 records and added 120 new records to database.
- Continued with remediation and assessment of oil contamination at the Fore River Staging Area (FRSA) facility.
- Continued with the remediation assessment of the oil contamination resulting from the February 2010 spill at the Cottage Farm Combined Sewer Overflow (CSO) facility.
- Submitted the Phase II – Comprehensive Site Assessment report for the Chelsea Creek Headworks to the MassDEP ahead of schedule in support of completing facility rehabilitation contract documents.
- Provided technical support for ongoing evaluation of project scope and schedule for remediation of PCBs at the Cottage Farm CSO Facility.
- Continued to provide technical support for the planned PCB abatement at the Chelsea Creek Headworks and provided support related to PCB encapsulation pilot testing.
- Provided support during construction startup for PCBs, lead paint, mercury, and asbestos abatement at the abandoned Westborough State Hospital Pump Station located on the grounds of the Carroll Water Treatment Plant.

- Continued to provide technical and regulatory coordination of the fuel tank maintenance contract. Completed fuel tank piping system upgrades at Gillis Pump Station, comprehensive leak detection testing and internal repair of a 20,000-gallon underground tank at Nut Island Headworks, replaced piping at Framingham Pump station, repaired and rebuilt underground piping sumps at multiple facilities, replaced tank monitoring systems at three facilities, and general monitoring system repair and upgrades at other facilities. Continued with the MassDEP-required monthly inspection requirement for all underground fuel storage tank systems.
- Completed the MassDEP-required triennial Third-Party Inspections at all MWRA underground fuel storage tank facilities with passing results at all facilities.
- Completed MassDEP-required triennial cathodic protection tests at two MWRA underground fuel storage tank facilities.
- Completed updates to the Spill Prevention, Control, and Countermeasure (SPCC) Plan for the MWRA Biosolids Processing Facility and Lonergan Intake. Incorporated these new and revised plans into the MWRA-wide SPCC annual training program.
- Continued to prepare, coordinate and oversee the completion of annual SPCC Plan training of over 200 MWRA oil handling staff and managers.
- Continued with MassDEP-required periodic groundwater monitoring around the former wastewater holding tank at Clinton.
- Provided technical and environmental regulatory support regarding contaminated soil and groundwater as well as geotechnical issues on various design and construction projects, including:
 - Stoneham Low Service Covered Storage and Pump Station,
 - Remote Headworks Rehabilitation,
 - Northern Intermediate High project,
 - Section 36 Watertown-Waltham Connection,
 - Alewife Brook Pump Station facility upgrades,
 - MWR003 Gate, Siphon and Floatables Control project
 - Southern Extra High Pipeline
 - Sudbury Aqueduct Rosemary Brook Siphon and Farm Pond facility rehabilitations
 - Section 53 Water Line
 - Section 57 Water Line
 - Section 23, 24, and 47 Water Line Rehabilitation
 - Fells Covered Storage microwave antenna tower project
 - Webster Avenue, Somerville pipe bridge
 - Ward Street Headworks antenna demolition
- Continued to provide ongoing regulatory technical support to Operations staff for the diesel oxidation catalyst-equipped engines at Cottage Farm, Prison Point, and CWTP including annual accuracy audits for each engine's monitoring systems and a performance retest of engine four at Prison Point.

- Coordinated installation of retrofit emissions controls MassDEP registration for the new Arlington Covered Storage emergency generator. Also submitted the MassDEP registration for the new emergency generators at the Brutsch Disinfection Facility and the Spot Pond Pump Station. Continued to work with Operations staff to implement maintenance and recordkeeping requirements for emergency generators.
- Completed air emissions compliance testing at the DITP's North Main Pump Station Odor Control Facility and a relative accuracy test audit of the Combustion Turbine Generator continuous emission monitoring system per air permit monitoring and testing requirements.
- Completion and timely submission of on-line greenhouse gas emissions reporting for DITP and the Biosolids Processing Facility via the Climate Registry Information System for compliance with the MassDEP and the Electronic Greenhouse Gas Reporting Tool for compliance with EPA.
- Completion and timely submission of annual Source Registration and Emissions Statements for DITP and the Biosolids Processing Facility via the eDEP's on-line electronic filing system.
- Data collection and processing in anticipation of triennial Source Registration and Emissions Statements for the following facilities via the eDEP's on-line electronic filing system.
 - Chelsea Creek Headworks
 - Columbus Park Headworks
 - Ward Street Headworks
 - Nut Island Headworks
 - Braintree-Weymouth Intermediate Pump Station
 - DeLauri Pump Station
 - Carroll Water Treatment Plant
 - Gillis Pump Station
- Provided technical support for the MassDEP air permit application for the proposed new odor control facility at the Chelsea Creek Headworks.
- Continue to prepare and submit quarterly, semi-annual and annual air monitoring and emissions compliance reports to EPA and MassDEP for DITP, Biosolids Processing Facility, Nut Island Treatment Plant, Carroll Water Treatment Plant, Prison Point CSO and Cottage Farm CSO.
- Provided technical and regulatory support in the assessment, reporting, and closeout of the Framingham Pump Station odor control chemical spill.
- Provided technical and regulatory support in response to the Nut Island Headworks odor control system fire.
- Represented MWRA in the Massachusetts Geological Survey annual meeting of the State Map Advisory Committee to assist the State Geologist with prioritize geological mapping activities in the next calendar year.

Budget Highlights:

- The FY17 Proposed Budget is \$643,000 a decrease of \$20,000 or 3%, as compared to FY16 Budget.
- \$467,000 for **Wages and Salaries**, an increase of \$15,000 or 3.2%, as compared to FY16 Budget mainly for contractual increases. The FY17 Proposed Budget includes funding for four positions, the same as FY16 Budget.
- \$4,000 for **Training and Meetings**, an increase of \$1,000 or 33.3%, as compared to FY16 Budget.
- \$166,000 for **Other Services**, a decrease of \$35,000 or 17.4%, as compared to FY16 Budget. The decrease is due to the decreased costs for the underground storage tank project based on remaining funds in the current contract.



Finance Division Budget

FINANCE DIVISION

Finance

Director's Office
Rates and Budget
Treasury
Controller
Risk Management

FY17 Proposed Current Expense Budget FINANCE DIVISION						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 3,589,481	\$ 3,641,446	\$ 3,650,888	\$ 3,727,056	\$ 76,167	2.1%
OVERTIME	200	-	-	-	-	-
FRINGE BENEFITS	-	-	-	-	-	-
WORKERS' COMPENSATION	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	2,139	1,451	3,000	3,000	-	0.0%
PROFESSIONAL SERVICES	442,678	538,383	514,010	580,010	66,000	12.8%
OTHER MATERIALS	6,885	5,566	6,350	6,100	(250)	-3.9%
OTHER SERVICES	12,332	7,283	8,815	9,015	200	2.3%
TOTAL	\$ 4,053,715	\$ 4,194,129	\$ 4,183,063	\$ 4,325,181	\$ 142,117	3.4%

FY17 Proposed Current Expense Budget FINANCE by Department						
DEPARTMENT	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
DIR OFFICE (FINANCE)	\$ 345,912	\$ 378,113	\$ 280,187	\$ 245,597	\$ (34,590)	-12.3%
CONTROLLER	1,487,662	1,496,244	1,579,853	1,662,610	82,757	5.2%
RATES AND BUDGET	797,962	830,770	848,345	878,676	30,331	3.6%
TREASURY	966,582	1,056,582	1,012,860	1,063,701	50,842	5.0%
RISK MANAGEMENT	455,597	432,420	461,819	474,596	12,777	2.8%
TOTAL	\$ 4,053,715	\$ 4,194,129	\$ 4,183,063	\$ 4,325,181	\$ 142,117	3.4%

The **Finance Division** is responsible for managing the finance functions of the Authority.

The Finance Division is comprised of five departments: Director's Office; Rates and Budget; Treasury; Controller; and Risk Management.

The Finance 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 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).

FY17 Goals:

- Manage and coordinate the Authority's finance functions.
- Develop and implement long-term strategies to ensure assessment increases to MWRA's communities are sustainable and predictable.
- Manage MWRA's debt portfolio to contribute to the achievement of sustainable and predictable rate increases.
- Improve the quality and presentation of budget documents and regularly required reports while working to develop new reports that will aid the Authority's Board of Directors, Management, and the MWRA Advisory Board.

FY17 Initiatives

- Continue assessment and evaluation of sustainable cost savings opportunities throughout the organization.
- Develop options and recommendations to ensure sustainable and predictable assessments and charges to our communities at both the water and wastewater utility level.

FY16 Mid-Year Accomplishments:

- Developed the FY17 Budget consistent with the FY16 planning estimates, for both the Current Expense Budget and the Capital Improvement Program.
- Maintained MWRA's strong credit ratings, Aa1, AA+, AA+ from Moody's, Standard & Poor's and Fitch respectively. MWRA's credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. These high credit ratings enable MWRA to borrow at very advantageous interest rates helping to minimize debt service expenses.

Budget Highlights:

- The FY17 Proposed Budget is \$4.3 million an increase of \$142,000 or 3.4%, as compared to the FY16 Budget.
- \$3.7 million for **Wages and Salaries**, an increase of \$76,000 or 2.1%, as compared to the FY16 Budget, mainly for contractual increases, longevity pay offset by reduction in the funding for an intern position during the summer. The FY17 Proposed Budget funds 40 positions, one more position than FY16 Budget.
- \$580,000 for **Professional Services**, an increase of \$66,000 or 12.8%, as compared to the FY16 Budget, for bond control services and audit services.

DIRECTOR'S OFFICE

FY17 Proposed Current Expense Budget FINANCE DIVISION DIRECTOR'S OFFICE						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 336,559	\$ 369,655	\$ 270,747	\$ 236,157	\$ (34,590)	-12.8%
TRAINING & MEETINGS	2,049	1,361	3,000	3,000	-	0.0%
OTHER MATERIALS	5,323	4,616	5,100	5,100	-	0.0%
OTHER SERVICES	1,981	2,481	1,340	1,340	-	0.0%
TOTAL	\$ 345,912	\$ 378,113	\$ 280,187	\$ 245,597	\$ (34,590)	-12.3%

The **Finance Division Director's Office** oversees a multitude of functions that support the daily operations and ensure the implementation of the Authority's long-term goals and strategies.

The Director's Office is responsible for the centralized financial functions of rates development, revenue collection, budgeting, capital financing, debt and investment management, accounting, payroll processing, and risk management. Additionally, the Director's Office ensures that transactions comply with all rules, regulations, Authority policies and procedures, and contract terms. The Director's Office manages the development and implementation of policies to uphold the efficient utilization of resources and control of all monies. The Director's Office provides advice and analysis to the Executive Director and the Board of Directors on all financial issues.

The division's continuing challenge in FY17 will be maintaining an agency-wide focus on balancing the competing needs to minimize assessment increases while ensuring the provision of critical MWRA services.

FY17 Goals:

- Manage and coordinate the Authority's finance and support service functions.
- Guide and coordinate division activities to support MWRA's goals and objectives.
- Continuously improve processes and performance for greater efficiency.
- Develop and implement long-term strategies to ensure reasonable rate increases to MWRA's communities.

Budget Highlights:

- The FY17 Proposed Budget is \$246,000, a decrease of \$35,000 or 12.4%, as compared to the FY16 Budget.
- \$236,000 for **Wages and Salaries**, a decrease of \$35,000 or 12.8%, as compared to the FY16 budget, mainly for the elimination of funding for interns/co-op. The FY17 Proposed Budget funds two positions, the same as in FY16 Budget.

