

MASSACHUSETTS WATER RESOURCES AUTHORITY



Fiscal Year 2018 Proposed CURRENT EXPENSE BUDGET

BOARD OF DIRECTORS

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Jennifer L. Wolowicz

Prepared under the direction of

Frederick A. Laskey, Executive Director
Michael J. Hornbrook, Chief Operating Officer
Thomas J. Durkin, Director, Finance

together with the participation of MWRA staff.



MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
100 First Avenue – Building 30
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

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

April 2017

Dear Chairman Taverna:

At its February 15, 2017 meeting, the MWRA Board of Directors voted to transmit the FY18 Proposed Current Expense Budget to the Advisory Board for its review and comment.

The FY18 Proposed Budget recommends a combined assessment increase of 3.8% in-line with the projection for FY18 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 FY18 Proposed Budget reflects the benefits of a planned \$20.0 million defeasance in FY17 with targeted savings primarily in FY22. Besides the planned defeasances, the Authority is continuing to address the significant Other Post Employment Benefits (OPEB) and Pension obligations.

Total expenses are \$749.1 million, a \$29.5 million or 4.1% increase over the FY17 Budget. Capital financing costs at \$469.1 million remain the largest portion of the budget, representing 62.6% of the total expenses. Operating expenses are \$280.0 million, of which \$238.4 million is for direct expenses and \$41.6 million is for indirect expenses.

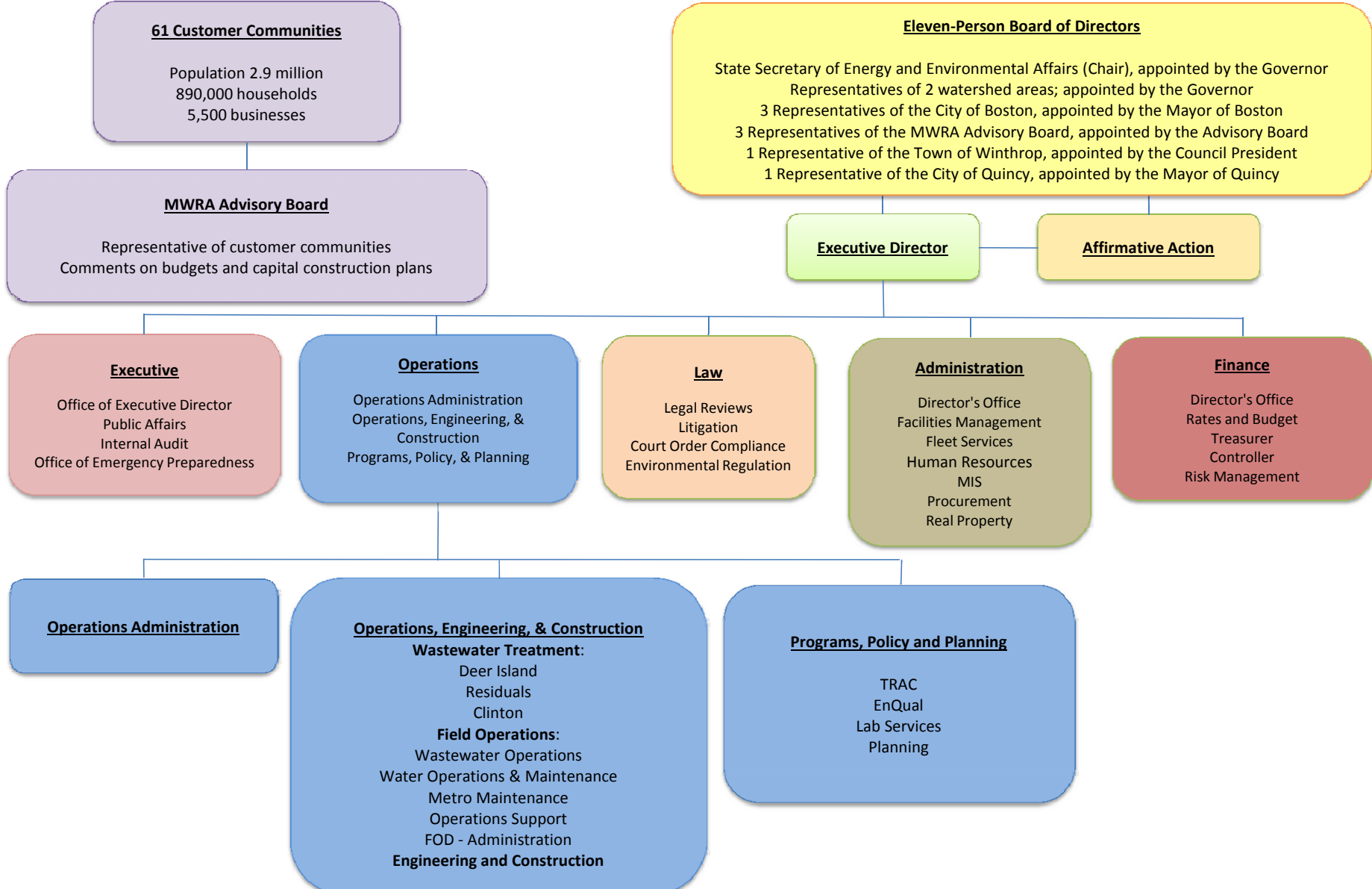
MWRA continues to employ a multi-year rates management strategy to promote sustainable and predictable assessment increases. As such, the assessment increases for FY19-22 are also estimated below 4%. However, the recent increase in the variable short-term rates, higher health insurance, higher chemicals and construction costs, coupled with potential tax code changes may represent a higher uncertainty in the FY18 Proposed Budget than in recent years. The Eversource remediation work to protect the Cross-Harbor Cable which provides electricity to Deer Island will put additional pressure on operating costs in FY18. The Proposed FY18 budget includes \$4.4 million for this project.

To ensure that the MWRA's long-term goals will continue to be met in future years, it is imperative to continue the conservative fiscally responsible budgeting practices while addressing all outstanding long-term liabilities.

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 FY18 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

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

Eleven-Person Board of Directors

State Secretary of Energy and 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

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 Organization and History

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.

Created by the Massachusetts legislature in 1985, MWRA assumed control of the water and sewer systems, including facilities, properties, and the right to utilize water withdrawn from system reservoirs that had formerly been the Sewerage and Waterworks Divisions of the Commonwealth of Massachusetts Metropolitan District Commission (MDC). The Commonwealth, under the management of the MDC Watershed Management Division (now the Department of Conservation and Recreation – Division of Watershed Management), retained ownership of real property, including the reservoirs and watersheds, the maintenance of which are included in MWRA's operating budget. In 1987, the legislature also transferred responsibility to operate and maintain the Clinton Wastewater Treatment Plant from the Commonwealth to the MWRA.

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.

Since 1985, the MWRA has invested over \$8.2 billion to modernize and improve the wastewater and waterworks systems serving its 61 member communities. In Fiscal Year 2017, the system serves approximately 2.9 million people and more than 5,500 businesses.

MWRA Goals and Performance Measures

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

During the year, MWRA measures actual performance on a monthly basis using various reporting tools. The monthly Financial Staff Summary reports on actual spending versus the budget and provides

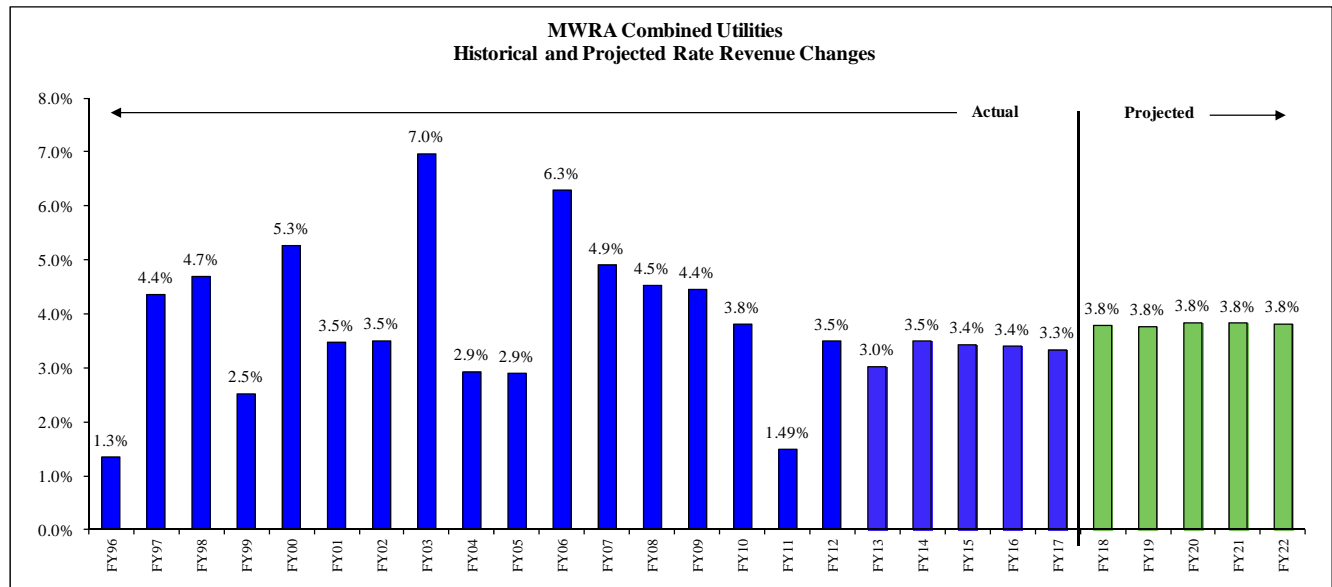
summary explanations of the variances at the line item level. At least twice a year staff prepares projections for the fiscal year-end with a similar level of explanations. The performance indicator reports (published by MWRA as the Orange and Yellow Notebooks) capture a variety of parameters regarding performance of each major functional area, on a monthly and quarterly basis.

Current Expense Budget Process Overview

Each year, MWRA prepares a Current Expense Budget that reflects the best available information for anticipated expenditures and revenues. MWRA transmits a proposed budget to the Advisory Board in February, with the anticipated assessment increase. The Advisory Board then 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. In June, MWRA's Board of Directors holds hearings on the budget to review recommendations by the Advisory Board and new information available since the budget was developed. Staff incorporates Board decisions from the hearings and presents a final budget and final assessments for approval in late June.

Proposed FY18 Budget Summary

The Proposed FY18 Current Expense Budget (Budget) has a combined utilities assessment increase of 3.79% with Rate Revenues totaling \$721.2 million. Rate Revenues account for nearly 96.3% of projected FY18 revenues. The graph below represents historical and projected assessment changes based on the Proposed FY18 Budget. The next four-year planning estimates, through FY22 (the most challenging year facing the Authority) also project assessment increases at 3.8%.



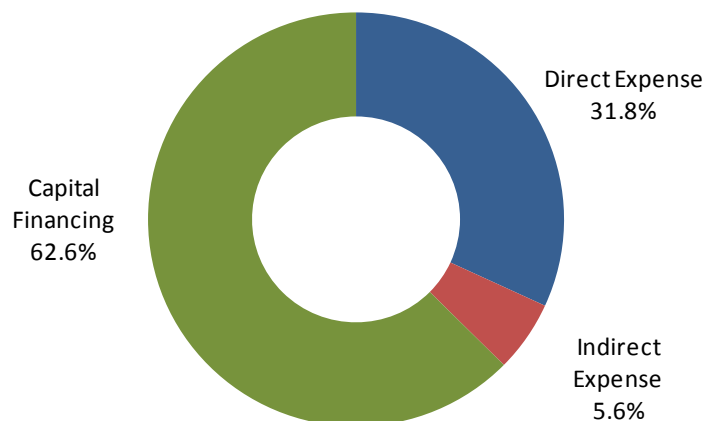
Measures taken by the Authority to achieve the 3.79% rate increase include:

- Continued practice of targeted defeasances;
- Budgeted 1,150 Full-Time Equivalent (FTE's) positions, the same as in FY17;
- Budgeted a \$10.9 million Debt Prepayment;
- Direct Expenses increased 5.2% versus FY17 budget, including preliminary cost estimates for the Deer Island cross harbor cable project;
- Indirect Expenses increased 9.5% versus FY17 budget due to increases in Addition to Reserves, Watershed Management, Additional Pension Deposit, Postemployment Benefits, Retirement Fund, and Insurance.

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.

Total expenses are \$749.1 million, an increase of \$29.5 million or 4.1% over the FY17 budget. Capital financing costs remain the largest component of the CEB and account for 62.6% of total expenses.

FY18 Current Expense Budget



Total expenses include \$469.1 million for Capital Financing costs and \$280.0 million for operating expenses, of which \$238.4 million is for Direct Expenses and \$41.6 million is for Indirect Expenses. The \$29.5 increase million over FY17 budget is due to higher Capital Financing expenses of \$14.0 million; higher Direct Expenses of \$11.9 million due to inclusion of preliminary cost estimates associated with the Deer Island cross harbor electrical cable project, Cost of Living Adjustments (COLA) for staff, and higher healthcare costs; and higher Indirect Expenses of \$39.7 million for Additions to Reserves, Watershed Management costs, and retirement/pension related costs.

The FY18 proposed Rate Revenue Requirement is \$721.2 million, an increase of \$26.4 million or 3.79% over FY17. The Proposed FY18 Budget revenues, excluding rate revenue, total \$27.9 million, an increase of \$3.1 million or 12.7% above the FY17 budget. The Proposed FY18 Budget non-rate revenue budget includes \$16.6 million in Other User Charges and Other Revenue and \$11.3 million for Investment Income. The majority of the increase reflects an increase in the Demand Response revenue generated by Deer Island and anticipated increased interest rates on investment income.

The table on the following page shows MWRA's Proposed FY18 Budget for revenue and expenses compared with the FY17 Budget and FY16 Actuals. Changes from FY17 to FY18 are described in the Revenue and Expense section of the Executive Summary.