RATES AND BUDGET

FY17 Proposed Current Expense Budget RATES AND BUDGET						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 796,450	\$ 829,846	\$ 847,070	\$ 877,551	\$ 30,481	3.6%
TRAINING & MEETINGS	-	-	-	-	-	-
PROFESSIONAL SERVICES	-	-	-	-	-	-
OTHER MATERIALS	982	615	650	500	(150)	-23.1%
OTHER SERVICES	531	310	625	625	-	0.0%
TOTAL	\$ 797,962	\$ 830,770	\$ 848,345	\$ 878,676	\$ 30,331	3.6%

The **Rates & Budget Department** provides the financial analysis that allows MWRA to translate its goals, and legal and financial commitments into cost-effective annual and multi-year programs and budgets. Department staff works closely with divisional staff to coordinate development of the long-term Capital Improvement Program (CIP) and monitor the progress of capital projects compared to projected schedules and budgeted spending. Staff also coordinates the development of MWRA's annual Current Expense Budget (CEB) and monitors spending compared to the budget throughout the year. The Budget Department also manages the annual process of establishing water and sewer assessments to be paid by MWRA's member communities and develops planning estimates of future rate projections.

FY17 Goals:

- Continually enhance processes and the management of resources to deliver the final CIP and CEB timely and accurately.
- Adhere to all MWRA policies, procedures, and administrative practices as well as all relevant statutory and regulatory authority, accounting, and budgeting principles.
- Improve the quality and presentation of budget documents and regularly required reports while working to develop new reports that will aid the Authority's Board of Directors, Management, and the MWRA Advisory Board.
- Provide financial analysis as required.

FY17 Initiatives:

- Continue assessment and evaluation of sustainable cost savings opportunities throughout the organization.
- Develop options and recommendations to ensure sustainable, predictable, and reasonable assessments and charges to our communities at both water and wastewater utility level.

FY16 Mid-Year Accomplishments:

- Developed the FY17 Budget consistent with the FY16 planning estimates, for both the Current Expense Budget and the Capital Improvement Program.
- Provided financial analysis for system expansion initiatives and preliminary long-term water redundancy options.
- Developed first round year-end projections for the CEB and CIP.

Budget Highlights:

- The FY17 Proposed Budget is \$879,000, an increase of \$30,000 or 3.6%, as compared to the FY16 Budget.
- \$878,000 for **Wages and Salaries**, an increase of \$30,000 or 3.6%, as compared to the FY16 Budget, mainly for contractual increases, longevity pay and one intern position during the summer. The FY17 Proposed Budget funds eight positions, the same as in FY16 Budget.

TREASURY

FY17 Proposed Current Expense Budget						
TREASURY						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 733,489	\$ 705,338	\$ 674,650	\$ 675,491	\$ 842	0.1%
OVERTIME	17	-	-	-	-	-
MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	90	90	-	-	-	-
PROFESSIONAL SERVICES	224,302	348,072	334,010	384,010	50,000	15.0%
OTHER MATERIALS	549	183	300	300	-	0.0%
OTHER SERVICES	8,135	2,899	3,900	3,900	-	0.0%
TOTAL	\$ 966,582	\$ 1,056,582	\$ 1,012,860	\$ 1,063,701	\$ 50,842	5.0%

The **Treasury Department** secures funds for ongoing operations and capital programs in addition to processing cash disbursements. Department staff collects revenue, disburse funds, and manage grant and loan programs in addition to debt issuance and investments.

FY17 Goals:

- Manage MWRA’s debt portfolio to contribute to the achievement of sustainable and predictable assessment increases.
- Maximize investment return while maintaining compliance with the General Revenue Bond Resolution requirements regarding security and liquidity.

FY16 Mid-Year Accomplishments:

- Implemented the Amendments to the Authority’s General Bond Resolution, which allowed for the release of \$112 million in reserves of which \$102 million was used to defease outstanding debt for budgetary relief in fiscal years 2016 through 2027. The remaining \$10 million was deposited to MWRA’s OPEB Trust.
- Defeased \$27.5 million of outstanding principal in June 2015 and \$9.2 million of principal in September 2015 for budgetary relief for fiscal year 2016 through 2020 thereby reducing the rate of increase to the Rate Revenue Requirement in those years. The sources of funding for this defeasance was primarily the fiscal year 2015 current expense budget surplus.
- Maintained MWRA’s strong credit ratings, Aa1, AA+, AA+ from Moody’s, Standard & Poor’s and Fitch respectively. MWRA’s credit ratings from all three major agencies are only one ratings step below the highest rating of AAA. These high credit ratings enable MWRA to borrow at very advantageous interest rates which helps minimize debt service expenses.
- Completed the Massachusetts Clean Water Trust (MCWT) Pool 19 borrowing. This \$53.0 million transaction was made at subsidized interest rates contributing to a lower overall cost of debt for the Authority.

Budget Highlights:

- The FY17 Proposed Budget is \$1.1 million, an increase of \$51,000 or 5.0% as compared to the FY16 Budget.
- \$675,000 for **Wages and Salaries**, an increase of \$1,000 or 0.1%, as compared to the FY16 Budget. The FY17 Proposed Budget funds eight positions, the same as FY16 Budget.
- \$384,000 for **Professional Services**, an increase of \$50,000 or 15%, as compared to the FY16 Budget for bond control related services.

CONTROLLER

FY17 Proposed Current Expense Budget CONTROLLER						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 1,325,902	\$ 1,334,187	\$ 1,437,403	\$ 1,504,060	\$ 66,657	4.6%
OVERTIME	183	-	-	-	-	-
MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	-	-	-	-	-	-
PROFESSIONAL SERVICES	160,625	160,975	140,000	156,000	16,000	11.4%
OTHER MATERIALS	27	152	300	200	(100)	-33.3%
OTHER SERVICES	925	930	2,150	2,350	200	9.3%
TOTAL	\$ 1,487,662	\$ 1,496,244	\$ 1,579,853	\$ 1,662,610	\$ 82,757	5.2%

The **Controller Department** consists of the Accounting, Accounts Payable, Accounts Receivable, and Payroll units. The department has the responsibility for ensuring integrity within the financial accounting system and integration among the four functions. The department is also responsible for the appropriate treatment, classification, and reporting of the MWRA's assets, liabilities, revenues and expenditures in accordance with accounting principles generally accepted in the United States of America.

FY17 Goals:

- Implement process efficiencies in all department units.
- Enhance controls to safeguard Authority assets and ensure accurate and timely reporting.

FY17 Initiatives:

- Integrate new contract accounting software module with existing accounting software.
- Complete automation of multiple Payroll Department documents.

FY16 Mid-Year Accomplishments:

- Rolled out electronic time sheet approval to Chelsea Maintenance departments.
- Collaborated to establishment of the MWRA Irrevocable OPEB Trust.

Budget Highlights:

- The FY17 Proposed Budget is \$1.7 million, an increase \$83,000 or 5.2%, as compared to the FY16 Budget.
- \$1.5 million for **Wages and Salaries**, an increase of \$67,000 or 4.6%, as compared to the FY16 Budget, mainly for funding one additional position and contractual increases. The FY17 Proposed Budget funds 18 positions, one position more than in FY16 Budget.
- \$156,000 for **Professional Services**, an increase of \$16,000 or 11.4%, as compared to the FY16

Budget, mainly for increased audit costs. The FY16 Budget reflects anticipated costs associated with the annual financial statement audit, the A-133 Single Audit related to the receipt of federal funds, and the actuarial services related to GASB 45 Other Post Employment Benefits.

RISK MANAGEMENT

FY17 Proposed Current Expense Budget RISK MANAGEMENT						
LINE ITEM	FY14 Actual	FY15 Actual	FY16 Budget	FY17 Proposed	Change FY16 to PFY17	
WAGES & SALARIES	\$ 397,081	\$ 402,420	\$ 421,019	\$ 433,796	\$ 12,777	3.0%
OVERTIME	-	-	-	-	-	-
TRAINING & MEETINGS	-	-	-	-	-	-
PROFESSIONAL SERVICES	57,751	29,336	40,000	40,000	-	0.0%
OTHER MATERIALS	4	-	-	-	-	-
OTHER SERVICES	760	664	800	800	-	0.0%
TOTAL	\$ 455,597	\$ 432,420	\$ 461,819	\$ 474,596	\$ 12,777	2.8%

The **Risk Management Department** is responsible for all MWRA insurance programs and risk management functions. Department staff manage all administrative functions relating to the initial reporting, processing, and resolution of construction contract claims and self-insured auto, general liability, and property damage claims. Department staff members are responsible for the annual procurement, renewals, and maintenance of all Authority-wide insurance policies and programs and for managing all aspects of MWRA’s contractor/vendor insurance certificate program. Department staff serve as liaisons to insurance industry participants including brokers, insurers, insurance consultants, and attorneys as well as providing support to all MWRA departments.

FY17 Goals:

- Process self-insured automobile, general liability, property damage, and construction contract claims in an efficient and timely manner.
- Secure the timely, cost effective renewal of Authority-wide insurance policies and contracts.
- Minimize MWRA’s exposure to financial loss stemming from contractor and vendor activities by reviewing risk exposures and establishing contract insurance requirements and monitoring contractors/vendors for compliance.
- Provide support to all MWRA Departments on all insurance, claims, litigation and risk management issues.

FY16 Mid-Year Accomplishments:

- Successfully procured MWRA’s Insurance Program through a competitive bid process for all lines of coverage at a 2% reduction in program cost compared to FY15. Secured a multi-year property policy for FY16 & FY17.
- Provided timely support to MWRA managers on all insurance, claims, litigation and risk management issues.

Budget Highlights:

- The FY17 Proposed Budget is \$475,000, an increase \$13,000 or 2.8%, as compared to the FY16 Budget.
- \$434,000 for **Wages & Salaries**, an increase of \$13,000 or 3%, as compared to the FY16 Budget, mainly for contractual increases. The FY17 Proposed Budget funds four positions, the same as in FY16 Budget.



Appendices

APPENDIX A

DIRECT EXPENSE BUDGET LINE ITEM DESCRIPTIONS

Introduction

MWRA's direct expense budget funds the annual expenses of its operating and support divisions. Though the direct expense budget constitutes less than half of MWRA's total budget, it is these expenses which directly support the provision of water and sewer services to MWRA's customers. The direct expense budget includes the annual costs of operating the water and sewer systems, and funds the policy direction, administrative, financial, and legal support services for MWRA's ongoing operations. The direct expense budget also includes the personnel costs for management and oversight of MWRA's extensive capital programs.

There are 11 line items in the division budgets. The line items are:

Wages and Salaries - This line item includes funds for regular pay, shift differential, holiday pay, and standby pay for MWRA staff, as well as funds for interns and temporary staff.

Overtime - This line item includes funds for overtime related to operations, maintenance, emergencies, and training.

Fringe Benefits - This line item includes funds for health and dental insurance, unemployment compensation, Medicare, and overtime meals.

Workers' Compensation - This line item includes funds for compensation payments, medical payments, and settlements of compensation claims.

Chemicals - This line item includes funds for the chemicals used in water and wastewater treatment, such as chlorine, sodium hypochlorite, soda ash, sodium bisulfite, and hydrofluosilicic acid.

Utilities - This line item includes funds for electricity, diesel fuel, and other utilities such as water and sewer services paid by MWRA to the towns in which it operates facilities.

Maintenance - This line item includes funds to purchase materials and services for the maintenance of MWRA's plants and machinery, water and sewer pipelines, grounds, and buildings.

Training and Meetings - This line item covers the costs of staff training, meetings, and professional seminars.

Professional Services - This line item funds outside consultants supporting MWRA activities, including engineering and construction services, laboratory and testing contracts, computer system consultants, and legal and audit services.

Other Materials - This line item includes funds for office materials, equipment, postage, laboratory supplies, MWRA vehicles, work clothes, and computer hardware and software.

Other Services - This line item includes funds for space leasing, health and safety initiatives, removal of grit and screenings from the sewerage system, and the contracted operation of MWRA's residuals processing plant.

Sections II – V present summaries of the MWRA's budgets with a detailed description of program budgets and highlights within each divisional section.

APPENDIX B

BUDGET PROCESS AND TIMETABLE

MWRA operates on a fiscal year that starts July 1. The Current Expense Budget development process begins in September and, as described below, continues through a series of interactive reviews and revisions until June, when the Board of Directors approves the final budget. Throughout the formal budget process, MWRA staff maintains an ongoing dialogue with the Board of Directors and Advisory Board to discuss issues, the status of budget development, and other concerns.