Table I-1

TOTAL MWRA	FY16 Actuals	FY17 Approved Budget	FY18 Proposed Budget	Change FY18 Proposed Budget vs FY17 Approved Budget	
				\$	%
EXPENSES					
WAGES AND SALARIES	\$ 96,118,427	\$ 101,858,897	\$ 104,781,848	\$ 2,922,951	2.9%
OVERTIME	4,355,586	4,192,676	4,507,278	314,602	7.5%
FRINGE BENEFITS	19,131,139	20,242,324	21,515,134	1,272,810	6.3%
WORKERS' COMPENSATION	2,350,369	2,344,190	2,322,980	(21,210)	-0.9%
CHEMICALS	9,297,550	9,110,407	10,414,788	1,304,381	14.3%
ENERGY AND UTILITIES	18,744,867	21,541,078	25,750,207	4,209,129	19.5%
MAINTENANCE	30,978,045	31,080,642	32,496,381	1,415,739	4.6%
TRAINING AND MEETINGS	370,752	435,481	406,181	(29,300)	-6.7%
PROFESSIONAL SERVICES	5,886,717	6,531,939	6,685,715	153,776	2.4%
OTHER MATERIALS	6,186,216	6,219,630	6,697,290	477,660	7.7%
OTHER SERVICES	22,628,385	22,974,855	22,833,106	(141,749)	-0.6%
TOTAL DIRECT EXPENSES	\$ 216,048,053	\$ 226,532,117	\$ 238,410,908	\$ 11,878,791	5.2%
INSURANCE	\$ 1,953,053	\$ 1,997,898	\$ 2,113,452	115,554	5.8%
WATERSHED/PILOT/DEBT	27,469,847	24,291,268	25,024,006	732,738	3.0%
COMMONWEALTH DEBT PREPAYMENT	32,000,000	-	-	-	
HEEC PAYMENT	1,342,141	773,859	670,978	(102,881)	-13.3%
MITIGATION	1,520,000	1,558,000	1,596,950	38,950	2.5%
ADDITIONS TO RESERVES	(34,927)	(167,742)	2,062,526	2,230,268	N/A
RETIREMENT FUND	8,159,521	3,132,624	3,277,369	144,745	4.6%
ADDITIONAL PENSION DEPOSIT	-	1,500,000	1,800,000	300,000	20.0%
POSTEMPLOYMENT BENEFITS	5,224,848	4,876,050	5,035,422	159,372	3.3%
TOTAL INDIRECT EXPENSES	\$ 77,634,483	\$ 37,961,956	\$ 41,580,703	\$ 3,618,746	9.5%
STATE REVOLVING FUND	\$ 78,131,559	\$ 86,971,915	\$ 87,044,610	72,695	0.1%
SENIOR DEBT	275,085,817	268,472,557	263,121,111	(5,351,446)	-2.0%
SUBORDINATE DEBT	49,222,442	69,997,992	87,554,667	17,556,675	25.1%
LOCAL WATER PIPELINE CP	262,498	4,149,242	4,086,863	(62,379)	-1.5%
CURRENT REVENUE/CAPITAL	11,200,000	12,200,000	13,200,000	1,000,000	8.2%
CAPITAL LEASE	3,217,060	3,217,060	3,217,060	-	0.0%
DEBT PREPAYMENT	-	10,994,960	10,900,000	(94,960)	-0.9%
VARIABLE RATE SAVINGS	(12,873,173)	-	-	-	
DEFEASANCE ACCOUNT	-	-	-	-	
DEBT SERVICE ASSISTANCE	(873,804)	(873,804)	-	873,804	-100.0%
TOTAL DEBT SERVICE	\$ 403,372,399	\$ 455,129,922	\$ 469,124,311	\$ 13,994,389	3.1%
TOTAL EXPENSES	\$ 697,054,934	\$ 719,623,995	\$ 749,115,922	\$ 29,491,926	4.1%
REVENUE & INCOME					
RATE REVENUE	\$ 672,440,000	\$ 694,878,500	\$ 721,238,000	26,359,501	3.79%
OTHER USER CHARGES	8,783,469	8,752,834	8,964,366	211,532	2.4%
OTHER REVENUE	15,749,464	6,519,171	7,658,774	1,139,603	17.5%
RATE STABILIZATION	-	-	-	-	
INVESTMENT INCOME	10,303,841	9,473,490	11,254,782	1,781,292	18.8%
TOTAL REVENUE & INCOME	\$ 707,276,774	\$ 719,623,995	\$ 749,115,922	\$ 29,491,928	4.1%

FY18 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.
- Continue to plan and develop long-term strategies to ensure sustainable and predictable assessments to our communities.
- Continue to invest in asset protection to ensure adequate availability of equipment and facilities to support core operations.
- Continue to aggressively pursue renewable and sustainable energy resources to reduce the environmental impacts of daily operations, increase energy efficiencies, and reduce overall operating costs.
- Continue to advocate MWRA interests in new and developing regulatory issues.

FY18 Major Initiatives:

- Plan for implementation of requirements of the new National Pollutant Discharge Elimination System (NPDES) Permits for DITP (assume new permit is issued for half of FY18) and Clinton Wastewater Treatment Plant is in effect for all of FY18.
- Continue to meet or surpass environmental compliance standards for DITP as required by the National Pollutant Discharge Elimination System (NPDES) permit and air quality permits.
- Develop options for mitigating the significant potential cost impacts for the sewer communities regarding the Eversource cross-harbor cable protection project.
- Continue to identify, assess, and implement initiatives to reduce energy demand and increase energy self-generation in MWRA's system. Enter into a new Memorandum of Understanding with Eversource for payment of energy reduction incentives. Pursue grant-funding and cost-sharing arrangements to defray costs of implementing these initiatives.

FY17 Mid-Year Accomplishments:

- Completed a \$104.3 million refunding bond transaction on August 2, 2016. The refunding resulted in \$9.8 million or 9.6% present value savings and \$13.2 million in gross debt savings over the life of the bonds.
- Executed an \$8.5 million defeasance of outstanding senior principal in September 2016. This defeasance reduces the debt service requirement between FY18 and FY20 by a total of \$9.7 million thereby reducing the rate of increase to the Rate Revenue Requirement in those years.

- 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.
- Expanded MWRA's primary security system and participated in the planning and execution of a week-long cyber security drill defending critical infrastructure.
- Received revenue for energy generated at numerous facilities including the following: hydroelectric \$184,000 from Oakdale Station, \$39,200 from Cosgrove Station, and \$7,500 from the Loring Road Pump Station; wind of \$176,000 from Charlestown Pump Station; and solar of \$43,000 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, non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits, and receipt of utility rebates for CEB-funded efficiency projects resulted in \$878,000 in revenue for the first six months of FY17. Deer Island also self-generated 42% of the plant's total required power during that time period.
- Processed 93.7 average tons per day of sludge at the Pelletization Plant and disposed of 2,453 tons of grit and screenings through a contracted vendor. .
- In water system, exercised 405 and replaced nine mainline valves; exercised 212 and replaced five blow-off valves.
- In the wastewater system, inspected 16.94 miles and cleaned 18.28 miles of MWRA pipeline. Inspected 492 structures and rehabilitated 94 manholes. Also inspected 17 and cleaned 36 inverted siphon barrels.
- At DITP, treated 99.9% of flow through secondary and met secondary permit limits at all times. Operated DITP without any NPDES Permit violations for the first six months of FY17.

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 Proposed FY18 Budget.

Revenue

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

In the Proposed FY18 Budget, 96.3% of revenue is derived from rate revenue. The remaining 3.7% 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

Under the Proposed FY18 Budget, the MWRA will raise \$721.2 million of its total revenue requirements from water and sewer assessments to member communities. Of the \$721.2 million, \$477.8 million will fund the sewerage system, an increase of 3.7% as compared to FY17; and \$243.4 million will fund the water system, an increase of 3.9% as compared to FY17.

SOURCES & USES OF FUNDS*		
\$ in Millions		
<i>Sources of Funds</i>		
Other User Charges	\$9.0	1.2%
Other Revenue	7.7	1.0%
Investment Income	11.3	1.5%
Rate Revenue	721.2	96.3%
Rate Stabilization	0.0	0.0%
TOTAL REVENUE	\$749.1	100.0%
<i>Uses of Funds</i>		
Total Expenses before Debt		
Service Offsets	\$469.1	
Less:		
Debt Service Assistance	-	
Bond Redemption	-	
Sub-Total Net Expenses	469.1	
Capital Financing	469.1	62.6%
Direct Expenses	238.4	31.8%
Indirect Expenses	41.6	5.6%
TOTAL EXPENSES	\$749.1	100.0%
TOTAL EXPENSES Less Offsets	\$749.1	

*May not add up due to rounding

Non-Rate Revenue

Other User Charges

Other User Charges include revenues derived from the provision of water and sewer services to communities and other entities under special agreements. Other User Charges in the FY18 Proposed Budget total \$9.0 million, a slight increase over FY17 budget and includes \$4.9 million for Chicopee Valley Aqueduct (CVA) communities, \$1.7 million for Deer Island water usage, \$727,000 for entrance fees from member communities, and \$500,000 for the Commonwealth's partial reimbursement for Clinton Wastewater Treatment Plant expenses. Other User Charges are \$212,000 or 2.4% more than the FY17 Budget which is mainly due to assessment increases related to increases for Lancaster and Water Treatment Plant Residuals assessments.

Other Revenue

Other Revenue is budgeted at \$7.7 million, an increase of \$1.1 million or 17.5% from the FY17 budget, due to projected revenue from ISO NE load response program on in increase in the payment rate per kilowatt. Other Revenue includes \$2.2 million in permit fees and penalties, \$4.4 million for the sale of Renewable Portfolio Credits, sale of generated power, and revenues for demand response programs.

Investment Income

MWRA earns interest income by investing funds in both long and short-term investments vehicles governed by Section 522 and 523 of the General Bond Resolution. The FY18 Proposed Budget includes \$11.3 million in investment income, an increase of \$1.8 million or 18.8% from the FY17

budget due to higher projected interest rates assumptions. FY18 short-term interest rate assumption is 1.25% which is 65 basis points greater than FY17.

Non-Recurring Revenue

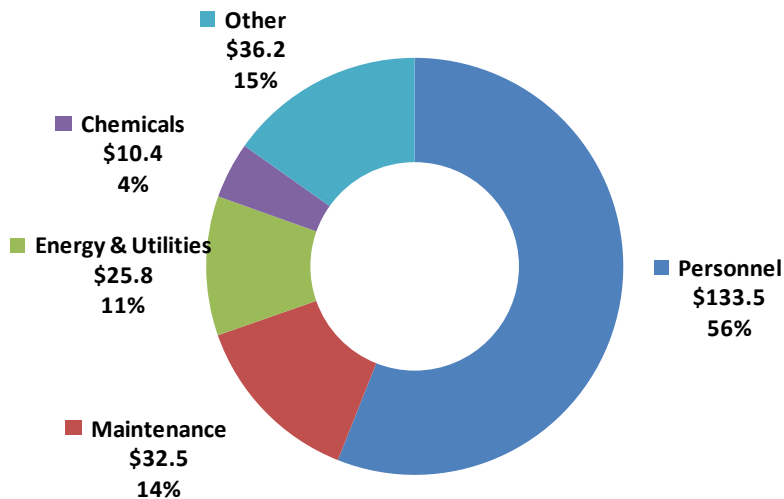
Non-Recurring Revenue is one-time revenue used in a given fiscal year to reduce assessments to member communities. In any fiscal year when annual revenues exceed expenses, MWRA may transfer the unexpended amount to the rate stabilization reserve. Within certain limits, MWRA may use this money to reduce 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 FY18 Proposed Budget, no Rate Stabilization fund usage is projected.

Direct Program Expenses

The Proposed FY18 Direct Expense Budget is \$238.4 million, \$11.9 million or 5.2% above the FY17 budget. The principal drivers for the increase are higher energy costs primarily associated with the cross harbor electrical cable project. Wages and salaries increased due to cost of living adjustments (COLAs); higher maintenance costs; chemical cost for assumed half of year of the new National Pollutant Discharge Elimination System (NPDES) permit and new contracts; and fringe benefits for projected healthcare cost increases. 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.

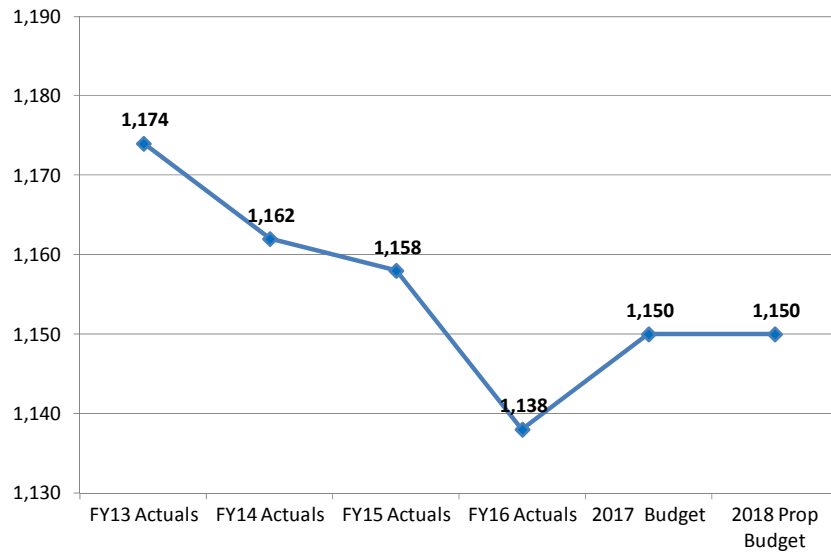
The chart below combines related direct expense line items into general cost categories and shows that labor costs (wages and salaries, overtime, fringe benefits, workers' compensation, and training) are the largest component of the direct expense budget 56%, other (professional services, other materials, and other services) 15%, maintenance 14%, energy & utilities 11%, and chemicals 4%.

Direct Expenses by Category
\$'s in Millions



Wages and Salaries – The budget includes \$104.8 million for Wages and Salaries as compared to \$101.9 million in the FY17 budget, an increase of \$2.9 million or 2.9%. Regular Pay is 98.3% of total Wages and Salaries and increased by \$3.0 million over the FY17 budget. On a Full-Time-Equivalent (FTE’s) basis, the Authority has budgeted 1,150 FTE, the goal recommended to be achieved with a five-year time frame by Amawalk consultants in a 2012 staffing study. New hires and backfills of vacant positions continue to be managed at the agency level and addressed on a case-by-case basis by senior management.

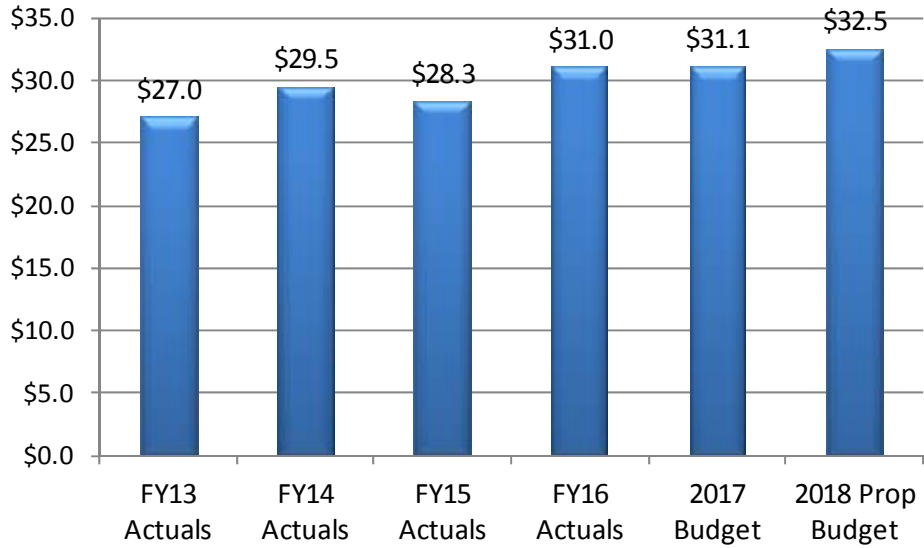
Average Full-Time Equivalents



Fringe Benefits – The budget includes \$21.5 million for Fringe Benefits, an increase of \$1.3 million or 6.3% from the FY17 budget. Health Insurance premiums total \$18.6 million, an increase of \$1.1 million or 6.3% from the FY17 budget largely due to anticipated cost increases.

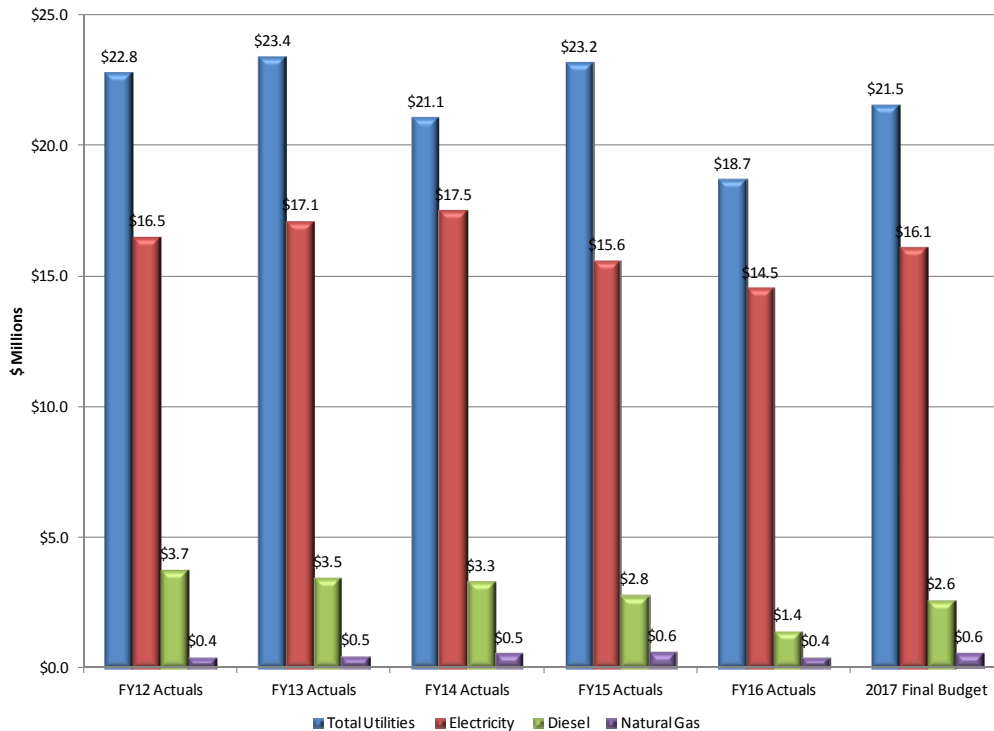
Maintenance – The budget includes \$32.5 million for Maintenance projects, an increase of \$1.4 million or 4.6% from the FY17 budget. The FY18 Maintenance increase is associated with project specific maintenance work. Over the past 5 years, the general trend in maintenance spending has been increasing, consistent with an organization goal to adequately fund core operations and protect the Authority’s assets. Asset protection is a growing priority on both the current expense and capital improvement budgets.

Maintenance



Utilities – The budget includes \$25.8 million for Utilities, which is an increase of \$4.2 million or 19.6% from the FY17 Budget. The increase is for diesel fuel of \$6.2 million to run the CTG’s during work associated with the cross harbor electrical cable project. This is offset by a reduction of electricity of \$2.5 million. The budget funds \$14.2 million for Electricity, \$8.7 million for Diesel Fuel, \$2.2 million for Water, and \$590,000 for Natural Gas. Without the anticipated cable project, utilities in total are \$500,000 or 2.3% higher than FY17.

Utilities



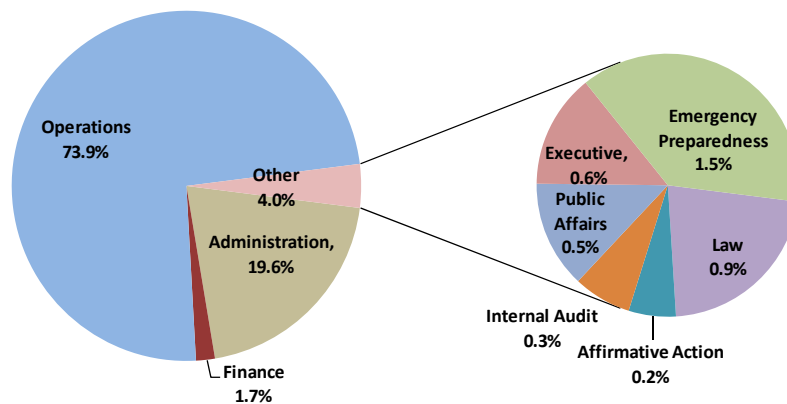
Chemicals – The budget includes \$10.4 million for Chemicals, an increase of \$1.3 million or 14.3% from FY17 budget, mainly due to assuming half a year of the new NPDES permit for Deer Island; price increases for Sodium Hypochlorite, Soda Ash, and Ferric Chloride, as well as updated assumptions for usage and pricing based on the most recent information on the other chemicals. The new NPDES permit for Deer Island is projected to have more stringent requirements for enterococcus treatment compliance.

Other Services – The budget includes \$22.8 million for Other Services, a decrease of \$142,000 or 0.6% from the FY17 Budget. The budget includes funding of \$12.8 million for Sludge Pelletization, \$3.7 million for Space/Lease Rentals and related expenses for the Charlestown Navy Yard, and Chelsea facilities, \$2.0 million for Voice and Data costs, \$1.4 million for Other Services, and \$1.2 million for Grit & Screenings removal. The largest decrease is for Sludge Pelletization of \$298,000 due to deflation. This is offset by increases in Membership/Dues/Subscriptions, Printing & Duplicating, Space/Lease Rentals, and Other Services.

Functional Area Budget Summary

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

**MWRA Direct Expense Budget
By Division**

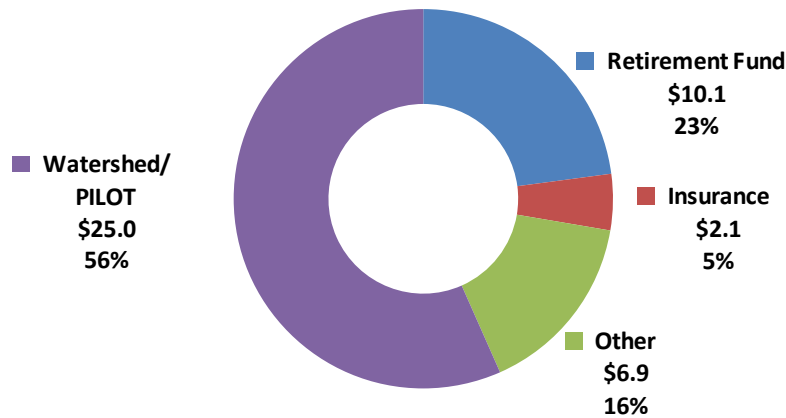


Indirect Program Expenses

The FY18 Proposed Indirect Expense Budget is \$41.6 million, \$3.6 million or 9.5%, above the FY17 Budget.

The following graph combines related 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 at 56% followed by Retirement Fund at 23%, Other (for items such as HEEC, Mitigation, and Addition to Reserves) at 16%, and Insurance at 5%.

Indirect Expenses by Category \$'s in Millions



Insurance

MWRA purchases property and casualty insurance from external insurance carriers with a self-insured retention of \$2.5 million dollars and Worker’s Compensation Excess insurance with a self-insured retention of \$500,000 per claim. The budget includes \$2.1 million for Insurance, an increase of \$116,000 or 5.8% as compared to the FY17 Budget. The FY18 Budget for premiums was based on existing premiums adjusted for inflation and market conditions and the claims budget was based on the five year average of Actuals. The budget includes \$1.7 million for premiums and fees and \$404,000 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. The next insurance consultant review is due in February 2017..

Watershed Reimbursement/PILOT

The Enabling Act directs MWRA to pay the Commonwealth of Massachusetts for several statutory obligations: Payment in Lieu of Taxes (PILOT) for Commonwealth-owned land in the watersheds and operating expenses of the Division of Water Supply Protection. The budget includes \$25.0 million for the Division of Water Supply Protection, an increase of \$733,000 or 3.0% versus the FY17 Budget. The increase is primarily due to higher operating expenses and PILOT payments in FY18.

Watershed Management FY18 Proposed vs. FY17 Budget

	<u>FY17 Budget</u>	<u>FY18 Budget</u>	<u>Variance</u>
Operating	\$ 15,919,268	\$ 16,424,006	\$ 504,738
Pilot	<u>\$ 8,372,000</u>	<u>\$ 8,600,000</u>	<u>\$ 228,000</u>
	\$ 24,291,268	\$ 25,024,006	\$ 732,738

Harbor Electric Energy Company (HEEC)

The budget includes \$671,000 for the Harbor Energy Electric Company (HEEC), a decrease of \$103,000 or 13.3% from the FY17 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 decrease is due to the expiration of the contractual obligations in May 2015, ending the amortization of the cable financing component of the capital investment.

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 FY18 Proposed Budget includes funding of \$1.6 million in community compensation for the City of Quincy and the Town of Winthrop. Both mitigation agreements expire in FY25.

Operating Reserves

The FY18 Proposed Budget includes an increase of \$2.1 million for the Operating Reserve from the FY17 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 FY18 Proposed Budget, the required balance is \$41.3 million versus the \$39.2 million required in FY17.

Retirement System Contribution

The budget includes \$5.1 million for the Retirement Fund, an increase of \$445,000 million or 9.6% over the FY17 budget. The minimum required contribution for FY18 is \$3.3 million based on the January 1, 2015 actuarial report. An additional pension deposit of \$1.8 million was also included in the Proposed FY18 Budget in recognition of lower than assumed returns on pension investments in CY 16. The Pension Fund achieved virtual full funding as of January 1, 2015.

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

In the FY18 Proposed Budget the Authority proposes funding its OPEB liability at \$5.0 million, continuing the Authority's long-term commitment to address its liabilities. 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 the pension liability and upon reaching full funding, move to address the OPEB obligation. Based on the latest actuarial evaluation, MWRA's pension fund is at


98.3% funding level. In the FY18 Budget the Authority is proposing to fund its OPEB liability at \$5.0 million. 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. The current Trust balance is \$16.5 million. The \$5.0 million contribution is 50% of the Annual 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.