MONTH	ACTIVITY
September	Divisions receive budget targets, guidelines, and manuals for the development of budget requests, and can begin to access MWRA's interactive budgeting system.
December	After the divisions return their budget requests, the Rates and Budget Department consolidates the authority-wide budgets, develops briefing materials for senior management, and identifies major budget issues.
January	The Executive Director determines proposed funding levels required to meet operational and financial objectives. Staff may seek appropriate policy direction from the Board.
February	MWRA transmits the Proposed Current Expense Budget to the Advisory Board for a 60-day review, during which time MWRA staff meet with Advisory Board staff, respond to questions, and provide updated information on plans and prices.
March – May	MWRA hosts public hearings to solicit comments on the proposed budget and community assessments from citizens in its service area. The Advisory Board reviews the proposed budget and transmits comments and recommendations to the MWRA.
June	The Board of Directors holds a hearing on the proposed budget and the Advisory Board's comments and recommendations. The Board of Directors adopts a final Current Expense Budget and a schedule of final wholesale water and sewer assessments.

APPENDIX C

MASSACHUSETTS WATER RESOURCES AUTHORITY BUDGET AND ASSESSMENT POLICIES AND PROCEDURES

(Revised August 2003 to incorporate changes to capital budget section of Management Policies adopted by the Board of Directors June 11, 2003)

These policies and procedures govern certain budget, assessment, and rates management practices at the Massachusetts Water Resources Authority (MWRA). Policies and procedures may be amended from time to time, provided that changes in provisions governing reporting to or approvals by the Board of Directors or the Advisory Board must be approved by the Board of Directors. If any sections of these policies and procedures are at variance with requirements of MWRA's financing agreements, the latter shall govern.

ASSESSMENT POLICIES AND PROCEDURES

Basis of MWRA Assessments

MWRA is required by its Enabling Act to establish assessments which, with other revenues, provide sufficient funds each year to pay all current expenses, debt service, and obligations to the Commonwealth; to pay all costs of maintenance, replacement, improvements, extension, and enlargement of the sewer and waterworks systems; to create and maintain reserve funds; and to provide amounts required by financing agreements. These assessments are adopted by MWRA based on the rate revenue requirements set forth in the Current Expense Budget.

Costs Recovered

MWRA capitalizes certain of its asset costs in accordance with its capitalization policy. Capital expenditures are planned as set forth in the Capital Improvement Program and are recovered through assessments in accordance with MWRA financing agreements. The Current Expense Budget provides detailed information on capital and debt costs, additions to reserves, and all operations and maintenance costs to be recovered with current revenue.

Sources of Current Revenue

MWRA recovers most of its current expenses from users of the services it provides. In addition to rate revenue requirements, budgeted current revenue includes anticipated fines, fees, investment income on certain fund balances, and payments for contracted services. MWRA is committed to seeking additional sources of current revenue.

Coverage Requirements

MWRA's financing agreements include coverage requirements which provide that each year revenue less operating expenses (net revenue) must be more than the amount required for debt service payments on outstanding bonds. The primary bond coverage requirement is that net

revenue must be 120 percent of required debt service fund deposits for bonds outstanding excluding subordinated bonds. The secondary coverage requirement is that net revenue must be 110 percent of required debt service fund deposits for all bonds outstanding, including subordinated bonds. Revenue must be raised annually to meet the primary and secondary bond coverage requirements and may be used for additions to reserves or for payment of obligations to the Commonwealth. Amounts remaining after these uses are used to pay capital costs in order to reduce the need for future borrowing or to reduce current debt service costs. In addition, MWRA has a supplemental bond coverage requirement that amounts contained in its Community Obligation and Revenue Enhancement (CORE) Fund shall equal 10 percent of required debt service fund deposits for bonds outstanding, excluding subordinated bonds. Amounts required to be on deposit in the CORE Fund are recovered through assessments as necessary.

Budget Surpluses

In any year in which current revenue exceeds both current expenses on a budget basis and amounts required to meet bond coverage tests, the amount of over-recovery is deposited first to reserve funds, if any, which are below the level specified in any financing agreements, and second into MWRA's rate stabilization fund or bond redemption fund. Amounts deposited in these funds are used to offset rate requirements in subsequent years and such, to provide rate relief for our communities. With Board approval, surplus funds can also be used for targeted defeasance in future years and/or to reduce future liabilities, as part of a multi-year rate strategy. MWRA consults with the Advisory Board regarding the yearly use of these funds.

Budgeting and Assessment Objectives

MWRA follows conservative budgeting practices, and has the following objectives in developing budgets and community assessments:

1. To minimize total costs, consistent with MWRA's statutory responsibilities to provide effective, environmentally sound wholesale water delivery and wastewater collection and treatment services;
2. To minimize the cost of debt;
3. To avoid single year assessment spikes by prudent management of cost and assessment increases, and
4. To support inter-generational equity by avoiding unfair assessment burdens on either current or future ratepayers.

Allocation of Costs and Revenue to Systems

Most of MWRA's current expenses are directly attributable to either water or sewerage service costs or to investment in either the water or sewerage systems. Expenses which support both systems (indirect system costs) are allocated to the water or sewer system based on generally accepted cost allocation principles. Investment, contract, and other income offsets water and

sewerage expenses on either a direct or allocated, indirect basis. The resulting net cost of water and sewerage services is the amount to be recovered through water and sewer assessments.

Allocation of Rate Revenue Requirements to User Assessments

Users of MWRA wholesale water and sewerage services are assessed for those services according to MWRA's water and sewer assessment methodologies. Assessments for water services are computed by MWRA based on metered water use for the preceding calendar year. The total assessment is allocated based on each community's share of water delivered in the immediately preceding calendar year.

Assessments for sewer services are computed on the basis of a combination of metered wastewater flow and loads, and population.

- Operations and Maintenance (O&M) costs are allocated based on total annual metered wastewater flow, and total annual average strength, septage, and high strength flow loads.
- Capital (or debt service) costs are allocated based on a combination of metered wastewater flow and loads, and population. One-quarter of capital costs are allocated based on maximum month flow, and total annual average strength, septage, and high strength flow loads. The remaining three-quarters of capital costs are allocated based on population. Half of the population allocation is based on census population and half is based on contributing population.

Schedule and Procedure for Adoption of Assessments

During the preparation of the proposed Current Expense Budget, required water and sewer rate revenue is determined, and a preliminary calculation of the allocation of costs to user-specific assessments is made. This information is provided to MWRA customers to assist them in their own fiscal planning. As provided in the Enabling Act, the proposed Current Expense Budget and preliminary assessments undergo statutory review, including public hearings and review by MWRA's Advisory Board. Further refinements of projected expenses and revenues also occur during this period. If review and analysis of the proposed Current Expense Budget results in lower projected expenses or higher projected revenue, some or all of such savings from preliminary estimates of assessments can be included in the adopted budget as additions to the rate stabilization fund and used to reduce rate revenue requirements in subsequent years. Alternatively, some or all of such savings can be used to reduce final assessments to customers below preliminary estimates.

The Current Expense Budget and final water and sewer assessments are adopted in June for the fiscal year beginning in July. The budget adopted in June may differ from the proposed budget as a result of review and further refinement of the proposed budget, although final assessments adopted by MWRA must be sufficient to recover water and sewer rate revenue requirements specified in the adopted budget. Final water and sewer rate requirements and their allocation to users may thus change from preliminary estimates. In addition, any individual community's final assessment may be higher or lower than the preliminary estimate, both because of changes

in the factors which affect the allocation of assessments among wholesale customers, and because of differences between MWRA's proposed and final budgets as approved by the Board of Directors.

Review and Dispute Resolution Process

MWRA annually determines preliminary and final assessments for water and sewer services in February and June prior to the beginning of the new fiscal year. These assessments must satisfy the requirement that MWRA fully recover its water and sewer costs by apportioning total costs as assessments among its wholesale water and sewer customers pursuant to its water and sewer rate methodologies and to certain specified data including:

- Calendar year metered water volume and metered wastewater flow obtained from MWRA's water and wastewater metering systems;
- Federal and state community census statistics, and sewer population estimates and other information supplied on Customer Service Update forms and Municipal Discharge Permits; and
- High strength user monitoring data and estimates of community septage volumes as obtained by MWRA's Toxic Reduction and Control Department.

The review and dispute resolution process provides MWRA's wholesale customers with the opportunity to review and comment on the reasonableness of the data used to calculate preliminary water and sewer assessments. During the year, MWRA provides its customers with monthly summaries of water and wastewater flow data distributed, at a minimum, on a bimonthly basis. Because annual metered water and wastewater flows are major components for establishing water and sewer charges for each community, customers are strongly encouraged to review this data closely upon receipt and raise questions with MWRA staff concerning the data. MWRA expects that prompt customer review and comment on meter data will result in the resolution of most water and wastewater metering questions and assure the most consistency between preliminary assessments in February and final assessments announced in June. Community contributions of high strength flow and septage, and population data are made available with the release of preliminary assessments in February.

If after an initial review a community believes that specific data used to calculate assessments should be reevaluated, a community may submit a written objection to the Executive Director with a copy to the Rates Manager or their designee. The objection must be signed by the local official on record with MWRA as responsible for water or sewer services in the city, town, or district. The objection should state the community's concern with the data used to calculate community assessments, and should also include information and technical data to support the community's objection.

In order for any data adjustments to be incorporated into the allocation of final fiscal year assessments, all objections to data used to calculate preliminary assessments must be received no later than the date of the final public hearing on the proposed budget and preliminary

assessments, held pursuant to Section 10 of the MWRA Enabling Act. MWRA staff will review and evaluate the merits of all written objections. Customers are notified in writing of the results of this review prior to the release of final assessments.

Adjustments to preliminary data, if any, are not retroactive beyond the applicable calendar year for proposed assessments. Final fiscal year assessments are calculated incorporating adjustments, if any, resulting from the review and objection process, and final rate revenue requirements as adopted by the Board of Directors.

Written objection(s) may also be submitted following the adoption of final fiscal year assessments, but no later than the end of the fiscal year for which the assessments are applicable. Objections submitted in this manner must also be directed to the Executive Director with a copy to the Rates Manager or their designee.

Following MWRA staff review, adjustments to assessments resulting from the challenge of rate basis data that are submitted following the adoption of final fiscal year assessments will be applied to the subsequent year's assessments. Customers are notified in writing of the results of this review and any assessment adjustments prior to the release of the subsequent year's assessments.

Water and Sewer Assessment Payment Schedule

MWRA adopts a schedule of assessments and a schedule of payments annually. Any adjustments for prior years resulting from the review and objection process are apportioned to each of the scheduled payment amounts. No interest is paid or billed by MWRA for previous year's adjustments.

Assessments are payable to MWRA in ten equal installments due on the first day of August, September, October, November, December, February, March, April, May, and June.

Interest Charge on Delinquent Payments

For payments received after a payment due date MWRA levies an interest charge of one percent per month or 0.033 percent per day. Interest charges do not accrue until 30 days after the bills are mailed to MWRA's customer communities. Interest charges are added to subsequent regular billings.

Retail Rates

MWRA assessments are for MWRA's provision of wholesale services. Local bodies which receive wholesale services in turn provide retail services to their users at the local level.

MWRA encourages its customers to establish retail rates which:

1. Recover the full cost of providing local water and/or sewerage services, including both direct costs and an allocation or estimate of indirect costs,

2. Charge users of local water and/or sewerage services in a manner which demonstrates to customers that increased use of services results in increased user costs,
3. Comply with MWRA policies directed to conservation of water; elimination of infiltration and inflow of surface water and ground water into the sewage collection, treatment, and disposal system; and removal or pretreatment of industrial wastes, and
4. To the extent consistent with #1 and #2, provide assistance to low income users through lifeline rates.

CAPITALIZATION POLICY

It is the policy of the MWRA that capitalization of expenditures conforms to generally accepted accounting principles. Under such guidelines, MWRA has adopted the provisions of the Financial Accounting Standards Board's Statement No. 71, "Accounting for the Effects of Certain Types of Regulation," which is intended to assure that utility revenues are appropriately matched with incurred costs. Capital expenditures create assets or extend their useful lives. Assets are valued at their cost and provide benefits over an extended period of time. Sources of funds for capital expenditures include grants, proceeds of MWRA borrowing, loans, and current revenue.

Asset value created by MWRA is of two kinds. One is the value of tangible assets either created or increased through MWRA capital investments. Such assets include land, buildings, plant, equipment, and the system infrastructure for water and wastewater. The cost of such fixed asset investment includes not only purchase, rehabilitation, and construction cost, but also ancillary expenses necessary to make productive use of the asset. Ancillary costs can include, but are not limited to, costs for planning studies, professional fees, transportation charges, site preparation expenditures, and legal fees and claims directly attributable to the asset.

The second kind of asset value created by MWRA investment is the value of intangible assets. While such investment does not result in tangible MWRA assets, it does create a benefit to MWRA and its users over several years. Such assets include the cost of MWRA efforts to establish base-line leak detection information for the water systems of MWRA customers. The cost of providing water consumption-limiting devices to households is another example.

Expenditures for tangible assets are included in the Capital Improvement Program and Budget if the expected cost of the individual asset or capital project is \$100,000 or more and if the expected useful life is more than one year. Expenditures for intangible assets are capitalized if the expected cost is \$100,000 or more and if the expected benefit period is three years or more. Annually recurring costs and expenditures for maintenance of assets are not capitalized, even though their cost may exceed \$100,000. Examples of such maintenance expenditures include replacement of vehicles or computers, replacement of inoperable valves or other equipment before the anticipated useful life has been reached, and pipeline or interceptor repairs that do not add significant life to the underlying asset.

RESERVES FUNDED FROM CURRENT REVENUE

Operating Reserve

The Operating Reserve has been established to provide a source of funds to be used to pay operating expenses of the sewer or water systems should there not be sufficient funds otherwise available for that purpose. Bond agreements specify that the fund level shall not be less than one-sixth of MWRA's annual operating expenses.

Insurance Reserve

The Insurance Reserve has been established to provide funds to restore, replace, or reconstruct lost or damaged property or facilities of the water or sewer system. It provides funds reserved against risks for which MWRA does not currently maintain insurance. This self-insurance reduces the cost MWRA might otherwise incur for purchased insurance policies. MWRA periodically evaluates the level of its insurance reserve and every three years a consulting engineer or an insurance consultant recommends an appropriate insurance reserve fund requirement. The current funding level of \$14.0 million has been determined to be adequate based on a FY14 Insurance Reserve Fund review performed by an outside insurance consultant who estimated an acceptable fund level in the range of \$12 to \$16 million. The next Insurance Reserve Fund review is expected to be finalized in February 2017.

Renewal and Replacement Reserve

The Renewal and Replacement Reserve has been established to pay the costs of emergency repairs or capital improvements to the system when funds are not available in either the Construction Fund or the Operating Fund. Amounts may not be withdrawn until MWRA has specified the project to which the amount will be applied, its estimated cost, and estimated completion date. It must also certify that such expenditures are reasonably required for the continued operation of the systems, or for maintenance of revenues, or that other provisions have not been made for funding such expenditures. Every three years, MWRA receives recommendations from a consulting engineer as to the adequacy of the renewal and replacement reserve fund requirement. The Renewal and Replacement Reserve Fund requirement is presently established at \$35 million. The adequacy of the funding requirements for the Operating Reserve Fund and the Replacement Reserve Fund have been confirmed by the Consulting Engineer in its most recent triennial report dated October 2011, prepared and delivered in accordance with the General Resolution. The next Triennial Report is scheduled for October 2014.

CURRENT EXPENSE BUDGET MANAGEMENT POLICIES AND PROCEDURES

A. Budget Allocations

Budget Contingency Holdbacks

After the Board of Directors adopts the Current Expense Budget each year, the Executive Director, the Chief Operating Officer, or a division director may reserve between two percent and four percent of a division's approved budget as a budget contingency to be expended only upon approval of the Executive Director. The contingency holdback may be from any line item or cost center or combinations thereof, and any amount reserved as a budget contingency is not to be included in the monthly budget allocation process described below. The Administration, Finance, and Audit Committee will be notified of all budget contingency holdback amounts.

Monthly Allocation of the Annual Current Expense Budget

Initial monthly allocations are made for purposes of adopting and filing an operating budget in accordance with MWRA's financing agreements. Before the end of the first reporting period of the fiscal year, divisions, with the assistance of the Rates and Budget Department, allocate the approved budget, less any holdbacks, by month. The allocations set forth planned expenditures and accruals for each of the 12 months of the year to be compared to actual expenditures and accruals as reported in MWRA's monthly variance reports.

B. Budget Variance Monitoring and Analysis

At the close of each monthly accounting period, the Treasury Department prepares MWRA financial statements. The Rates and Budget Department then prepares monthly variance reports that compare planned to actual revenues and expenses.

Variance Analysis

Division directors and staff review variance reports and explain variances between planned and actual expenditures as requested by the Rates and Budget Department. Variance explanations are prepared as needed, usually at the end of each quarter of the fiscal year. At least twice each year MWRA staff prepares forecasts of year-end expenditures and revenue. Barring extraordinary circumstances, division directors are responsible for controlling spending within the overall division budget. The Rates and Budget Department reviews all variances and projections so that appropriate measures may be taken to ensure that overall spending is within the MWRA's budget.

Variance explanations are submitted to the Rates and Budget Department in accordance with the schedule developed by the Rates and Budget Department. Each month the Rates and Budget Department prepares a summary of budget variances for inclusion in the Management Indicators Report (Yellow Notebook). The Rates and Budget Department also prepares a monthly staff summary (except for July and August) to the Board of Directors describing major budget

variances and a quarterly budget variance report for inclusion in the Board of Directors Report on Key Indicators of MWRA Performance (Orange Notebook). At least twice a year, the Rates and Budget Department prepares a staff summary to the Board of Directors on year-end projections of revenue and expenses.

C. Budget Amendments

An amendment to an MWRA Current Expense Budget is defined as follows:

A proposed change in an adopted budget or a proposed budget transmitted to the MWRA Advisory Board in accordance with Section 8(b) of Chapter 372 of the Acts of 1984 which meets any of the following criteria:

1. Any increase in total current expenses.
2. An increase of five percent or more in total division expenses.
3. An increase in any expense line item (subsidiary account) of 15 percent or more if that line item is at least 2.5 percent of total current expenses.
4. An addition or deletion of a specific new program or initiative, the cost of which is greater than one percent of total current expenses, unless the addition or deletion has been specifically recommended by the Advisory Board.

The Executive Director, with the concurrence of the Chairman of the Board of Directors and the Chairman of the Administration, Finance, & Audit Committee of the Board of Directors, submits proposed amendments to the Advisory Board for comment and recommendation. At the end of the Advisory Board 30-day review period, the Board of Directors may take action on the amendment.

CAPITAL BUDGET MANAGEMENT POLICIES AND PROCEDURES

General Guidelines

The Authority shall periodically adopt and revise capital facility programs for the Waterworks and Sewer Systems and capital budgets based on these programs. The Authority shall consult in the preparation of its capital facility programs for the Sewer and Waterworks Systems with the Authority's Advisory Board and the Executive Office of Environmental Affairs, and may consult with other agencies of federal, state and local government concerned with the programs of the Authority. Proposed capital facility programs and capital expenditure budgets for said systems shall be submitted to the Advisory Board for such consultation no less than sixty days prior to adoption or revision by the Authority. The Authority shall prepare a written response to reports submitted to it by the Advisory Board, which response shall state the basis for any substantial divergence between the actions of the Authority and the recommendations contained in such reports of the Advisory Board. The Authority shall capitalize expenditures in accordance with generally accepted accounting principles. Capital expenditures will be planned in accordance with Authority financing agreements and policies for amortization of capital costs.

Capital Budget Contingency

A contingency for each fiscal year is incorporated into the Capital Improvement Program for the purpose of providing for unanticipated or unpredictable expenditures under the CIP spending cap.

Capital Budget Monitoring and Reporting

The Authority shall continually monitor the progress of capital projects for purposes of managerial control and decision-making and for financial planning and management. Two capital budget variance analysis reports will be provided to the Board of Directors, one for the first six months of a year and one at year-end. The reports will include planned project schedules and budgets compared to actual performance. The reports will highlight any major changes, either in scope or budget, of any project. Based on these reports, staff may recommend to the Board of Directors revisions, if appropriate, to the annual and five-year caps based upon said changes. In addition, capital budget progress reports shall be provided to the Board of Directors on a regular basis, both as project specific updates and in Quarterly Orange Notebook reports that shall include discussions of project progress compared to schedules. Monthly Financial Summary reports shall include discussions of capital expenditures compared to budget.

Capital Budget Spending Cap

Beginning in June 2003, the Board of Directors established a five-year Capital Budget Spending cap and annual caps for each year within the cap period. Spending for any year in the cap period may vary within plus or minus 20% of the annual cap, as long as total spending for the five-year period does not exceed the five-year cap. Before the end of each five-year cap period, the Board will adopt a cap for the next five-year period and annual caps for each year in the period. The Board established the third five-year cap for the FY14-18 period at its June 2013 meeting.

Expenditures in Excess of the Spending Cap

In the event of unanticipated spending requirements, the Executive Director may recommend to the Board of Directors that annual expenditures exceed an annual cap by more than 20% or that five-year expenditures exceed the current five-year CIP spending cap. In such an event, a proposed plan to adjust the five-year cap or any of the annual caps will be presented to the Board. Any such proposed plan will be submitted to the MWRA Advisory Board for review and comment for a period of thirty days. At the end of the thirty-day period, the Board of Directors may take action on the proposed plan.