Capital Financing

Outstanding Debt and Debt Management

The \$8.2 billion spent on MWRA’s modernization efforts since the Authority was established in 1986, has relied heavily on debt financing. Total debt as of June 30, 2016 was \$5.2 billion consisting of senior and subordinated debt, as well as Tax-Exempt Commercial Paper. 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, 2016	% of Total
Senior General Revenue Bonds	\$ 3,181,950,000	61.1%
Massachusetts Clean Water Trust	\$ 980,095,379	18.8%
Subordinate General Revenue Bonds	\$ 895,460,000	17.2%
Tax-Exempt Commercial Paper/Revolving Line of Credit	\$ 149,000,000	2.9%
Total	\$ 5,206,505,379	100.0%


 79.9% of MWRA's Debt is Fixed Rate

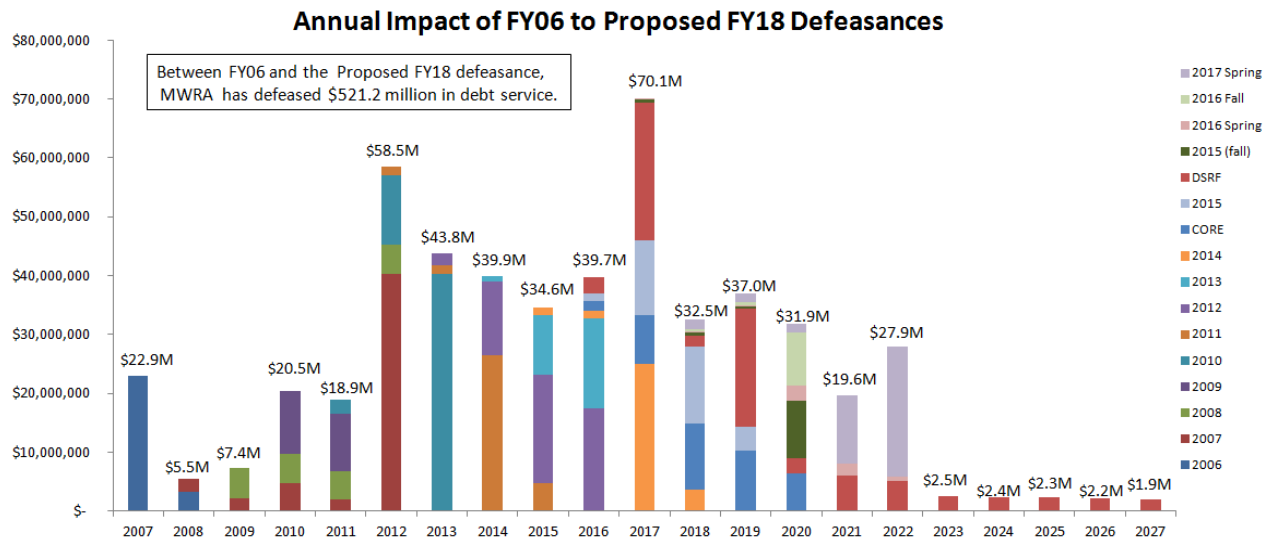
As a result of the Authority’s Capital Improvement Program, capital financing as a percent of total expenses (before offsets) has increased steadily from 36% in 1990 to 62.6% in the FY18 Current Expense Budget. Much of this debt service is for completed projects, primarily the Boston Harbor Project and the Integrated Water Supply Improvement Program. The MWRA’s capital spending, from its inception, had been dominated by projects mandated by court ordered or regulatory requirements, which in total have accounted for ~80% of capital spending to date. Going forward, and as the Combined Sewer Overflow (CSO) projects reached substantial completion in December 2015, the majority of spending will be focused on asset protection and water redundancy initiatives. The projected capital spending scheduled for fiscal year 2018 is less than scheduled principal payments which will contribute to decrease MWRA’s outstanding indebtedness.

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

The FY18 Proposed Budget capital financing costs total \$469.1 million and remain the largest portion of the MWRA’s budget, accounting for 62.6% of total expenses.

The FY18 Proposed Budget includes a planned defeasance of \$31 million which is comprised of \$20 million from the projected FY17 surplus and \$11.0 million from the Debt Prepayment included in the

FY17 CEB. The defeasance will reduce debt service by approximately \$1.6 million in years FY18-FY20, \$11.6 million in FY21, and \$22.1 million in FY22.



The FY18 Budget assumes a 3.5% interest rate for variable rate debt which is 0.25% higher than the rate in FY17. The Authority’s variable rate debt assumption is comprised of three separate elements: the interest rate for the daily and weekly series; liquidity fees for the Standby Bond Purchase Agreement, Letter of Credit, and Direct Purchase providers; and remarketing fees. While MWRA continues to experience unusually low interest rates, they are not reflective of historical averages and there are projected increases in the future.

The FY18 Proposed Budget capital financing costs increased by \$14.0 million or 3.1% compared to the FY17 Budget. This increase in the MWRA’s debt service is the result of projected FY18 borrowings and the structure of the existing debt, partially offset by the impact of the projected defeasance. The FY18 capital financing budget includes:

- \$263.1 million in principal and interest payments on MWRA’s senior fixed rate bonds. This amount includes \$5.7 million to support issuances of \$100 million in May 2017 and \$3.5 million to support issuances of \$100 million of new money in May 2018. Also it includes a reduction of \$1,050,000 for the effect of the planned FY17 defeasance;
- \$87.6 million in principal and interest payments on subordinate bonds;
- \$87.0 million in principal and interest payments on SRF loans. This amount includes \$8.8 million to support issuances of \$105.0 million of replacement loans during 2017 and 2018;
- \$13.2 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.

Capital Financing and Grant Revenues

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

MWRA expects to borrow the majority of funds necessary for future capital spending. Borrowing will include the issuance of fixed and variable rate revenue bonds; borrowing from the Massachusetts Clean Water Trust (also known as the State Revolving Loan Fund or SRF), and a Tax-Exempt Commercial Paper program. The table below details the FY18 Proposed budget capital financing line item. It also shows how upgrading the sewerage system has dominated the capital program to date. Current and future borrowings increasingly support improvements to the water system. A complete list of the Authority's indebtedness by series is presented in Appendix F.

	Amount Outstanding	Total FY16 Capital Costs	Sewer	Water
Total SRF ¹ Debt	\$980.1	\$87.0	\$67.4	\$19.6
Total Senior Debt	\$3,182.0	263.1	166.8	96.3
Total Subordinate Debt	\$895.5	87.6	59.8	27.7
Total SRF and Debt Service²	\$5,057.5	\$437.7	\$294.1	\$143.6
Water Pipeline Commercial Paper	149.0	4.1	0.0	4.1
Current Revenue/Capital ³		13.2	12.5	0.7
Capital Lease		3.2	1.9	1.3
Debt Prepayment ⁴		10.9	10.4	0.5
	149.0	\$31.4	\$24.8	\$6.6
Total Capital Financing (before Debt Service Offsets)	5,206.5	\$469.1	\$319.0	\$150.2
Debt Service Offsets:				
Debt Service Assistance		0.0	0.0	0.0
Bond Redemption		0.0	0.0	0.0
Total Capital Financing	5,206.5	\$469.1	\$319.0	\$150.2

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.

⁴ Debt Prepayment will be used defeasance of bonds at end of fiscal year.

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 \$559,000 by FY27. The following table summarizes the projected CIP impact on the operating budget by project over the next ten years.

Fiscal Year	CEB Impacts (\$ in thousands)										
	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

Rate Assessment and Methodology

Community Profile and Assessments

MWRA provides wholesale water and sewer services to 61 communities or local bodies. Fifty-one local bodies purchase water supply services, and 45 local bodies purchase wastewater transport and treatment services. Thirty-five local bodies purchase both. Approximately 3.0 million people, or 44% of the population of Massachusetts, live and work in the communities that purchase water and/or wastewater services from MWRA.

MWRA's largest single customer is the Boston Water and Sewer Commission (BWSC), which provides retail services in the City of Boston. In the FY18 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 assessments for FY18.

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 FY18 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 FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
ARLINGTON	\$4,976,564	\$5,239,376	5.3%	\$7,993,120	\$8,368,475	4.7%	\$12,969,684	\$13,607,851	\$638,167	4.9%
BELMONT	2,828,456	2,918,249	3.2%	4,825,479	4,942,787	2.4%	7,653,935	7,861,036	207,101	2.7%
BOSTON (BWSC)	82,771,709	86,245,262	4.2%	132,271,845	136,988,619	3.6%	215,043,554	223,233,881	8,190,327	3.8%
BROOKLINE	7,046,691	6,833,777	-3.0%	12,894,419	13,070,164	1.4%	19,941,110	19,903,941	(37,169)	-0.2%
CHELSEA	4,215,080	4,310,799	2.3%	7,663,315	7,774,066	1.4%	11,878,395	12,084,865	206,470	1.7%
EVERETT	4,948,191	5,202,970	5.1%	8,124,101	8,425,809	3.7%	13,072,292	13,628,779	556,487	4.3%
FRAMINGHAM	8,159,808	8,034,710	-1.5%	12,824,962	13,125,770	2.3%	20,984,770	21,160,480	175,710	0.8%
LEXINGTON	7,349,661	7,275,204	-1.0%	7,265,870	7,453,886	2.6%	14,615,531	14,729,090	113,559	0.8%
MALDEN	6,950,768	6,789,727	-2.3%	12,941,073	13,414,561	3.7%	19,891,841	20,204,288	312,447	1.6%
MEDFORD	6,432,219	6,408,548	-0.4%	11,878,789	12,202,584	2.7%	18,311,008	18,611,132	300,124	1.6%
MELROSE	2,915,635	2,865,865	-1.7%	6,251,952	6,438,677	3.0%	9,167,587	9,304,542	136,955	1.5%
MILTON	3,360,396	3,509,472	4.4%	5,362,055	5,473,036	2.1%	8,722,451	8,982,508	260,057	3.0%
NEWTON	12,950,552	12,942,568	-0.1%	20,518,241	21,949,686	7.0%	33,468,793	34,892,254	1,423,461	4.3%
NORWOOD	3,652,867	3,718,045	1.8%	7,023,166	7,507,430	6.9%	10,676,033	11,225,475	549,442	5.1%
QUINCY	11,776,311	12,247,825	4.0%	19,971,978	20,724,145	3.8%	31,748,289	32,971,970	1,223,681	3.9%
READING	2,109,549	2,219,983	5.2%	4,769,928	4,962,610	4.0%	6,879,477	7,182,593	303,116	4.4%
REVERE	4,943,964	4,916,091	-0.6%	10,611,549	10,845,129	2.2%	15,555,513	15,761,220	205,707	1.3%
SOMERVILLE	7,658,290	7,960,067	3.9%	15,918,035	16,624,447	4.4%	23,576,325	24,584,514	1,008,189	4.3%
STONEHAM	3,174,690	3,039,459	-4.3%	4,542,049	4,628,916	1.9%	7,716,739	7,668,375	(48,364)	-0.6%
WALTHAM	9,384,159	9,074,300	-3.3%	13,122,122	13,622,399	3.8%	22,506,281	22,696,699	190,418	0.8%
WATERTOWN	3,290,986	3,401,796	3.4%	5,971,177	6,126,647	2.6%	9,262,363	9,528,443	266,080	2.9%
WINTHROP	1,643,615	1,622,216	-1.3%	3,320,069	3,412,713	2.8%	4,963,684	5,034,929	71,245	1.4%
TOTAL	\$202,540,161	\$206,776,309	2.1%	\$336,065,494	\$348,082,556	3.6%	\$538,605,655	\$554,858,865	\$16,253,210	3.0%

MWRA Sewer and Partial Water Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
CANTON	\$1,673,754	\$2,548,346	52.3%	\$4,137,162	\$4,244,707	2.6%	\$5,810,916	\$6,793,053	\$982,137	16.9%
NEEDHAM	1,039,372	1,114,185	7.2%	5,683,915	5,918,642	4.1%	6,723,287	7,032,827	309,540	4.6%
STOUGHTON	1,144,245	254,814	-77.7%	4,747,341	5,059,137	6.6%	5,891,586	5,313,951	(577,635)	-9.8%
WAKEFIELD	1,852,218	2,181,150	17.8%	5,813,697	6,122,307	5.3%	7,665,915	8,303,457	637,542	8.3%
WELLESLEY	1,056,294	1,749,172	65.6%	5,459,750	5,625,596	3.0%	6,516,044	7,374,768	858,724	13.2%
WILMINGTON	703,075	779,298	10.8%	2,595,601	2,830,863	9.1%	3,298,676	3,610,161	311,485	9.4%
WINCHESTER	1,544,349	2,130,222	37.9%	4,033,770	4,157,512	3.1%	5,578,119	6,287,734	709,615	12.7%
WOBBURN	3,355,306	3,650,561	8.8%	9,324,662	9,427,691	1.1%	12,679,968	13,078,252	398,284	3.1%
TOTAL	\$12,368,613	\$14,407,748	16.5%	\$41,795,898	\$43,386,455	3.8%	\$54,164,511	\$57,794,203	\$3,629,692	6.7%

MWRA Sewer-only Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
ASHLAND				\$2,485,174	\$2,594,722	4.4%	\$2,485,174	\$2,594,722	\$109,548	4.4%
BEDFORD				3,368,331	3,580,904	6.3%	3,368,331	3,580,904	212,573	6.3%
BRAINTREE				9,100,270	9,692,938	6.5%	9,100,270	9,692,938	592,668	6.5%
BURLINGTON				5,078,461	5,319,835	4.8%	5,078,461	5,319,835	241,374	4.8%
CAMBRIDGE				23,745,695	24,952,536	5.1%	23,745,695	24,952,536	1,206,841	5.1%
DEDHAM				5,311,572	5,518,993	3.9%	5,311,572	5,518,993	207,421	3.9%
HINGHAM SEWER DISTRICT				1,798,028	1,863,727	3.7%	1,798,028	1,863,727	65,699	3.7%
HOLBROOK				1,759,996	1,809,042	2.8%	1,759,996	1,809,042	49,046	2.8%
NATICK				5,756,705	5,940,655	3.2%	5,756,705	5,940,655	183,950	3.2%
RANDOLPH				6,272,186	6,361,335	1.4%	6,272,186	6,361,335	89,149	1.4%
WALPOLE				3,713,877	3,831,925	3.2%	3,713,877	3,831,925	118,048	3.2%
WESTWOOD				2,598,265	2,789,172	7.3%	2,598,265	2,789,172	190,907	7.3%
WEYMOUTH				11,765,811	12,119,331	3.0%	11,765,811	12,119,331	353,520	3.0%
TOTAL				\$82,754,371	\$86,375,115	4.4%	\$82,754,371	\$86,375,115	\$3,620,744	4.4%

MWRA Water-only Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
LYNNFIELD WATER DISTRICT	\$643,348	\$752,424	17.0%				\$643,348	\$752,424	\$109,076	17.0%
MARBLEHEAD	2,341,415	2,479,532	5.9%				2,341,415	2,479,532	138,117	5.9%
NAHANT	476,532	539,824	13.3%				476,532	539,824	63,292	13.3%
SAUGUS	3,692,889	3,969,580	7.5%				3,692,889	3,969,580	276,691	7.5%
SOUTHBOROUGH	948,422	1,001,153	5.6%				948,422	1,001,153	52,731	5.6%
SWAMPSCOTT	1,834,151	1,900,046	3.6%				1,834,151	1,900,046	65,895	3.6%
WESTON	2,445,970	2,830,058	15.7%				2,445,970	2,830,058	384,088	15.7%
TOTAL	\$12,382,727	\$13,472,617	8.8%				\$12,382,727	\$13,472,617	\$1,089,890	8.8%