APPENDIX D

MWRA Planning Estimates FY2016 to FY2025

COMBINED UTILITIES										
	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025
EXPENSES										
Direct Expenses	\$222,834	\$228,739	\$235,557	\$242,031	\$248,476	\$254,990	\$261,901	\$269,463	\$276,359	\$283,886
Indirect Expenses	46,953	41,673	45,734	46,625	47,739	48,928	51,429	47,201	48,416	49,896
Capital Financing (before offsets)	<u>432,689</u>	<u>451,512</u>	<u>469,313</u>	<u>491,771</u>	<u>551,679</u>	<u>564,219</u>	<u>596,187</u>	<u>551,211</u>	<u>528,572</u>	<u>511,078</u>
Sub-Total Expenses	\$702,477	\$721,923	\$750,604	\$780,426	\$847,895	\$868,136	\$909,518	\$867,875	\$853,347	\$844,860
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	(24,598)	(1,510)	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Expenses	\$702,477	\$721,923	\$750,604	\$780,426	\$823,297	\$866,626	\$909,518	\$867,875	\$853,347	\$844,860
REVENUE & INCOME										
Non-Member and Other Revenue	\$20,684	\$15,314	\$15,719	\$16,025	\$16,219	\$16,799	\$17,134	\$16,926	\$17,063	\$17,149
Interest Income	9,353	8,003	9,095	10,483	13,298	13,221	13,423	13,634	13,917	14,279
Rate Stabilization	0	0	0	0	10,084	12,136	13,136	1,156	0	0
Total Other Revenue	\$30,037	\$23,317	\$24,814	\$26,509	\$39,601	\$42,156	\$43,692	\$31,716	\$30,980	\$31,428
Total Rate Revenue	\$672,440	\$698,606	\$725,790	\$753,918	\$783,697	\$824,471	\$865,825	\$836,159	\$822,366	\$813,431
Rate Revenue Increase	3.4%	3.9%	3.9%	3.9%	3.9%	5.2%	5.0%	-3.4%	-1.6%	-1.1%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$1,055	\$1,100	\$1,154	\$1,204	\$1,253	\$1,326	\$1,393	\$1,425	\$1,460	\$1,497
Based on water use of 90k gpy (weighted)	\$1,556	\$1,622	\$1,703	\$1,777	\$1,848	\$1,956	\$2,055	\$2,102	\$2,154	\$2,208
WASTEWATER UTILITY										
	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025
EXPENSES										
Direct Expenses	\$150,055	\$153,958	\$158,698	\$163,048	\$167,342	\$171,637	\$176,264	\$181,511	\$186,047	\$191,141
Indirect Expenses	12,998	9,126	11,177	11,292	11,610	11,972	12,420	12,899	13,180	13,695
Capital Financing (before offsets)	<u>293,405</u>	<u>316,677</u>	<u>317,386</u>	<u>337,149</u>	<u>379,865</u>	<u>370,988</u>	<u>390,496</u>	<u>337,532</u>	<u>317,587</u>	<u>310,897</u>
Sub-Total Wastewater Expenses	\$456,457	\$479,761	\$487,261	\$511,489	\$558,816	\$554,596	\$579,180	\$531,942	\$516,814	\$515,733
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	(5,783)	0	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Wastewater Expenses	\$456,457	\$479,761	\$487,261	\$511,489	\$553,033	\$554,596	\$579,180	\$531,942	\$516,814	\$515,733
REVENUE & INCOME										
Non-Member and Other Revenue	\$5,455	\$5,568	\$5,671	\$5,792	\$5,929	\$6,044	\$6,180	\$6,260	\$6,373	\$6,504
Interest Income	4,935	4,147	4,786	5,600	7,364	7,586	7,732	7,788	7,748	7,871
Rate Stabilization	0	0	0	0	3,923	0	0	0	0	0
Prior Year Utility Surplus/Deficit Transfer	0	0	0	0	0	0	0	0	0	0
Total Other Revenue	\$10,390	\$9,716	\$10,457	\$11,392	\$17,216	\$13,630	\$13,912	\$14,049	\$14,121	\$14,375
Wastewater Rate Revenue	\$446,067	\$470,045	\$476,804	\$500,096	\$535,817	\$540,967	\$565,268	\$517,893	\$502,693	\$501,358
Rate Revenue Increase	1.4%	5.4%	1.4%	4.9%	7.1%	1.0%	4.5%	-8.4%	-2.9%	-0.3%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$620	\$652	\$675	\$709	\$750	\$776	\$813	\$813	\$831	\$859
Based on water use of 90k gpy (weighted)	\$914	\$961	\$996	\$1,046	\$1,106	\$1,144	\$1,199	\$1,199	\$1,227	\$1,267
WATER UTILITY										
	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025
EXPENSES										
Direct Expenses	\$72,780	\$74,781	\$76,859	\$78,983	\$81,135	\$83,353	\$85,637	\$87,952	\$90,312	\$92,745
Indirect Expenses	33,955	32,547	34,557	35,333	36,129	36,956	39,009	34,303	35,235	36,201
Capital Financing (before offsets)	<u>139,285</u>	<u>134,834</u>	<u>151,927</u>	<u>154,623</u>	<u>171,815</u>	<u>193,231</u>	<u>205,691</u>	<u>213,679</u>	<u>210,985</u>	<u>200,180</u>
Sub-Total Water Expenses	\$246,020	\$242,162	\$263,343	\$268,938	\$289,079	\$313,540	\$330,338	\$335,933	\$336,532	\$329,127
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	(18,815)	(1,510)	0	0	0	0
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Water Expenses	\$246,020	\$242,162	\$263,343	\$268,938	\$270,264	\$312,030	\$330,338	\$335,933	\$336,532	\$329,127
REVENUE & INCOME										
Non-Member and Other Revenue	\$15,229	\$9,746	\$10,048	\$10,233	\$10,290	\$10,755	\$10,953	\$10,665	\$10,690	\$10,645
Interest Income	4,418	3,856	4,309	4,883	5,934	5,635	5,691	5,846	6,169	6,408
Rate Stabilization	0	0	0	0	6,161	12,136	13,136	1,156	0	0
Prior Year Utility Surplus/Deficit Transfer	0	0	0	0	0	0	0	0	0	0
Total Other Revenue	\$19,647	\$13,602	\$14,357	\$15,116	\$22,385	\$28,526	\$29,780	\$17,667	\$16,859	\$17,053
Water Rate Revenue	\$226,373	\$228,561	\$248,986	\$253,822	\$247,879	\$283,504	\$300,557	\$318,266	\$319,674	\$312,073
Rate Revenue Increase	7.7%	1.0%	8.9%	1.9%	-2.3%	14.4%	6.0%	5.9%	0.4%	-2.4%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$435	\$448	\$479	\$496	\$503	\$550	\$580	\$612	\$629	\$638
Based on water use of 90k gpy (weighted)	\$642	\$661	\$707	\$731	\$742	\$811	\$856	\$902	\$927	\$941

** Annual household charges are estimated for communities that receive full water and wastewater services from MWRA weighted by the number of households in each of these core communities. Based on community responses to the 2014 MWRA Advisory Board's Annual Water and Sewer Retail Rate Survey.

APPENDIX E

GLOSSARY OF FINANCIAL AND OPERATING TERMS

8M permit: Permission granted by MWRA to persons who wish to construct property improvements on land either adjoining or overlapping MWRA property interests. Permission may be conditioned on various operational and/or engineering concerns.

Accrued Costs: Adjustments to paid expenditures to account for materials or services received but for which payment has not been made.

Activated Sludge: The sludge that results when primary effluent is mixed with bacteria-laden sludge and then agitated and aerated to promote biological treatment.

Advanced Waste Treatment: Wastewater treatment beyond the secondary or biological stage that includes the removal of nutrients such as phosphorus and nitrogen and the removal of a higher percentage of suspended solids and organic matter than primary treatment.

Advisory Board: The agency that represents the interests of MWRA's 61 user communities to the Board of Directors in an advisory capacity in accordance with the provisions of MWRA's Enabling Act. The Advisory Board elects three members of the Board of Directors, reviews and comments on MWRA's CIP and CEB, and approves the addition of new communities to the wastewater and water systems.

Aerobic: In the presence of free oxygen.

Anaerobic: Life or processes such as bacteria that digest sludge that require, or are not destroyed by, the absence of free oxygen.

AOOC: Assimilable Organic Carbon - One measure of the "food" available to bacteria within a water system. More complex carbon compounds can become assimilable when oxidized by strong disinfectants.

ARRA: American Recovery and Reinvestment Act of 2009 – principal forgiveness loans distributed based on the Department of Environmental Protection's Intended Use Plan.

Ash: The inert material remaining after the combustion of wastewater sludge. Ash is either wet or dry depending on combustion system design.

Bacteria: One-celled microscopic organisms commonly found in the environment. Bacteria can be harmful, such as pathogens, or helpful and perform a variety of biological treatment processes.

BDOC: Biologically Degradable Organic Carbon - Another, more precise, measure of the "food" available to bacteria within a water system.

BGD: Billion gallons per day.

Biofilm: Growth of various bacteria within a water distribution system on the pipe walls. Biofilm growth can contribute to iron corrosion, colored water, poor taste, excessive chlorine demand, and complications with coliform testing.

Blow-off valves: Valves operated during pipeline repair to de-water (drain) a portion of a pipeline.

BOD: Biochemical Oxygen Demand - An indicator of the amount of biodegradable contaminants in wastewater.

Board of Directors: The 11-member governing board of MWRA.

Bond Resolution: A document adopted by the Board of Directors that governs MWRA's issuance of revenue bonds and sets forth its obligations to bondholders.

Boston Harbor Project: An extensive plan of activities which MWRA developed and implemented to construct new wastewater treatment facilities in response to a federal court order to comply with the provisions of the U.S. Clean Water Act.

Business Systems Plan (BSP): The strategic planning framework for MWRA's management information systems. The BSP is updated annually to reflect ongoing business requirements, new opportunities identified by ongoing MWRA strategic planning efforts, technology changes, and user requests.

BWSC: Boston Water and Sewer Commission - The agency responsible for providing water and sewer services to the City of Boston, MWRA's largest customer.

BWTF: William A. Brutsch Water Treatment Facility – Water treatment plant for the Chicopee Valley Aqueduct communities of Chicopee, South Hadley Fire District #1, and Wilbraham. The facility has a capacity of 24 mgd, and disinfects the water using a combination of UV light and chlorine.

CADD: Computer aided drafting and design.

Capital Improvement Program (CIP): A plan which identifies and estimates the nature, schedule, cost, and financing of long-term assets that MWRA intends to build or acquire during a specific period.

Capital Investment: Development of a facility or other asset that adds to the long-term value of an organization.

Carroll Water Treatment Plant (CWTP): Water treatment facility for waters from Quabbin and Wachusett Reservoirs with capacity of 405 mgd using ozonation as a primary disinfectant and UV as a secondary disinfectant beginning in February 2014.

CDF: Cosgrove Disinfection Facility

Cathodic Protection: A form of corrosion protection that is particularly effective against galvanic corrosion. Galvanic corrosion occurs when pipe metal is in the presence of other metals while immersed in water. The interaction of these elements causes an electric current to flow away from the pipe, taking electrons with it and pitting the pipe as a result. Cathodic protection reverses the current, thereby stopping the corrosion.

Centrifuge: A machine that uses centrifugal force to separate substances of different densities and remove moisture. MWRA uses centrifuges at the Deer Island Wastewater Treatment Plant to de-water sludge.

CFM: Cubic Feet per Minute - A measure of the quantity of a material flowing through a pipe.

Chloramination: The process of adding chloramine to drinking water. Chloramine, a form of chlorine and ammonia, is used as a residual disinfectant because it lasts longer in the water distribution system than primary disinfectants.

Chloramine: A long lasting residual disinfectant created by combining measured amounts of chlorine and ammonia. Chloramine forms fewer disinfection by-products than chlorine.

Chlorination: The process of adding chlorine to drinking water to inactivate pathogens.

Chlorine: A relatively strong primary disinfectant, effective against bacteria, *giardia*, and viruses, but not *cryptosporidium*. Concerns exist about the health effects of its by-products, some of which are or will be regulated.

Clarifiers: Settling tanks or basins in which wastewater is held for a period of time, during which heavier solids settle to the bottom and lighter materials float to the surface.

Clean Water Act: A law passed by Congress in 1972, and subsequently amended, which sets national standards for pollution reduction, permits discharges from wastewater treatment plants, and promotes achievement of the national goal that all surface waters be "fishable and swimmable."

Cleaning and Lining: Cleaning and cement lining of unlined cast iron water mains to improve hydraulic capacity and extend useful life.

CMMS (Computerized Maintenance Management System): *Maximo* is the computerized maintenance management system which is an essential component of successful asset management. This system is an important tool used in refining the long-term maintenance strategy to ensure proper maintenance and replacement of plant assets.

Co-Digestion Process: Introduction of non-wastewater derived organic waste material into the wastewater anaerobic digestion process. Co-digestion could potentially increase digester gas production which would be utilized for heating and electricity generation at Deer Island.

Coliform bacteria: A group of lactose fermenting bacteria, which while not of direct health concern, are used as a first line indicator of potential problems. See fecal coliform and *E.coli*.

Combined Sewer and Combined Sewer Overflow: While modern systems transport rainwater and sewage from homes and businesses through separate pipes, some older systems like Boston's have "combined" sewers that carry both flows together. During normal conditions flows are delivered to treatment plants. During very heavy rains, these systems become overloaded. Built-in overflows (called combined sewer overflows or "CSOs") must then act as relief points by releasing excess flows into the nearest body of water. This prevents sewage backups into homes and onto area streets, but the discharges can impact water quality.

Comminutor - A machine or process that pulverizes and reduces solids to minute particles.

Commonwealth Debt Service Assistance (DSA): Funds appropriated by the Commonwealth to offset MWRA capital financing expenses.

Community Obligation and Revenue Enhancement (CORE) Fund: A fund established by MWRA's bond resolution that is used to provide insurance against delays by communities in paying charges due to MWRA.

Composting: The process of converting wastewater treatment residuals to a soil-like humus material often used in the horticultural industry. The process involves the aerobic breakdown of the residuals and the addition of sawdust or wood chips.

Corrosion Control: Adjustments to the chemistry of treated water to reduce its ability to dissolve lead, copper, other metals, or form hydrogen sulfide. Corrosion control can include adjustments to pH and alkalinity, as well as the addition of corrosion inhibitors such as phosphates or oxidizers.

Coverage Requirement: Requirement of MWRA's bond resolution which provides that each year, revenue less operating expenses (net revenue) must be more than the amount required for debt service payments on outstanding bonds.