MWRA Partial Water-only Customers	Final FY17 Water Assessment	Preliminary FY18 Water Assessment	Percent Change from FY17	Final FY17 Sewer Assessment	Preliminary FY18 Sewer Assessment	Percent Change from FY17	Final FY17 Combined Assessment	Preliminary FY18 Combined Assessment	Dollar Change from FY17	Percent Change from FY17
DEDHAM-WESTWOOD WATER DISTRICT	\$196,381	\$296,964	51.2%				\$196,381	\$296,964	\$100,583	51.2%
LYNN (LWSC)	243,938	327,659	34.3%				243,938	327,659	83,721	34.3%
MARLBOROUGH	3,887,876	4,921,458	26.6%				3,887,876	4,921,458	1,033,582	26.6%
NORTHBOROUGH	1,135,772	1,245,202	9.6%				1,135,772	1,245,202	109,430	9.6%
PEABODY	1,507,269	1,945,917	29.1%				1,507,269	1,945,917	438,648	29.1%
TOTAL	\$6,971,236	\$8,737,200	25.3%				\$6,971,236	\$8,737,200	\$1,765,964	25.3%
SYSTEMS TOTAL	\$234,262,737	\$243,393,874	3.9%	\$460,615,763	\$477,844,126	3.7%	\$694,878,500	\$721,238,000	\$26,359,500	3.8%

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 PFY18 Rate Revenue Requirement (000's)

	Sewer	Water	Total
Allocated Direct Expenses	\$160,412	\$77,999	\$238,411
Allocated Indirect Expenses	\$11,779	\$29,802	\$41,581
PLUS			
Capital Expenses:			
Debt Service (less offsets)	\$294,122	\$143,598	\$437,720
Current Revenue for Capital	\$12,540	\$660	\$13,200
Other Capital Expenses	\$12,328	\$5,875	\$18,204
PLUS			
Non-Rate Revenue:			
Investment Income	-\$6,458	-\$4,797	-\$11,255
Fees and Other Revenue	-\$6,880	-\$9,743	-\$16,623
Rate Stabilization	\$0	\$0	\$0
EQUALS			
Rate Revenue Requirement	\$477,844	\$243,394	\$721,238

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 FY18, community assessments are projected to represent 96.3% 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 FY18 through FY27. The planning estimates assume no Debt Service Assistance and use of Rate Stabilization and Bond Redemption reserves through FY2027 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 FY18 CEB	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027
Total Rate Revenue (\$000)	\$ 694,879	\$ 721,238	\$ 748,379	\$ 777,081	\$ 806,851	\$ 837,644	\$ 858,538	\$ 851,261	\$ 853,809	\$ 863,976	\$ 871,071
Rate Revenue Change from Prior Year (\$000)	\$ 22,438	\$ 26,359	\$ 27,141	\$ 28,701	\$ 29,770	\$ 30,793	\$ 20,894	\$ (7,277)	\$ 2,549	\$ 10,167	\$ 7,094
Rate Revenue Increase	3.4%	3.8%	3.8%	3.8%	3.8%	3.8%	2.5%	-0.8%	0.3%	1.2%	0.8%
Use of Reserves (\$000)	\$ -	\$ -	\$ -	\$ -	\$ 4,197	\$ 10,910	\$ -	\$ -	\$ -	\$ 33,596	\$ 13,917

Estimated Household Bill

Based on annual water usage of 61,000 gallons	\$ 1,095	\$ 1,144	\$ 1,196	\$ 1,250	\$ 1,306	\$ 1,365	\$ 1,420	\$ 1,462	\$ 1,511	\$ 1,567	\$ 1,623
Based on annual water usage of 90,000 gallons	\$ 1,616	\$ 1,689	\$ 1,764	\$ 1,844	\$ 1,927	\$ 2,014	\$ 2,095	\$ 2,157	\$ 2,229	\$ 2,312	\$ 2,395

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 \$61.9 million increase in direct expenses from FY18 to FY27 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 2.5% for salaries and 3.0% for other direct expenses starting in FY18;
- CIP inflation rate of 2.5%;
- Capital spending based on the latest CIP expenditure forecast for FY18 to FY27.
- Long-term fixed rate debt issues with 30-year terms and 5.0% interest rates in FY18, 5.25% rates in FY19, 5.5% rates in FY20, 5.75% rates in FY21 and 6.0% rates from FY22 and beyond;
- Variable rate interest projected at 3.50% in FY18, 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.

MWRA Rates Management

Planning estimates for 2018 through 2027 forecast rate revenue requirement increases of 3.8% in FY18, 3.8% annually from FY19 through FY22, 2.5% in FY23, -0.8% in FY24, 0.3% in FY25, 1.2%

in FY26, and 0.8% in FY27.

The FY18 Budget:

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

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.

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 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, 2016 are available online at www.mwra.com.



Executive Office
Budget

EXECUTIVE DIVISION

Executive

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

The **Executive Division** 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 Division oversees a centralized MWRA-wide security program to preserve and protect MWRA facilities, systems and employees.

The Executive Division includes the Office of Executive Director, Office of Emergency Preparedness, Internal Audit, Public Affairs, and the Affirmative Action and Compliance Unit (AACU). Each of these Departments is accounted for separately in the MWRA budget.

The **Office of the Executive Director** includes the Board of Directors' cost center as well as 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 "fiscal 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, holds 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 FY18 Proposed Direct Expense Budget.

FY18 Proposed Current Expense Budget OFFICE OF THE EXECUTIVE DIRECTOR							
DEPARTMENT	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
EXECUTIVE OFFICE	\$ 506,811	\$ 537,059	\$ 524,168	\$ 540,227	\$ 16,059	3.1%	
BOARD OF DIRECTORS	78,863	77,379	82,662	84,059	1,397	1.7%	
ADVISORY BOARD / OTHER COMMITTEES	650,150	686,464	708,366	724,351	15,985	2.3%	
TOTAL	\$ 1,235,824	\$ 1,300,902	\$ 1,315,196	\$ 1,348,637	\$ 33,441	2.5%	

FY18 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.

FY18 Proposed Current Expense Budget OFFICE OF THE EXECUTIVE DIRECTOR							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 578,597	\$ 608,188	\$ 598,347	\$ 616,538	\$ 18,191	3.0%	
OVERTIME	65	61	-	-	-	-	
TRAINING & MEETINGS	43	97	850	850	-	0.0%	
PROFESSIONAL SERVICES	155,009	164,819	171,380	176,288	4,908	2.9%	
OTHER MATERIALS	3,069	2,089	3,485	2,750	(735)	-21.1%	
OTHER SERVICES	499,041	525,648	541,134	552,211	11,077	2.0%	
TOTAL	\$ 1,235,824	\$ 1,300,902	\$ 1,315,196	\$ 1,348,637	\$ 33,441	2.5%	

Budget Highlights:

- The FY18 Proposed Budget is \$1.3 million, an increase of \$33,000 or 2.5%, as compared to the FY17 Budget.

- \$617,000 for **Wages and Salaries**, an increase of \$18,000 or 3.0%, as compared to the FY17 Budget. The FY18 Proposed Budget includes funding for five positions, the same as the FY17 Budget.

OFFICE OF THE EXECUTIVE DIRECTOR	FY17 FTEs	FY18 FTEs Proposed
EXECUTIVE OFFICE	5	5
TOTAL	5	5

- \$176,000 for **Professional Services**, an increase of \$5,000 or 2.9%, as compared to the FY17 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.
- \$552,000 for **Other Services**, an increase of \$11,000 or 2.1%, as compared to the FY17 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

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.

FY18 Proposed Current Expense Budget						
OFFICE OF EMERGENCY PREPAREDNESS						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 554,860	\$ 509,627	\$ 603,837	\$ 861,043	\$ 257,206	42.6%
OVERTIME	797	-	-		-	-
MAINTENANCE	553,878	598,220	499,651	651,900	152,249	30.5%
TRAINING & MEETINGS	3,915	6,808	17,000	15,500	(1,500)	-8.8%
PROFESSIONAL SERVICES	1,804,732	1,845,169	1,920,000	1,958,000	38,000	2.0%
OTHER MATERIALS	12,849	44,999	18,967	19,042	75	0.4%
OTHER SERVICES	110,950	111,395	121,124	121,772	648	0.5%
TOTAL	\$ 3,041,980	\$ 3,116,218	\$ 3,180,579	\$ 3,627,257	\$ 446,678	14.0%

FY18 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.

FY18 Initiatives:

- 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 and add new ones to selected sites.
- Procure a contract to update the access control system.
- Use Maximo for security system equipment maintenance and repair work orders.

- 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.
- Hold a major Inter-Agency Consequence Management drill.
- Establish a backup security monitoring center and communications head end at Norumbega.
- Complete facility security audits and implement the resulting enhancement and remedial work recommendations.
- Expand the number of facilities that we can fly our drones, through individual Part 107 waiver requests and/or a Jurisdictional Certificate of Waiver or Authorization (COA) request.
- Complete design, procurement and installation of flood protection barriers.
- Improve the cyber security of the MWRA's physical Security System.

FY17 Mid-Year Accomplishments:

- Established a small Unmanned Aircraft System (drone) program with certified pilots.
- Established a relationship with the Boston Regional Intelligence Center (BRIC) and built on our cyber relationship with the Massachusetts National Guard.
- Completed physical security audits at 50 facilities.
- Completed transition away from the old Loronix video monitoring system.
- Signed new three-year Security Equipment Maintenance contract.
- Made progress on the new Security Center in Chelsea.
- Integrated new Chelsea Screen House security systems into the MWRA's security system.
- Completed a total of 73 training events or drills.
- Continued to provide an emergency response training program and a tabletop exercise series for MWRA staff and community water system staff. A total of 146 people attended from 23 community systems.

Budget Highlights:

- The FY18 Proposed Budget is \$3.6 million, an increase of \$447,000 or 14.0%, as compared to the FY17 Budget.

- \$861,000 for **Wages and Salaries**, an increase of \$257,000 or 42.6%, as compared to the FY17 Budget, mainly due to the transfer of two positions from Human Resources position in FY17 which have been supporting security functions. The FY18 Proposed Budget includes funding for eight positions, two higher than the FY17 Budget.

OFFICE OF EMERGENCY PREPAREDNESS	FY17 FTEs	FY18 FTEs Proposed
EMERGENCY PREPAREDNESS	6	8
TOTAL	6	8

- \$652,000 for **Ongoing Maintenance**, an increase of \$152,000 or 30.5%, as compared to the FY17 Budget, mainly due to the higher cost associated with the new security equipment maintenance contract. This budget includes funding of \$515,000 to cover the MWRA-wide security systems preventative maintenance and repair service, \$110,000 for MWRA-wide security systems maintenance materials and equipment, including cameras, intrusion detection, card readers, and \$27,000 for the intrusion alarm annual and semi-annual monitoring services contracts.
- \$2.0 million for **Professional Services**, an increase of \$38,000 or 2.0%, as compared to the FY17 Budget, primarily to include EAP work on Western Reservoirs, thereby covering over 30 communities. The budget includes \$655,000 for security services at the Deer Island Treatment Plant facility, \$610,000 for the Chelsea facility, \$417,000 for the Carroll Water Treatment Plant, \$86,000 for the Account Manager, \$48,000 for the Training Officer, \$10,000 for vehicle maintenance and emergency allowance, and \$22,000 for Charlestown Navy Yard (CNY) facility. Also included under Professional Services is \$110,000 for updating the Dam EAPs to match the regulatory change to FEMA’s PD-64 and annual updates.
- \$19,000 for **Other Materials**, basically unchanged from the FY17 Budget. This line item mainly funds purchase of Health and Safety materials for the ESU Team.
- \$122,000 for **Other Services**, basically unchanged the FY17 Budget. 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

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.

FY18 Proposed Current Expense Budget AFFIRMATIVE ACTION & COMPLIANCE UNIT						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 510,897	\$ 520,186	\$ 547,871	\$ 547,800	\$ (71)	0.0%
OVERTIME	137	-	-	-	-	-
TRAINING & MEETINGS	1,250	4,964	4,800	7,500	2,700	56.3%
OTHER MATERIALS	1,703	1,763	1,664	2,139	475	28.5%
OTHER SERVICES	312	1,416	924	924	-	0.0%
TOTAL	\$ 514,298	\$ 528,329	\$ 555,259	\$ 558,363	\$ 3,104	0.6%

FY18 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 Mid-Year Accomplishments:

- Provided management assistance to the Human Resources Department in the overall recruitment and selection process for qualified candidates for thirty-eight (38) new hires and fifty-seven (57) promotions.
- Conducted oversight of 161 construction and professional projects, including 5 site visits monitoring the minority and women workforce as well as MBE/WBE/DBE compliance. With the exception of MBE Professional Services, the other procurement targets remain.

Budget Highlights:

- The FY18 Proposed Budget is \$558,000, an increase of \$3,000 or 0.6%, as compared to the FY17 Budget.
- \$548,000 for **Wages and Salaries** is level funded with the FY17 Budget, due to the backfill of vacated positions being hired at lower salaries. The FY18 Proposed Budget includes funding for six positions, the same as FY17 Budget.

AFFIRMATIVE ACTION & COMPLIANCE UNIT	FY17 FTEs	FY18 FTEs Proposed
AACU	6	6
TOTAL	6	6

INTERNAL AUDIT

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.