CP (Construction Package): Major construction projects such as the Carroll Water Treatment Plant or the North Dorchester Bay CSO project will group areas of work into individual construction contracts.

Cross-Connection: A point at which potable water piping is connected to a non-potable water source creating an opportunity for the introduction of pollutants into the potable water.

Cryogenic oxygen plant: MWRA operates a cryogenic oxygen-based facility as part of its secondary wastewater treatment program at Deer Island.

Cryptosporidium: A protozoan parasite that can cause severe gastrointestinal disease in healthy individuals, and may be fatal to people with compromised immune systems. Cryptosporidia exist in the environment as hard walled oocysts that are very resistant to chlorination, but can be inactivated by disinfection with ozone or ultraviolet light.

CSO: Combined Sewer Overflow – An overflow point and the discharged flow from a combined sewer system intended to provide hydraulic relief to avoid system flooding and backups during large wet weather events. During large rainstorms, systems can become overloaded, with the excess discharged directly into surface waters. The discharged flow and the discharge location are called CSOs. In the metropolitan Boston area there are approximately 46 active, permitted CSOs that currently discharge into rivers or Boston Harbor.

CSO Facilities: MWRA has six facilities that intercept the flow from CSO pipes. Four of these facilities provide treatment and two provide storage prior to discharge. The CSO facilities have some capacity to store flow and pump it to the Deer Island plant after rainstorms end.

CT: Concentration x Contact Time - A measure of disinfection effectiveness established under the Surface Water Treatment Rule. CT is the product of the concentration of disinfectant [C] and the time it has been in contact with the water [T]. Required CT varies by type of disinfectant, organism, temperature, and pH.

CTG (Combustion Turbine Generator): CTGs are used to generate electricity during planned cable outages, wet weather operations and for participation in price response events.

Current Expense Budget: A financial plan that estimates the revenues and expenses associated with MWRA's operations for a fiscal year.

C-Value: The carrying capacity of a water main for a specified length and pressure drop that is determined by its diameter and resistance to flow. The friction coefficient "C" of the main is often used as a measure of flow resistance. C-values for new pipe are about 120 for water mains that are 6 to 16-inches in diameter, and 130 and 140 for larger diameter mains.

DAF: Dissolved Air Flotation - A process of adding super saturated air into water to cause coagulated solids to rise to the top to be skimmed off. DAF replaces conventional gravity sedimentation (clarification) and is particularly cost-effective for low turbidity waters subject to periodic algae blooms.

DBP: Disinfection By-products - Complex compounds formed by the use of oxidizing agents such as chlorine or ozone in waters containing organic matter.

D/DBP Stage 1: Disinfectants/Disinfection By-products, Stage 1 Rule - Promulgated 11/1998, and effective 1/2002, this rule set DBP limits at 80 parts per billion for Trihalomethanes and 60 parts per billion for Haloacetic Acids, averaging all samples over four quarters.

D/DBP Stage 2: Disinfectants/Disinfection By-products Stage 2 Rule - The rule further regulates the amount of DBPs allowed in water. The 80/60 values set in Stage 1 will now apply to each individual sample location in a "Locational Running Annual Average".

Debt Service: In a given fiscal year, the amount of money necessary to pay interest and principal on outstanding notes and revenue bonds.

DEP: Department of Environmental Protection - The Massachusetts agency that regulates water pollution control, water supplies, and waterways and dispenses federal and state grant funds to support these activities.

Department: A sub-unit of an MWRA division.

Department of Conservation and Recreation (DCR): Created in 2003 through the merger of the Metropolitan District Commission and the Department of Environmental Management, DCR manages the Commonwealth's diverse parks system and protects and enhances natural resources and outdoor recreational opportunities throughout Massachusetts.

De-watering: The process of removing water from wastewater treatment residuals. De-watered sludge has the appearance of mud or wet soil material.

Diffusers: A system of shafts, rising from the end of MWRA's effluent outfall tunnel to the seabed, which disperses treated wastewater over a large area. Technically, the diffusers are the "sprinkler heads" mounted on top of the riser shafts that lead from the outfall tunnel and disperse wastewater into Massachusetts Bay.

Digesters: Tanks for the storage and anaerobic or aerobic decomposition of organic matter present in sludge.

Direct Program Expenses: Costs directly associated with providing services or performing activities.

Disinfection, Primary: The inactivation (killing) of pathogenic organisms in a water system by the use of chemical or other disinfection agents.

Disinfection, Residual: The presence of a measurable residual of disinfectant within a water distribution system to help control bacterial re-growth and guard against contamination.

Dissolved Oxygen (DO): A measure of the amount of oxygen in a given amount of water. Adequate levels of DO are needed to support aquatic life. Low dissolved oxygen concentrations can result from inadequate wastewater treatment.

Division: A major organizational unit within MWRA, encompassing the activities and resources for providing a major service or function.

DLS (Department of Laboratory Services): Laboratory Services is a full service analytical testing and consulting group within the MWRA that primarily serves client groups primarily within the Operations Division. The analytical services that Laboratory Services provides include wet chemistry, metals, organics, and microbiology testing. Related services include field sampling, technical consultation, and contract laboratory management.

DMR (Discharge Monitoring Report): Monthly reports that are submitted to federal and state regulators. MWRA monitors the effluent (treated sewage) that is discharged into Massachusetts Bay, to ensure that it meets the standards set out in the NPDES permit. Analytical support to the effluent monitoring program is provided by the Department of Laboratory Services.

E.coli: A normal inhabitant of the digestive tract of mammals. The presence of *E.coli* indicates probable contamination by fecal matter.

Effluent: Treated wastewater discharged from a treatment plant.

EIR: Environmental Impact Report – A document prepared in adherence with the Massachusetts Environmental Policy Act (MEPA) to review the environmental impact of projects and ensure opportunities for public review and comment.

EIS: Environmental Impact Statement – A document prepared in adherence with the National Environmental Policy Act to review the environmental impact of projects and ensure opportunities for public review and comment.

Enabling Act: Legislation (Chapter 372 of the Acts of 1984) that established MWRA and define its purpose and authority as of January 1, 1985.

ENF: Environmental Notification Form - The first step in the MEPA process.

EOEEA: Executive Office of Energy and Environmental Affairs - The Massachusetts cabinet office that oversees state environmental agencies.

EOC: Emergency Operations Center

EOEA: Executive Office of Environmental Affairs - The Massachusetts cabinet office that oversees state environmental agencies.

EPA: Environmental Protection Agency - The federal government agency responsible for environmental enforcement and investigation.

ESWTR: Enhanced Surface Water Treatment Rule - A federal rule that is promulgated in three stages:

1) Interim Enhanced Surface Water Treatment Rule (IESWTR): The IESWTR was promulgated in 1998 and tightened the requirements for the operation of water filtration plants in large systems to take a first step toward controlling *cryptosporidium* in source waters. IESWTR also added *cryptosporidium* to the list of issues considered within watershed protection plans for unfiltered systems.

2) LT1ESWTR primarily extends the IESWTR to smaller systems

3) LT2ESWTR: further tightens the standards for the operation of filtration plants and adds requirements for 99% inactivation of *cryptosporidium* and the use of two primary disinfectants for unfiltered systems. The concept of proportional treatment, with less treatment required for cleaner sources, was implemented as part of the rule.

Enterococcus: A pathogen indicator, similar to fecal coliform, that is used in the Massachusetts Water Quality Standards for marine waters, consistent with the Federal Clean Water Act requirements, which indicates potential contamination from human or animal waste.

Eutrophication: Nutrient enrichment of a lake or other water body typically characterized by increased growth of planktonic algae and rooted plants. Eutrophication can be accelerated by wastewater discharges and polluted runoff.

Expenditures: Payments for goods and services received.

Expenses: Costs associated with the operating activities of a period, including expenditures and accrued costs.

Facility Information System (FIS): The management information system at the Deer Island Treatment Plant.

Fecal coliform bacteria: A group of bacteria used as a primary indicator organism for potential contamination from human or animal waste. Also called thermo-tolerant bacteria. Specific organisms in the group may or may not be of health concern (see *E.coli*).

Filtration: A water treatment process involving the removal of suspended particulate matter by passing the water through a porous medium such as sand or carbon.

Fiscal Year: The 12-month financial period used by MWRA that begins July 1 and ends June 30 of the following calendar year. MWRA's fiscal year is numbered according to the calendar year in which it ends.

Flash coat: A light coat of shotcrete used to cover minor blemishes on a concrete surface.

FOD (Field Operations Department): Department within the Operations Division created to provide high quality, uninterrupted water delivery and wastewater collection services to MWRA communities. The department is responsible for the treatment, transmission, and distribution of water from the Quabbin and Wachusett reservoirs to community water systems. It also manages the collection, transport, and screening of wastewater flow from MWRA communities to the Deer Island Treatment Plant.

Force Main: A pressure pipe joining the pump discharge at a water or wastewater pumping station with a point of gravity flow.

FRSA (Fore River Staging Area): The site of the Sludge Pelletization Plant.

Giardia: A protozoan parasite that can cause severe gastrointestinal disease, although there is medical treatment available. *Giardia* exist in the environment as hard-walled cysts, and are moderately resistant to chlorine disinfection.

Geographic Information System (GIS) -- A geographic information system is a system designed to capture, store, manipulate, analyze, manage, and present all types of spatial or geographical data.

Green Energy: Energy that comes from natural sources such as sunlight, wind, rain, tides, plants, algae and geothermal heat. These energy resources are renewable, meaning they're naturally replenished.

Goal: A statement in general terms of a desired condition, state of affairs, or situation. Goals, which are long-term in nature and not usually directly measurable, provide general direction for the activities of operating units.

Global Positioning System (GPS): Also known as an Automatic Vehicle Location system (GPS/AVL), this tool provides real-time transmission alerts utilizing a cell phone/satellite communication system and a web-based mapping system to track vehicles and operator-driven mobile equipment in MWRA's service area. The system allows MWRA to respond more quickly to emergencies, enhance driver and vehicle safety, reduce fuel costs, track mileage electronically, monitor unauthorized vehicle usage, and improve efficiency.

Graphitization: A corrosion mechanism that alters the molecular structure of the carbon/iron matrix of cast iron pipe. During the process, iron atoms are forced away from the metal leaving behind an unstable carbon matrix. The result is a weakened pipe, easily susceptible to ruptures. High frequency in the number of breaks causes leakage to be a major problem of graphitized pipe.

Grit: Sand-like materials that quickly settle out of wastewater.

Groundwater: A body of water beneath the surface of the ground. Groundwater is made up primarily of water that has seeped down from the surface.

HAA: Haloacetic Acids - A class of disinfection by-products related to chlorine disinfection. HAAs are regulated under D/DBP Stage 1 and 2 Rules at 60 ppb.

Harbor Electric Energy Company (HEEC): A subsidiary of NStar which installed a cross harbor power cable and built a sub-station to provide power for construction and operation of the new Deer Island Treatment Plant.

Head House: A structure containing the control gates to a conduit such as a sewer pipeline.

Headworks: A preliminary treatment structure or device, usually including a screening and de-gritting operation, that removes large or heavy materials such as logs and sand from wastewater prior to primary treatment.

Heavy Metals: Metals such as lead, silver, gold, mercury, bismuth, and copper that can be precipitated by hydrogen sulfide in an acid solution.

HOM (Harbor and Outfall Monitoring): A comprehensive program to provide environmental data that helps to predict and measure the effect of Deer Island outfall discharge on the marine ecosystem.

Incentives and Other Charges: A fee system designed to help recover permitting, inspecting, and monitoring costs incurred by MWRA's TRAC Program and provide incentives to permitted users to reduce discharges.

Indirect Expenses: Costs not directly associated with providing services or performing activities.

Infiltration/Inflow (I/I): The problem of clean water flows entering sewers resulting in diminished pipe capacity for sanitary flows and in costly pumping and treatment of unnecessarily large wastewater volumes. Infiltration is groundwater that leaks into the sewerage system through pipe joints and defects. Inflow, primarily a wet-weather phenomenon, refers to water that enters sewers from improperly connected catch basins, sump pumps, land and basement drains, and defective manholes. Inflow also enters through improperly closed or defective tidegates during high tides.