FY18 Proposed Current Expense Budget						
INTERNAL AUDIT						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 692,181	\$ 652,455	\$ 644,414	\$ 676,414	\$ 32,000	5.0%
MAINTENANCE	5	-	-	-	-	-
TRAINING & MEETINGS	6,249	3,069	6,700	6,650	(50)	-0.7%
PROFESSIONAL SERVICES	-	-	-	-	-	-
OTHER MATERIALS	1,309	2,258	2,020	2,150	130	6.4%
OTHER SERVICES	2,820	2,109	1,691	1,700	9	0.5%
TOTAL	\$ 702,564	\$ 659,891	\$ 654,825	\$ 686,914	\$ 32,089	4.9%

FY18 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, consultants and vendors doing business with MWRA have adequate accounting and billing systems to provide current, complete and accurate cost and price information and project invoicing.

FY17 Mid-Year Accomplishments:

- Identified \$2,344,410 in savings related to: internal audits, management advisory services, consultant audits, construction labor burden reviews, vendor reviews, facility lease agreements, and on-going savings from the lease of the engine house by the Fore River Railroad Corporation.
- Issued final audit reports on MIS Mobile Equipment Asset Tracking and Fuel Card Purchases. Issued six incurred cost audits, two preliminary consultant and eight preliminary construction reviews.
- Provided management advisory and data analysis services dealing with MWRA overhead rates, domicile vehicle policy comparison, MIS asset accountability, sole source awards, labor rates on professional services contracts, financial reviews, unemployment compensation and various contract negotiations.

- Twenty five audit recommendations have been closed during the period.

Budget Highlights:

- The FY18 Proposed Budget is \$687,000, an increase of \$32,000 or 4.9%, as compared to the FY17 Budget.
- \$676,000 for **Wages and Salaries**, an increase of \$32,000 or 5.0%, as compared to the FY17 Budget.

INTERNAL AUDIT DEPARTMENT	FY17 FTEs	FY18 FTEs Proposed
INTERNAL AUDIT	7	7
TOTAL	7	7

PUBLIC AFFAIRS

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 internal and external web sites, 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.

FY18 Proposed Current Expense Budget PUBLIC AFFAIRS						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 1,060,003	\$ 1,089,986	\$ 1,139,183	\$ 1,184,858	\$ 45,675	4.0%
OVERTIME	852	767	900	900	-	0.0%
TRAINING & MEETINGS	(572)	4,044	4,415	4,415	-	0.0%
PROFESSIONAL SERVICES	1,175	0	1,300	1,300	-	0.0%
OTHER MATERIALS	25,199	18,195	26,175	26,175	-	0.0%
OTHER SERVICES	31,903	30,140	48,816	48,816	-	0.0%
TOTAL	\$ 1,118,560	\$ 1,143,133	\$ 1,220,789	\$ 1,266,464	\$ 45,675	3.7%

FY18 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 responses to ensure that Authority owned infrastructure is protected.
- 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.
- Continue to grow the user population of MWRA’s Everbridge communication platform in order to reach as many residents as possible, keeping them up to date on meetings, reports, and infrastructure projects.
- 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.
- Provide technical support to 14 cities and towns that host MWRA’s emergency back-up aqueducts as part of the Public Access Aqueduct Program.
- 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.

FY18 Initiatives:

Ongoing Advocacy – Commonwealth Rate Relief

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

MWRA’s Public Affairs staff continues to work with the Legislature to advocate on behalf of member communities regarding issues that are crucial to the Authority’s core mission. The Executive Director and Director of Intergovernmental Affairs routinely meet with House and Senate leaders to discuss issues that are crucial to the Authority and its customers. Now that the 2017-2018 Legislative session has begun, staff will continue to monitor all newly filed legislation that could impact the Authority from an operational and administrative perspective.

FY17 Mid-Year Accomplishments:

- Successfully advocated for the funding of the Sewer Rate Relief Fund. The current FY17 General Appropriations Act (GAA) includes \$1.1 million for Sewer Rate Relief (due to budget cost saving measures, the line-item is now \$500K).
- Oversaw the review of 73 projects filed with the Massachusetts Environmental Policy Act Office. MWRA in-house review resulted in the preparation and submittal of 42 comment letters.
- Submitted six Project Notification Forms to the Massachusetts Historic Commission and local Historic Commissions.
- Submitted two Community Preservations Applications to the City of Newton and Town of Needham.
- In August, the Five-Year Progress Report was completed and distributed to the Governor and the legislature, in accordance with the Enabling Act.
- Successfully launched the Everbridge communication platform to keep community members informed of construction project updates, service notices, and public meetings. Efforts to grow the user population will continue.
- Conducted several public meetings to update public officials and residents of MWRA's upcoming infrastructure investments and their potential impacts on local communities.

Aqueduct Trail Progress -To date, MWRA staff has issued several Section 8 (m) Permits as part of the Public Access Aqueducts Program authorizing approximately 28 miles of Aqueduct Trails. MWRA estimates that approximately 17 miles are currently open including new sections in the Town of Needham and Weston.

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 (3.25 miles opened)
Weston^[1]: 1.5 miles authorized (1.5 miles opened) (500' alternative trail opened on private Pine Brook Country Club property to link public trail)
Wayland: 4.2 miles authorized (0 miles opened)

^[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.

Sudbury Aqueduct

Framingham: 1.5 miles authorized (1.5 miles opened)
Natick: 2.25 miles authorized (1.5 miles opened)
Wellesley: 3.0 miles authorized (3.0 miles opened)
Needham: 1.4 miles authorized (1.4 miles opened) (additional .5 mile trail opened on private Olin/Babson College property to link public trail)

Cochituate Aqueduct

Natick: 2.6 miles authorized (0 miles opened)

Communications – In FY2017, construction photo books are underway for the Braintree-Weymouth Relief Facilities, MetroWest Water Supply Tunnel, Norumbega Covered Storage Facility and Spot Pond Covered Storage Facility. Other books will begin in FY2018. The in-house design of the Annual Water Quality Report is underway and will be mailed out in June in accordance with the EPA mandate. Communications staff have also been updating all MWRA forms on the intranet site.

Through the first half of FY2017, Communications staff focused a lot of time on the on-going drought. Efforts include additional information on MWRA’s website, design, response to numerous media inquiries and outreach through social media. This will likely continue well into FY2018. In addition, the lead in drinking water issue continues to generate interest.

School Education - The School Education staff continues to conduct daily 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 for 2017 will focus on the impact weather has on MWRA’s systems. This program provides an important opportunity for the students, teachers and parents to learn together about MWRA’s mission.

Budget Highlights:

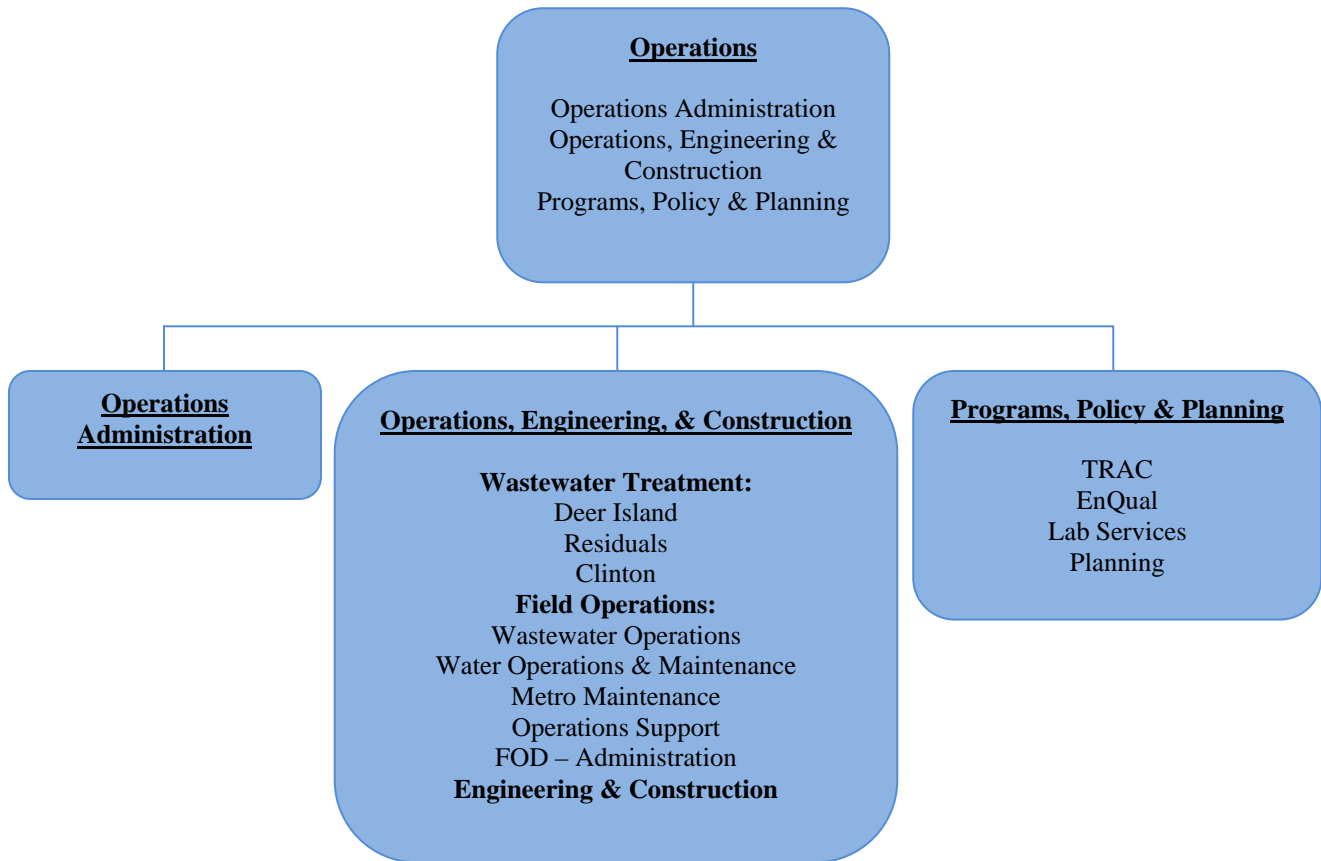
- The FY18 Proposed Budget is \$1.3 million, an increase of \$46,000 or 3.7%, as compared to the FY17 Budget.
- \$1.2 million for **Wages and Salaries**, an increase of \$46,000 or 4.0%, as compared to the FY17 Budget. The FY18 Proposed Budget includes funding for 13 positions, the same as the FY17 Budget.

PUBLIC AFFAIRS DEPARTMENT	FY17 FTEs	FY18 FTEs Proposed
PUBLIC AFFAIRS	13	13
TOTAL	13	13



Operations Division Budget

OPERATIONS DIVISION



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.

FY18 Proposed Current Expense Budget						
OPERATIONS DIVISION						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 73,730,111	\$ 75,417,179	\$ 79,571,615	\$ 81,858,814	\$ 2,287,199	2.9%
OVERTIME	4,388,800	4,250,176	4,128,812	4,424,407	295,595	7.2%
FRINGE BENEFITS	80,606	83,741	75,207	78,815	3,608	4.8%
CHEMICALS	9,749,142	9,297,550	9,110,407	10,414,788	1,304,381	14.3%
UTILITIES	20,974,683	18,628,196	21,426,848	25,630,971	4,204,122	19.6%
ONGOING MAINTENANCE	23,826,321	26,256,252	25,712,792	27,288,585	1,575,793	6.1%
TRAINING & MEETINGS	130,079	165,127	195,725	200,725	5,000	2.6%
PROFESSIONAL SERVICES	1,871,719	2,240,903	2,677,277	2,648,645	(28,632)	-1.1%
OTHER MATERIALS	4,930,576	5,012,352	4,937,519	4,980,649	43,130	0.9%
OTHER SERVICES	18,395,102	18,767,824	18,897,162	18,570,163	(326,999)	-1.7%
TOTAL	\$ 158,077,138	\$ 160,119,301	\$ 166,733,363	\$ 176,096,561	\$ 9,363,198	5.6%

The Operations Division is composed 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.

FY18 Proposed Current Expense Budget						
OPERATIONS DIVISION by Department						
DEPARTMENT	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
OPERATIONS ADMINISTRATION	\$ 4,455,415	\$ 4,561,932	\$ 4,881,995	\$ 4,919,133	\$ 37,139	0.8%
OPERATIONS, ENGINEERING & CONSTRUCTION	136,314,899	137,210,798	142,628,866	150,858,739	8,229,873	5.8%
PROGRAMS, POLICY & PLANNING	17,306,823	18,346,571	19,222,502	20,318,688	1,096,186	5.7%
TOTAL	\$ 158,077,138	\$ 160,119,301	\$ 166,733,363	\$ 176,096,561	\$ 9,363,198	5.6%

The **Programs, Policy & Planning Section** is composed of the Toxic Reduction and Control, Environmental Quality (EnQual), Lab Services, and Planning departments. In total, the budgets for these programs represent 11.5% of the Operations Division’s FY18 Proposed Budget and 8.5% of MWRA’s FY18 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 and also oversees implementation of MWRA’s 8-M Permits processes.
- 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 State's 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 water and wastewater systems.

The **Operations, Engineering & Construction Section** is composed of the Wastewater Treatment, Field Operations, and Engineering & Construction departments. In total, the budgets for these programs represent 86% of the Operations Division's FY18 Proposed Budget and 63% of MWRA's FY18 Proposed Direct Expense Budget. This section focuses on the following:

- operations and maintenance of MWRA's wastewater treatment facilities including Deer Island Treatment Plant, Clinton Wastewater Treatment Plant, Residuals Pelletizing Facility, Combined Sewer Overflow 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 Facility 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.

FY18 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.

FY18 Major 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.
- Self-generate ~52% of the Deer Island Treatment Plant's (DITP) required power through optimization of power generation assets, including the wind turbines, Steam Turbine Generation (STG) back pressure system, photovoltaic panels, and Combustion Turbine Generators (CTGs). This includes extensive operation of the CTGs to allow Eversource to complete the HEEC Cable Protection Project (HEEC Project) within the established time period. Historically, these assets would only provide approximately 30% of Deer Island's total requirements, but due to the HEEC Project the CTGs will be operational July through October 2017 to allow Deer Island to be entirely off Eversource's power feed during that time. The timing and duration of the HEEC Project is subject to change.
- Continue to optimize ultraviolet disinfection treatment process for MWRA's potable water system at the Carroll Water Treatment Plant and Brutsch Disinfection Facility.
- Operate the new Spot Pond covered storage facility in water system for the second 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.
- Commence use of new phosphorous treatment system and natural gas lines at the Clinton Wastewater Treatment Plant.

Engineering & Construction:

- Issue Notice to Proceed for numerous contracts including the following major projects:
 - NIH Redundancy & Storage: Section 89/29 Redundancy – Rehab – Design
 - Northern Low Service Rehab Section 8: Section 57 Water & 21/2-/19 Sewer Design/ESDC/REI
 - Winsor Station Pipeline Improvements: Winsor Power Station Final Design/CA/RI
 - Metropolitan Tunnel Redundancy: Conceptual Design ERI
 - Watershed Division Capital Improvements: Quabbin Admin Bldg Rehab Design CA/RI
 - Central Monitoring System: Waterworks SCADA/PLC Upgrades
 - Facility Asset Protection: Pump Station & CSO Condition Assessment

- Substantially complete numerous CIP design and construction phases including the following:
 - Section 80 Rehabilitation: Construction
 - Winsor Station Pipeline Improvements: Hatchery Pipeline Construction
 - Spot Pond Storage Facility – Owners’ Representative
 - NIH Redundancy & Storage: Section 89 & 29 Redundancy Phase 1B Construction
 - Waterworks Facility Asset Protection: Cosgrove/Gillis PS/CF CSO Flat Roof Replacement
 - Facility Asset Protection: Alewife Brook Pump Station Rehabilitation Construction
 - Facility Asset Protection: Interceptor Renewal 1, Reading Ext. Sewer Construction
 - Clinton Phosphorus Removal

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 2018) and Clinton Wastewater Treatment Plant (new permit in effect as of March 2017).

- 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.

FY17 Mid-Year Accomplishments:

Operations, Energy, and New Facilities Start-ups:

- Assisted the Procurement Department with contracts to supply and deliver chemicals for the water and wastewater system facilities. Chemicals procured included activated carbon, ferric chloride, and hydrogen sulfide.
- Received revenue for energy generated at numerous facilities including the following: hydroelectric \$184,000 from Oakdale Station, \$39,200 from Cosgrove Station, and \$7,500 from the Loring Road Pump Station; wind of \$176,000 from Charlestown Pump Station; and solar of \$43,000 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, non-rate revenue from the sale of Renewable Portfolio Standards Program (RPS) credits, and receipt of utility rebates for CEB-funded efficiency projects resulted in \$878,000 in revenue for the first six months of FY17. Deer Island also self-generated 42% of the plant's total required power during that time period.
- Processed 93.7 average tons per day of sludge at the Pelletization Plant and disposed of 2,453 tons of grit and screenings through a contracted vendor.

Maintenance:

- The Operations Division spent \$12.8 million on maintenance of which \$5.7 million was for materials and \$7.1 million was for services.
- Procured and implemented numerous contracts for maintenance services, including the following;
 - Instrumentation services for 28 facilities on an emergency and non-emergency basis
 - Ongoing Maximo maintenance and support contract
 - Overhead doors maintenance services
 - SCADA software maintenance contract for DITP and Wachusett.
 - Prison Point CSO suction and discharge piping rehab contract

- Procured a ten-wheeled diesel powered truck, two new diesel powered front end loaders, and 32 passenger vehicles as part of MWRA’s vehicle replacement policy.
- Procured and implemented a Deer Island Treatment Plant contract for fuel oil deliveries needed for the ongoing HEEC Project.
- Procured and implemented numerous contracts for maintenance projects including:
 - DI Lighting Exterior Lighting Phases 5, 8 and 9.
 - DI Wind Turbine maintenance service contract
 - Quabbin power-saving, telecommunications, and security improvements
 - Metro Ops as-needed paving contract
 - Repair contract for DITP’s Thermal Power Plant
- Completed numerous maintenance projects including the following:
 - Plumbing Maintenance staff completed the annual Check Valve Replacement Program on all chemical feed systems, Facility Maintenance Staff inspected caulking and pipe joints, staff cleaned the Sodium Hypo Chlorite Injectors.
 - Dam Safety: Final Phase I Dam Safety Reports now completed for all dams on the required Regulatory Schedule.
 - Hype Park Avenue valve replacements and piping removal was completed, the excavation backfilled, paved, and the overall site cleaned up.
 - The deep anode work was completed on Section 57 at Winthrop Avenue at Tufts Avenue in Everett for the Cathodic Protection System.
 - Permanent paving of previous pipeline worksites continues. Several sites in Everett, Chelsea, Boston and Quincy, including Nut Island, have been completed.
 - Repaired and Replaced Scrubber #4 at Nut Island
- Continued to procure and implement service contracts for demolition and clean-up at the Nut Island Headworks in the aftermath of a January 2016 fire in the lower part of the facility.
- In water system, exercised 405 and replaced nine mainline valves; exercised 212 and replaced five blow-off valves.
- In the wastewater system, inspected 16.94 miles and cleaned 18.28 miles of MWRA pipeline. Inspected 492 structures and rehabilitated 94 manholes. Also inspected 17 and cleaned 36 inverted siphon barrels.

Engineering, Construction, and Planning:

- Spending through FY17 second quarter totals \$56.7 million, including \$24.3 million for wastewater projects, \$29.6 million for Waterworks System, and 2.8 million for other projects.
- Awarded 17 contracts with a total value of \$113 million, including the following contracts:

- Chelsea Creek Headworks Upgrades Construction - \$72.9 million
 - Northern Intermediate High Section 89 & 29 Redundancy Construction Phase IC - \$17.8 million
 - Chelsea Headworks Upgrades Resident Engineering/Inspection - \$3.6 million
 - New Connecting Mains Shaft 7 to WASM 3 CP3, Section 23,24,47 Final Design/Construction Administration/Resident Inspection - \$3.5 million
 - Prison Point Rehabilitation Design/Construction Administration/Resident Inspection - \$2.8 million
 - Commonwealth Avenue Pump Station Redundancy Design/Construction Administration/Resident Inspection - \$2.8 million
- Substantially completed eight projects with a value of \$51.5 million, including the following:
 - Deer Island Treatment Plant Scum Skimmer Replacement
 - Weston Aqueduct Supply Mains Section 36 Water Mains Arlington & Medford
 - Chelsea Screenhouse Upgrades
 - Webster Avenue Bridge Pipe Replacement
 - Southborough Water Quality Laboratory Upgrades
 - Deer Island Secondary Reactor Variable Frequency Drives Construction
 - Deer Island Cryogenics Chillers Replacement
 - Deer Island Thermal Power Plant Boiler Controls Replacement
 - Secured MWRA Board approval for the preferred alternative for the purpose of providing redundancy for the Metropolitan Tunnel System (City Tunnel, City Tunnel Extension and Dorchester Tunnel). The approved approach includes construction of northern and southern deep rock tunnels from the Hultman Aqueduct and MetroWest Water Supply Tunnel to the Weston Aqueduct Supply Main (WASM) 3 and to the Southern Spine water mains. The Board's approval allows staff to proceed with preliminary design, geotechnical investigations and Massachusetts Environmental Policy Act (MEPA) review of this critical project, budgeted at \$1.4 billion in the Proposed FY18 CIP.

Environmental:

- The TRAC Department completed the following Environmental Protection Agency (EPA)-required work for significant industrial users: 144 inspections, 149 monitoring events, and 318 sampling of connections. This department also issued or renewed 111 permits to Significant Industrial Users (SIUs) and non-SIUs.
- At DITP, treated 99.9% of flow through secondary and met secondary permit limits at all times. Operated DITP without any NPDES Permit violations for the first six months of FY17.
- 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 10 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.

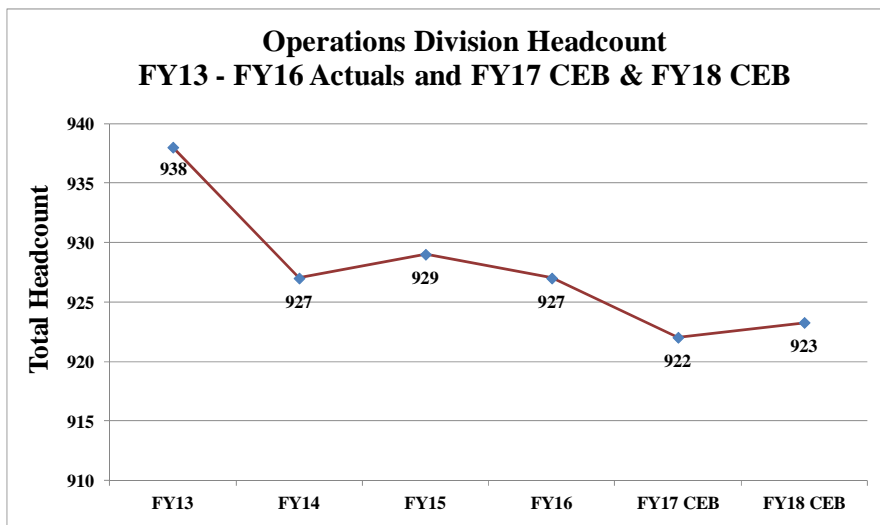
- Met all water quality and treatment standards for giardia in the drinking water system during the first six months of FY17. Also, maximum turbidity results at Quabbin and Wachusett were within MassDEP standards.
- During the first six months of FY17, the Department of Laboratory Services performed 174,000 tests including the annual Lead and Copper Rule testing and Massachusetts Bay water column testing for the Harbor and Outfall Monitoring program.
- Distributed \$8.9 million in grants and interest-free loans to member sewer communities to rehabilitate their collection systems with the goal of structurally reducing infiltration and inflow.
- Distributed \$13.9 million in Local Water System Assistance Program interest-free loans to member water communities including \$2 million under the Lead Service Line Replacement Loan Program.

Budget Highlights:

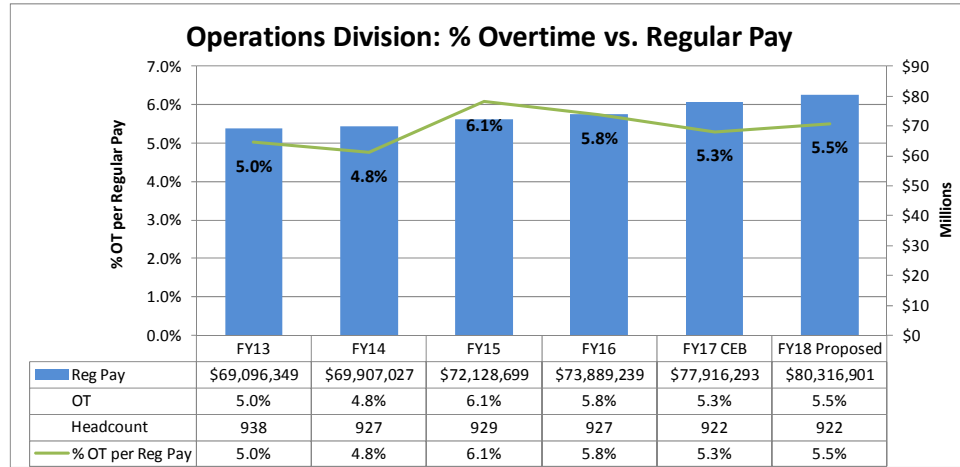
- The FY18 Proposed Budget is \$176.1 million, which is \$9.4 million or 5.6%, more than the FY17 Budget.
- Line items that increase from the FY17 Budget include:

- The FY18 Proposed Budget of \$81.9 million for **Wages and Salaries** is an increase of \$2.3 million or 2.9% from the FY17 Budget primarily due to wage increases associated with collective bargaining agreements. The FY18 Proposed Budget funds 919 filled full-time equivalent positions on average during the year, on a headcount of 923 positions, and also includes \$788,000 for Stand-by Pay to ensure staffing availability and response during emergencies, \$174,000 for Interns, and \$80,000 for Temporary Employees to assist lead testing in schools.