Influent: The flow of water that enters the wastewater treatment process.

Insurance Reserve: A fund established to adequately reserve against risks for which MWRA does not currently maintain insurance.

Interceptors: The large pipes that convey wastewater from collection systems to treatment plants.

Investment Income: Income derived by investing certain operating and reserve fund balances in interest-yielding securities in accordance with the provisions of MWRA's bond resolution.

ISO - NE (Independent System Operator of New England): Non-profit wholesale operator of the regional grid system. The MWRA receives payment from ISO-NE when Deer Island, Carroll Water Treatment Plant, and the four Remote Headworks remove themselves from the grid. All six facilities participate in load response programs offered by ISO-NE which pays larger commercial and industrial electricity consumers to "shed load" during grid peaks. There are several programs available such as price, demand response and load response. MWRA constantly evaluates the options and participates in the most advantageous program.

Labor Costs: Direct costs of employing permanent and temporary personnel, including wages, salaries, overtime pay, fringe benefits, and workers' compensation.

Land Application: The use of wastewater treatment residuals on land for agricultural benefits.

Landfilling: The disposal of residuals by burial. Modern landfills have double liners, leachate collection systems, and other design features to protect against groundwater contamination.

LCR: Lead and Copper Rule – A federal rule that set an action level for lead and copper at “worst case” consumer taps. Optimized corrosion control, notification, education, and lead service replacements are all components of compliance plans.

Leachate: Water that drains from a landfill after having been in contact with, and potentially contaminated by, buried residuals. Modern landfills are designed to collect leachate for subsequent treatment.

Limnology: The scientific study of physical, chemical, meteorological, and biological conditions in fresh waters.

LIMS: Laboratory Information and Management System – An automated database system used to transfer information between MWRA’s Central Laboratory to its client groups and to process information obtained by the Central Laboratory to monitor substances that enter and leave the MWRA wastewater system. Use of LIMS removes the potential for human error in the sampling process by bar coding samples, eliminating the need to transcribe sample data, producing pre-printed project-specific sample check-off forms for field crews, and automating testing through pre-set test codes and project-specific parameters.

LOX (Liquid Oxygen): Liquid oxygen is used together with electrical energy to generate ozone at the Carroll Water Treatment Plant.

Mapping Protocols: Sets of specifications defining the content and format of data to be collected.

MCL: Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available control technology.

MCLG: Maximum Contaminant Level Goal - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Massachusetts Environmental Policy Act (MEPA) Unit: A unit of the Commonwealth’s Executive Office of Environmental Affairs responsible for implementation of the state environmental review process.

Methane: A colorless, nonpoisonous, flammable gas produced as a by-product of anaerobic sludge processing. At Deer Island, MWRA uses methane as fuel to provide heat and hot water and to generate electricity.

MGD: Million gallons per day.

MIS: Management Information Systems

Mission: A description of the fundamental purposes and major activities of an operating unit or program.

Mitigation: Financial remuneration or non-financial considerations that MWRA provides to communities to alleviate the negative effects of major construction projects.

Molybdenum (Mo): A metallic element that resembles chromium and tungsten in many properties, and is used in strengthening and hardening steel. Mo is a trace element in plant and animal metabolism. The concentration of molybdenum in sludge products is strictly regulated.

NACWA (Nation Association of Clean Water Agencies): NACWA represents the interests of publicly owned wastewater treatment plants. NACWA is involved in all areas of water quality protection including the development of environmental legislation and assisting federal regulatory agencies in the implementation of environmental programs.

NEFCo: New England Fertilizer Company - The contractor responsible for the operation of processing sludge into fertilizer pellets at MWRA's residuals processing plant located in Quincy. NEFCo is also responsible for marketing and distributing the pellets and disposing of any product that is not marketable.

National Pollutant Discharge Elimination System (NPDES) Permit: A permit issued by EPA in conjunction with DEP that governs wastewater discharges into surface waters.

NHS (Northern High Service): Project that involves a series of water system pipeline improvements in the MWRA's Northern High Service Area.

Nitrification: An aerobic process in which bacteria changes the ammonia and organic nitrogen in wastewater into oxidized nitrogen (usually nitrate). Second-stage BOD is sometimes referred to as the nitrification stage (first-stage BOD is called the carbonaceous stage). Also, a similar process in the water distribution system, where ammonia from chloramine can be used by nitrifying bacteria, resulting in a reduced chlorine residual, and the potential for additional bacteria growth.

OCC: Metropolitan Operations Control Center, located at MWRA's Chelsea Facility.

OEP (Office of Emergency Preparedness): The Office of Emergency Preparedness has oversight over security, exercises, emergency operations, planning, the Emergency Services Unit and critical infrastructure protection.

OMS (Operations Management Systems): OMS correlates PICS data with laboratory analysis to track and analyze DITP's process performance with regard to the plant's discharge permit from EPA and DEP and with respect to cost effective operation.

Operating Reserve: A fund established to adequately reserve for operating contingencies, required by MWRA's bond resolution to be not less than one-sixth of its annual operating expenses.

Organic Matter: Material containing carbon, the cornerstone of plant and animal life. It originates from domestic and industrial sources.

Other User Charges: Revenue received per agreements MWRA has for provision of water, sewer, and other services to entities other than communities which are charged assessments.

Outfall: The pipe or structure where effluent is discharged into receiving waters.

Ozonation: The application of ozone to water, wastewater, or air, generally for the purposes of disinfection or odor control. The Carroll Water Treatment Plant (CWTP) employs the ozonation process to inactivate pathogens, including *cryptosporidium*, with lower levels of DBPs.

Ozone: A strong disinfectant made from oxygen and electrical energy. Ozone is effective against *cryptosporidium*.

Pathogens: Harmful organisms, often called germs that can cause disease. Waterborne pathogens (or the diseases they cause) include *giardia*, *cryptosporidium*, cholera, typhoid, *E.coli*, Hepatitis A, *legionella*, and MAC.

Payments in Lieu of Taxes (PILOT): Amounts which MWRA pays each fiscal year to cities and towns for land owned by the Commonwealth in the Quabbin, Ware River, Wachusett, and Sudbury watersheds. Consistent with the provisions of MWRA's Enabling Act, these payments are based on the past commitments of the Commonwealth of Massachusetts.

Penalty Revenue: Revenue derived from penalties assessed by MWRA to violators of its sewer use regulations.

Performance Measure: An indicator of the work and/or service provided, defined by output, work or service quality, efficiency, effectiveness, or productivity.

Performance Objective: A statement of proposed accomplishments or attainments that is short-term in nature and measurable.

PICS (Process Instrumentation and Control System): PICS provides real-time operations data from systems throughout Deer Island (including system status, flow, etc.).

Plume: The rising discharge of treated wastewater effluent from a treatment plant outfall pipe.

Preliminary Treatment: The process of removing large solid objects, sticks, gravel, and grit from wastewater.

Pretreatment: The reduction or elimination of pollutant properties in wastewater prior to discharge into a sewer system.

Primacy: Primary enforcement authority for Federal Safe Drinking Water Act regulations delegated to a state by the Environmental Protection Agency (EPA).

Primary Treatment: A wastewater treatment process that takes place in a rectangular or circular tank and allows substances in wastewater that readily settle or float to be separated from the water being treated. Primary treatment results in 50-60% removal of suspended solids and 30-34% removal of BOD.

Program: An organized group of activities and the resources to carry them out aimed at achieving one or more related objectives.

Rate Revenue: Revenue received from annual assessments of communities within MWRA's service area for water and sewer services.

Rate Stabilization Reserve: A fund established by the Board of Directors that is used to reduce rate revenue requirements. MWRA finances this reserve with unexpended or surplus funds available from the Current Expense Budget at the end of each fiscal year.

RCM (Reliability Centered Maintenance): A maintenance strategy adopted at Deer Island in FY00 for critical systems. RCM is a failure modes and effects process that involves maintenance, operations and engineering staff in the development of preventative maintenance and operation plans for plant systems.

Relief Sewer: A sewer built to carry flows in excess of the capacity of an existing sewer.

Renewable Energy: Energy from a source that is not depleted when used, such as wind or solar power

RGGI: The Regional Greenhouse Gas Initiative is a mandatory, market-based program in the United States to reduce greenhouse gas emissions. The program involves selling emission allowances through auctions and investing the proceeds in demand-side management and clean energy technology projects.

Remote Headworks: The initial structures and devices of a treatment plant set apart by some distance from the plant site.

Renewal and Replacement Reserve: A fund established to adequately reserve for the cost of capital improvements not provided for by funds available through the Capital Improvement Program or the Current Expense Budget.

Residuals: The by-products of the wastewater treatment process, including scum (floatables), grit and screenings, primary sludge, and secondary sludge.

Revenue Bonds: Bonds payable from a specific source of revenue and which do not pledge the full faith and credit of the issuer.

RPS (Renewable Portfolio Standards): State policies which mandate a state to generate a percent of its electricity from renewable resources. Qualified renewable generation facilities for the MWRA include: the Steam Turbine Generator (STG) and a variety of Hydroelectric, Wind

and Solar units. The MWRA is issued electronic certificates for each megawatt hour of electricity produced from the digester gas, which is considered renewable energy. RPS credits are a source of revenue for the MWRA.

Safe Yield Model: The equation used to determine the maximum dependable draft that can be made continuously on a water supply source during a period of years during which the probable driest period or period of greatest deficiency in water supply is likely to occur.

SAMS: Sewerage Analysis and Management System – A database which contains specifications of the location, size, and condition of MWRA wastewater interceptors and appurtenances and which produces maps for use by MWRA and outside parties. Now referred to as Wastewater GIS.

Sanitary Sewers: In a separate system, pipes that carry only domestic wastewater.

SCADA: Supervisory Control and Data Acquisition - Equipment for monitoring and controlling water or wastewater facilities remotely.

SCBA: Self-contained breathing apparatus.

Screenings: Large items such as wood and rags that are collected from wastewater in coarse screens prior to primary treatment.

Scum: Floatable materials such as grease, oil, and plastics that are skimmed from the surface of wastewater as it flows through large settling tanks.

SDWA: Safe Drinking Water Act - A Federal law enacted in 1986 and amended in 1996 that requires EPA to establish national primary drinking water regulations for water suppliers which consist of MCLs or treatment techniques.

Secondary Treatment: Usually following primary treatment, secondary treatment employs microorganisms to reduce the level of BOD and suspended solids in wastewater.

Sedimentation Tanks: Settling tanks where solids are removed from sewage. Wastewater is pumped to the tanks where the solids settle to the bottom or float on the top as scum. The scum is skimmed off the top, and solids on the bottom are pumped out for further treatment and/or final disposal.

Seeding: The initial filling of sludge into digesters.

Sensitive user: A member of a group within the general population likely to be at greater risk than the general population of adverse health effects due to exposure to contaminants in drinking water. Sensitive users include infants, children, pregnant women, the elderly, and individuals with histories of serious illness.

Septic Tanks: Tanks used for domestic wastes when a sewer line is not available to carry them to a treatment plant. Periodically, the septage is pumped out of the tanks, usually by commercial firms, and released into a wastewater treatment system.

Shotcrete: Mortar or concrete conveyed through a hose and projected at high velocity onto a surface; also known as air-blown mortar, pneumatically applied sprayed mortar, or gunned concrete.

Siphon: A closed conduit, a portion of which lies above the hydraulic grade line, resulting in a pressure less than atmospheric and requiring a vacuum within the conduit to start flow. A siphon utilizes atmospheric pressure to effect or increase the flow of water through the conduit.

Slip Lining: Insertion by pushing or pulling of lines fabricated of plastic, concrete cylinder pipe, reinforced concrete, or steel through existing conduits from access pits.

Sludge: Material removed by sedimentation during primary and secondary treatment. Sludge includes both settled particulate matter and microorganisms and is the single largest component of wastewater residuals. At the time sludge is removed during the treatment process, it contains only 0.5% to 5% solid content by weight. It has the appearance of muddy water.

Sodium Hypochlorite (NaOCl): A liquid form of chlorine that MWRA uses in the disinfection and/or odor processes at the Deer Island Treatment Plant, various other Wastewater facilities, and the Carroll Water Treatment Plant (CWTP).

Storm Sewers: Separate systems of pipes that carry only water runoffs from roofs, streets, and parking lots during storms.

Surcharging: Loads on a system beyond those normally anticipated; also, the height of wastewater in a sewer manhole above the crown of the sewer when the sewer is flowing completely full.

Suspended Solids: The particulate matter contained in wastewater.

SWTR: Surface Water Treatment Rule – A Federal rule promulgated in 1989 that affects all utilities using surface waters or waters under the influence of surface waters. SWTR requires filtration unless certain criteria on source water quality, watershed control, and disinfection effectiveness can be met (see also ESWTR).

Telemetry: Remote measuring or monitoring devices connected to a central monitoring station via telephone lines.

TCR: Total Coliform Rule – A federal rule that requires monitoring of water distribution systems for coliform bacteria and chlorine residual. No more than 5% of the coliform samples in a month can be positive.

TOC: Total Organic Carbon - A measure of the amount of organic material in water. Often used as a surrogate for disinfectant demand or DBP precursors.

Transition: A short section of conduit used as a conversion section to unite two conduits having different hydraulic elements.

TTHM: Total Trihalomethanes - A class of disinfection by-products, related to primarily chlorine disinfection (see D/DBP Rule).

TRAC: Toxic Reduction and Control – The department responsible for MWRA’s industrial pretreatment program.

TSS (Total Suspended Solids): A measure of the settleable solids and non-settleable solids in wastewater. During the primary treatment process, flows are routed to primary treatment clarifiers that remove about half of the pollutants brought to the plant in typical wastewater (50-60% of total suspended solids and up to 50% of pathogens and toxic contaminants are removed).

Ultraviolet (UV) Treatment: Ultraviolet light is an effective method of disinfection in drinking and wastewater applications. UV light damages the DNA of microbes, and is particularly effective against cryptosporidium. Federal regulations require two primary disinfectants for unfiltered water systems. The Carroll Water Treatment Plant added UV as a second disinfectant (in addition to ozonation) in February 2014 and the Quabbin Disinfection Facility (now named the William A. Brutsch Water Treatment Facility) in Ware added UV (as a second disinfection in addition to chlorine) in October 2014.

United States Geological Survey (USGS): The federal agency that collects Geographic Information System (GIS) data for developing mapping protocols.

Vector Jet Truck: A vehicle used to clean and/or remove blockages from sewer lines by pushing and/or pulling fluids in the sewer.

VMM: Vehicle Management and Maintenance – The program responsible for management and maintenance of MWRA’s vehicles and heavy equipment.

WASM (Weston Aqueduct Supply Mains): Project involving the rehabilitation of the four Weston Aqueduct Supply Mains that carry potable water to MWRA’s service area. When complete, they will transmit about one-third of the water to MWRA’s service area and the City tunnel will carry the remaining two-thirds.

Wastewater: The water carried by sewers serving residences and businesses that enters wastewater facilities for treatment. Wastewater is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, and/or agricultural and can encompass a wide range of potential contaminants and concentrations.

Wastewater Treatment Plant (WTP): A facility containing a series of tanks, screens, filters, and other equipment and processes for removing pollutants from wastewater.

Water Supply Trust: The legislature further enhanced the ability of the Department of Conservation and Recreation (DCR) Office of Watershed Management to protect the source waters of the MWRA drinking water supply by establishing a Water Supply Protection Trust in 2004. The trust provides a more efficient mechanism for MWRA's direct funding of the Office of Watershed Management. The Water Supply Protection Trust has a five person board of trustees responsible for approving the Annual Work Plan and Budget each spring for the following fiscal year.

Watershed Reimbursement: An amount that MWRA pays to the Department of Conservation and Recreation (DCR) each fiscal year for maintaining and managing the primary sources of MWRA's water supply (watersheds) in accordance with the laws of the Commonwealth of Massachusetts. The amount of the reimbursement is determined by prevailing legislation.

Wholesale Water and Sewer Services: Potable water and wastewater collection, transport, delivery, and treatment services that MWRA provides to communities. Communities provide the same services directly to retail customers or end users.

WOCC: Western Operations Control Center, located at the Carroll Water Treatment Plant.

APPENDIX F
FY17 Final Current Expense Budget - Capital Financing Detail (as of 12/31/15)

	Outstanding as of 12/31/15	Total	Sewer	Water
SRF¹				
Unrefunded (93A, 93D, 95A,98C)	\$ 1,375,000	\$ 3,532	\$ 3,532	\$ -
1999E Sewer		392,808	392,808	-
1999E Water	9,368,956	579,892	-	579,892
1999F	215,625,000	20,294,527	20,294,527	-
2000E Sewer		2,843,928	2,843,928	-
2000E Water	52,225,067	572,208	-	572,208
2001C Water	2,030,000	248,060	-	248,060
2001D Sewer		384,595	384,595	-
2001D Water	2,944,867	81,482	-	81,482
2002H Sewer		3,153,402	3,153,402	-
2002H Water	76,815,000	1,550,234	-	1,550,234
2002I Sewer		100,707	100,707	-
2002I Water	1,730,198	1,465	-	1,465
2003A	645,755	68,484	-	68,484
2003B	1,834,287	222,128	-	222,128
2003C Sewer		1,361,152	1,361,152	-
2003C Water	33,061,399	964,765	-	964,765
2004C Sewer		544,693	544,693	-
2004C Water	8,416,542	91,298	-	91,298
2004D Sewer		2,689,064	2,689,064	-
2004D Water	48,960,000	642,619	-	642,619
2005C Sewer		419,088	419,088	-
2005C Water	5,510,356	68,557	-	68,557
2005D Sewer		3,045,132	3,045,132	-
2005D Water	55,006,594	801,616	-	801,616
2005E Sewer		24,961	24,961	-
2005E Water	273,433	5,479	-	5,479
2006C Sewer		484,121	484,121	-
2006D Sewer		2,807,930	2,807,930	-
2006D Water	62,905,137	1,607,466	-	1,607,466
2006E Sewer		22,883	22,883	-
2006E Water	324,572	10,281	-	10,281
2007C Sewer		307,061	307,061	-
2007C Water	4,335,508	181,033	-	181,033
2007D Sewer		1,148,187	1,148,187	-
2007E Sewer		3,242,827	3,242,827	-
2007E Water	58,726,123	1,259,793	-	1,259,793
2008G Sewer		402,460	402,460	-
2008G Water	4,531,876	82,117	-	82,117
2009C Sewer		5,742,088	5,742,088	-
2009C Water	85,912,800	1,885,220	-	1,885,220
2009D Sewer		647,609	647,609	-
2009D Water	9,417,934	85,620	-	85,620
2010D Sewer		1,423,132	1,423,132	-
2010D Water	40,427,414	1,436,853	-	1,436,853
2011A Sewer		383,189	383,189	-
2011A Water	8,751,731	367,968	-	367,968
2012C Sewer		524,324	524,324	-
2012C Water	9,841,229	254,745	-	254,745
2012D Sewer		2,857,384	2,857,384	-
2012D Water	45,985,970	532,418	-	532,418
2013B Sewer		2,214,434	2,214,434	-
2013B Water	36,878,768	533,721	-	533,721
2014C Sewer		283,380	283,380	-
2014C Water	9,803,204	385,121	-	385,121
2015A Sewer		2,646,508	2,646,508	-
2015A Water	63,740,399	979,497	-	979,497
2015B Sewer		260,517	260,517	-
2015B Water	5,474,627	152,224	-	152,224
Replacement Loan Sewer (2016)		382,017	382,017	-
Replacement Loan Water (2016)		360,893	-	360,893
Pool 19 Sewer		2,865,526	2,865,526	-
Pool 19 Water		1,834,828	-	1,834,828
Replacement Loan Sewer (2017)		382,017	382,017	-
Replacement Loan Water (2017)		360,893	-	360,893

APPENDIX F
FY17 Final Current Expense Budget - Capital Financing Detail (as of 12/31/15)

	Outstanding as of 12/31/15	Total	Sewer	Water
Pool 20 Sewer		2,580,745	2,580,745	
Pool 20 Water		1,644,015	-	1,644,015
Total SRF Debt	\$ 987,656,759	\$ 86,718,919	\$ 66,865,927	\$ 19,852,992
MWRA Senior Debt				
2002J New	273,180,000	63,203,625	56,883,263	6,320,363
2002J Refunding	1,000,000	50,000	25,000	25,000
2005A Refunding	263,845,000	18,607,688	8,373,459	10,234,228
2005B Refunding	80,290,000	4,014,500	1,338,033	2,676,467
2006A New	62,320,000	2,492,800	-	2,492,800
2006B Refunding	169,925,000	7,951,550	5,963,663	1,987,888
2007A New	188,150,000	8,440,687	1,434,917	7,005,771
2007B Refunding	647,950,000	34,017,375	28,574,595	5,442,780
2009A New	64,240,000	3,212,000	2,409,000	803,000
2009B Refunding	259,190,000	12,646,438	9,105,435	3,541,003
2010A New	85,150,000	4,169,000	2,918,300	1,250,700
2010B Refunding	152,940,000	7,182,000	4,165,560	3,016,440
2011B New	130,765,000	6,313,475	4,419,433	1,894,043
2011C Refunding	321,880,000	15,853,075	6,182,699	9,670,376
2012A New	128,090,000	6,347,475	3,173,738	3,173,738
2012B Refunding	86,775,000	4,240,325	890,468	3,349,857
2013A Refunding	165,640,000	46,030,450	25,777,052	20,253,398
2014D New	68,275,000	3,357,250	2,282,930	1,074,320
2014E Refunding	25,295,000	4,171,750	3,650,281	521,469
2014F Refunding	141,410,000	6,396,700	1,982,977	4,413,723
FY16 New Money (2016)		6,505,000	3,252,500	3,252,500
FY17 New Money (2017)		5,194,444	2,597,222	2,597,222
Potential Defeasance Impact		(1,071,350)	(807,100)	(264,250)
Total Senior	\$ 3,316,310,000	269,326,256	\$ 174,593,424	\$ 94,732,833
Subordinate Debt				
1999B	\$ 58,600,000	\$ 5,804,500	\$ 3,482,700	\$ 2,321,800
2002C Refunding	35,120,000	1,141,400	380,429	760,971
2008A Refunding	234,845,000	14,744,498	12,975,158	1,769,340
2008C Refunding	105,620,000	17,296,112	16,604,268	691,844
2008E Refunding	133,640,000	8,324,436	7,658,481	665,955
2008F Refunding	50,000,000	1,625,000	146,250	1,478,750
2012E Refunding	62,830,000	3,464,820	727,612	2,737,208
2012F Refunding	60,300,000	3,382,595	710,345	2,672,250
2012G Refunding	49,780,000	10,485,094	10,065,690	419,404
2014A Refunding	50,000,000	1,625,000	146,250	1,478,750
2014B Refunding	64,755,000	2,104,538	189,408	1,915,129
Total Subordinate Debt	\$ 905,490,000	69,997,992	\$ 53,086,591	\$ 16,911,401
Total SRF & MWRA Debt Service²	\$ 5,209,456,759	426,043,167	\$ 294,545,942	\$ 131,497,225
Other Capital				
Water Pipeline Commercial Paper	\$ 149,000,000	4,149,242	-	4,149,242
Current Revenue/Capital ³		18,000,000	18,000,000	-
Capital Lease		3,217,060	1,923,096	1,293,964
Total Other Capital	\$ 149,000,000	\$ 25,366,302	\$ 19,923,096	\$ 5,443,207
Total Capital Financing (before Debt Service Offsets)	\$ 5,358,456,759	451,409,469	\$ 314,469,037	\$ 136,940,432
Debt Service Offsets				
Debt Service Assistance		-	\$ -	\$ -
Bond Redemption		-	-	-
Total Debt Service Offsets		-	-	-
Total Capital Financing	\$ 5,358,456,759	451,409,469	\$ 314,469,037	\$ 136,940,432

¹ SRF debt service payments reflect net MWRA obligations after state and federal subsidies.

² Numbers may not add due to rounding.

³ Current Revenue/Capital is revenue used to fund ongoing capital projects.