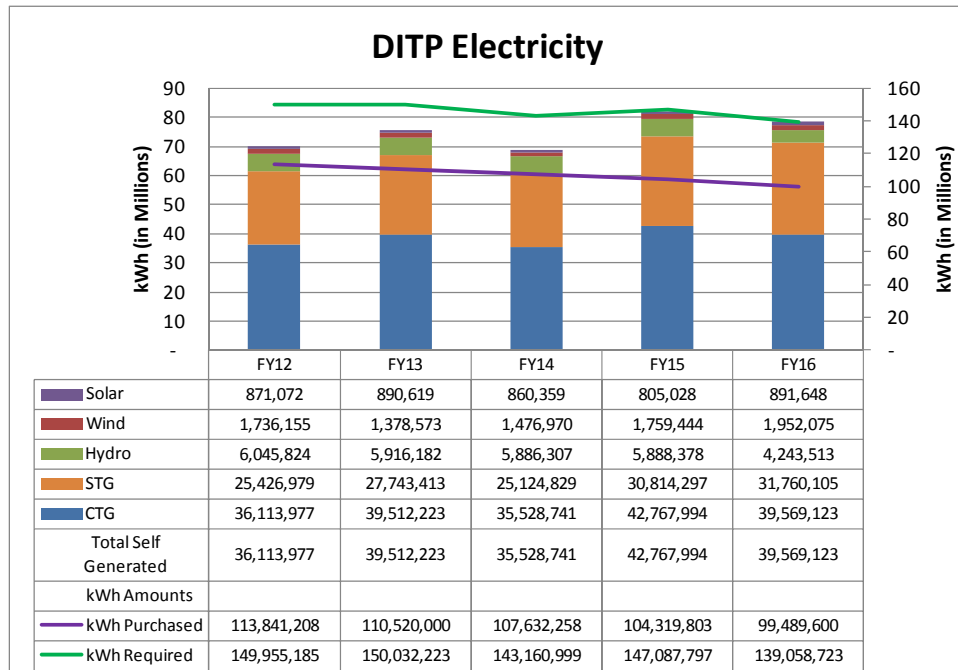
FTEs Operations by Department		
DEPARTMENT	FY17 FTEs	FY18 FTEs Proposed
OPERATIONS ADMINISTRATION	24	24
OPERATIONS, ENGINEERING & CONSTRUCTION	730	730
PROGRAMS, POLICY & PLANNING	165	165
TOTAL	919	919



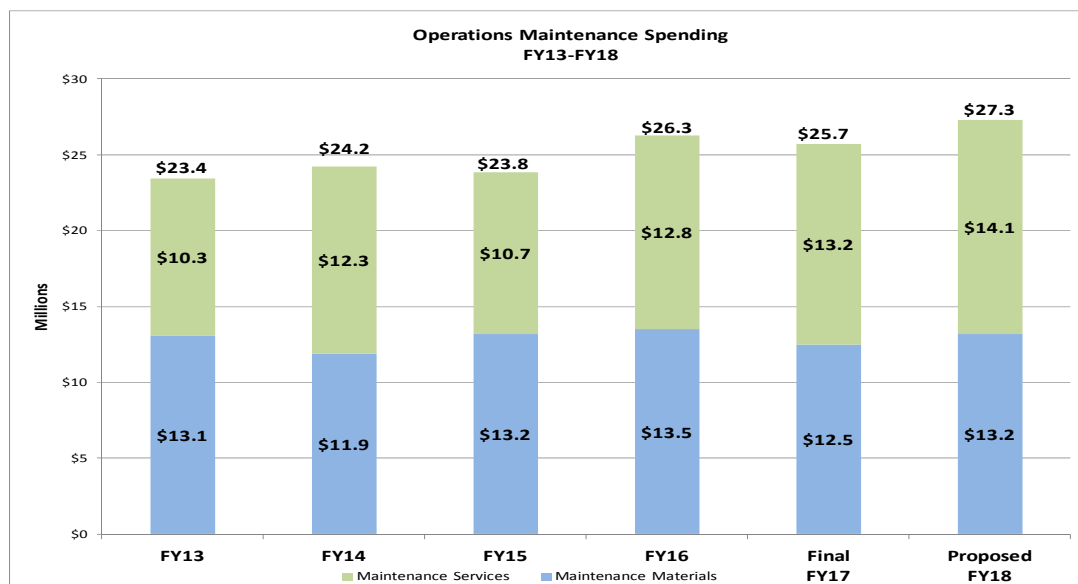
- The FY18 Proposed Budget of \$4.4 million for **Overtime** is a net increase of \$296,000 or 7.2% from the FY17 Budget primarily due to incremental overtime of \$468,000 required to support the operation of the CTGs at DITP during the HEEC Project. It also includes contractual wage increases. These increases are offset by a decrease in overtime associated with the North Main Pump Station (NMPS) project due to fewer planned shutdowns in FY18 as the project nears completion. The budget includes \$1.8 million for emergencies and storms; \$1.6 million for planned work required on off-shifts and during periods of lower flows; \$1.1 million for routine coverage of operations per prevailing collective bargaining agreements; and \$20,000 for training.



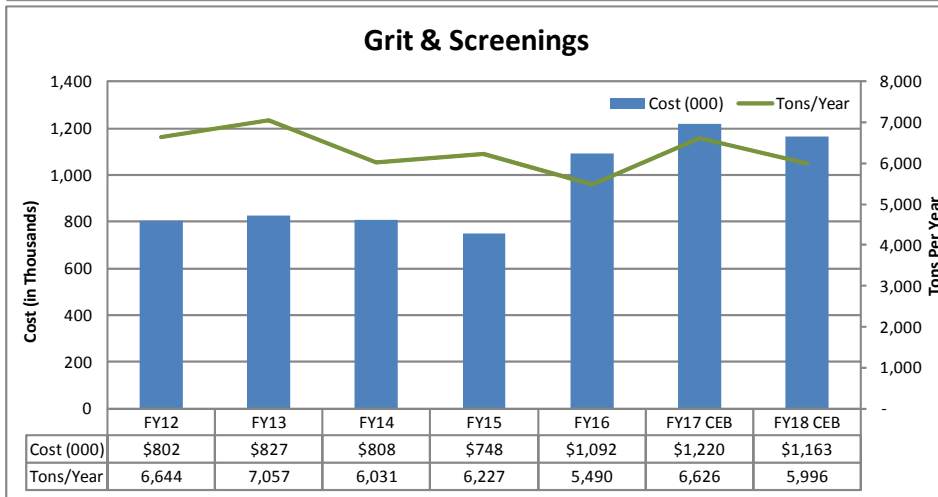
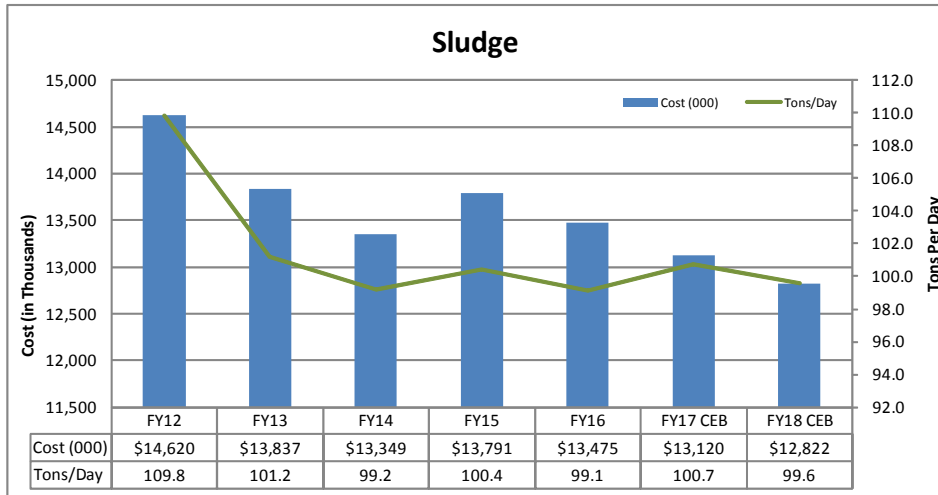
- The FY18 Proposed Budget of \$10.4 million for **Chemicals** includes \$5.8 million for disinfection and treatment in the water system and \$4.6 million for disinfection, treatment, and odor control in the wastewater system. The budget includes \$3.6 million for soda ash; \$2.7 million for sodium hypochlorite; \$914,000 for ferric chloride; \$450,000 for liquid oxygen; \$361,000 for hydrofluosilicic acid; \$328,000 for activated carbon; \$315,000 for carbon dioxide; \$403,000 for hydrogen peroxide; \$317,000 for polymer; \$541,000 for sodium bisulfite; and \$204,000 for aqua ammonia. The FY18 Proposed Budget is \$1.3 million or 14% more than the FY17 Budget due to the net effect of price and usage adjustments based on recent trends, contracts, and market projections. The FY18 budget also includes an increase of \$600,000 for additional chemicals required at DITP to treat enterococcus when the new permit goes into effect in January 2018.
- The FY18 Proposed Budget of \$25.6 million for **Utilities** includes \$14.0 million for electricity, \$8.7 million for diesel fuel, \$2.2 million for water, and \$590,000 for natural gas. The increase of \$4.2 million or 20% from the FY17 Budget is primarily due to the net effect of operating the CTGs at DITP to provide power during the HEEC Cable Protection Project while the plant is off the grid. The utility budget by department is \$15.3 million for Deer Island Treatment Plant, \$4.9 million for Wastewater Operations, \$4.6 million for Water Operations, \$510,000 for the Chelsea office and maintenance facilities, and \$229,000 for the Clinton Wastewater Treatment Plant.



- The FY18 Proposed Budget for **Maintenance** is \$27.3 million, a net increase of \$1.6 million or 6.1% from the FY17 Budget primarily due to changes in project priorities from year to year. The FY18 Proposed Budget includes \$14.1 million for services and \$13.2 million for materials. By maintenance area, the largest categories of spending for materials and services include \$13.4 million for plant and machinery; \$4.6 million for building and grounds; 3.8 million for specialized equipment; \$2.4 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 at DITP and in the Field Operations Department facilities; invasive plant control in the water reservoirs; painting and coating upkeep at DITP and 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 FY18 Proposed Budget of \$201,000 for **Training and Meetings** covers specialized training, attendance at industry conferences, and site visits as required to vendors and other plants. It specifically funds training for topics such as spill response and boom deployment; spill prevention and control; belt laser alignment; cyber security; and electrical voltage. The FY18 Proposed Budget is \$5,000 or 2.6% more than the FY17 Budget primarily due to increased need for workforce development associated with succession planning and the impacts of expected retirements.
- The FY18 Proposed Budget of \$5.0 million for **Other Materials** includes \$1.9 million for Vehicle Replacements; \$908,000 for Lab and Testing Supplies; \$199,000 for Vehicle Expenses (gas, mileage reimbursement); \$432,000 for Health and Safety Supplies; \$585,000 for Equipment and Furniture; and \$429,000 for Work Clothes. The increase of \$43,000 or 1% from the FY17 Budget is primarily due to additional equipment purchases for the emerging reservoir contaminant monitoring program and more lab and testing supplies for a required water quality test (UCMR4), offset by a decrease for vehicle expenses associated with lower gas prices and the consolidation of toll expenses in the Fleet Service Department's budget.
- Line items that decrease from the FY17 Budget include:
 - The FY18 Proposed Budget for **Professional Services** is \$2.6 million, including \$1.7 million for lab and testing services; \$609,000 for engineering services and \$266,000 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; \$310,000 for Dam Safety Services; \$253,000 for outsourced testing by the Central Laboratory; \$60,000 for MWRA's FY18 contribution to the Mystic River Modeling project; \$66,000 for comprehensive reservoir-wide plant survey in the water system; and \$75,000 for invasive species control services in the reservoirs. The FY18 Proposed Budget is \$29,000 less than the FY17 Budget due to deletion of funds for initiatives that will finish in FY17 including the assessments of MWRA's SCADA directory and cathodic protection programs, offset by increases for some services based on needs.
 - The FY18 Proposed Budget for **Other Services** is \$18.6 million, including \$12.8 million for sludge pelletization; \$1.9 million for space leases and rentals, including the Chelsea office facility; \$1.2 million for grit and screenings removal and disposal; \$975,000 for telecommunications services; \$467,000 for police details; \$262,000 for other services; and \$465,000 for memberships, dues, and subscriptions. The FY18 Proposed Budget is \$327,000 less than the FY17 Budget primarily due to reductions for contractual inflation for sludge pelletization services, lower grit and screenings quantities based on recent trends, and a decreased budget for technical assistance to communities to reduce lead in water pipes based on expected needs.



OPERATIONS ADMINISTRATION

The **Operations Administration Department** is composed 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.

FY18 Proposed Current Expense Budget OPERATIONS ADMINISTRATION							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 2,307,256	\$ 2,388,095	\$ 2,555,869	\$ 2,475,902	\$ (79,966)		-3.1%
OVERTIME	282	508	-	-	-		-
FRINGE BENEFITS	-	-	-	-	-		-
TRAINING & MEETINGS	10,288	22,098	23,800	22,800	(1,000)		-4.2%
PROFESSIONAL SERVICES	78,738	64,483	105,001	95,001	(10,000)		-9.5%
OTHER MATERIALS	1,811,438	1,741,007	1,902,500	1,932,400	29,900		1.6%
OTHER SERVICES	247,413	345,742	294,825	393,030	98,205		33.3%
TOTAL	\$ 4,455,415	\$ 4,561,932	\$ 4,881,995	\$ 4,919,133	\$ 37,139		0.8%

FY18 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.

FY18 Major Initiatives:

- Make substantial progress, complete, and/or implement startup of major capital projects
- Advance the program to provide redundancy for the Metropolitan Tunnel System.
- Ensure reliable operations of DITP during the next phase of the Cross Harbor Cable relocation project.
- Oversee MWRA's participation on key regulatory initiatives including negotiation of the next DITP NPDES Permit, compliance with the multi-year CSO Program performance assessment, and potential transfer of NPDES program management from the US Environmental Protection Agency to the MA Department of Environmental Protection.

FY17 Mid-Year Accomplishments:

- Secured Board of Directors' support for development of the long-term, \$1.4 billion Metropolitan Tunnel System Redundancy Project and supported Advisory Board's public meeting to discuss this project.
- Oversaw DITP's successful operations during the initial phase of the HEEC Cable Relocation project.

Budget Highlights:

- The FY18 Proposed Budget is \$4.9 million, an increase of \$37,000 or 0.8%, compared to the FY17 Budget.
- \$2.5 million for **Wages and Salaries**, a decrease of \$80,000 or 3.1%, as compared to the FY17 Budget. The fund supports 26 filled positions, equaling to 23.6 full-time equivalents (FTEs) due to adjustments for part-time workers.
- \$23,000 for **Training & Meetings**, a decrease of \$1,000 or 4.2% as compared to FY17 Budget. Funding in this line item is for attendance at conferences for the COO, DCOO, finance staff as well as division-wide attendance at major industry professional conferences held annually.
- \$95,000 for **Professional Services**, a decrease of \$10,000 or 9.5% as compared to FY17 Budget. The decrease is primarily due to reduced funding for the Mystic River Modeling Project/USGS program to reflect likely levels of spending. This budget includes \$35,000 for Energy Advisory Services to provide expert advice on energy matters to support staff with energy procurements, pricing analyses and other energy projects.
- \$1.9 million for **Other Materials**, which is an increase of \$30,000 or 1.6% as compared to FY17 Budget primarily due to the consolidation of division-wide funding for safety glasses and rain gear. The major item in the budget is \$1.9 million for vehicle replacements to address the needs of an aging fleet. At an average cost of \$30k to \$35k per vehicle, the budget supports replacement of 54-63 vehicles which is approximately 11%-12% of the active fleet.
- \$393,000 for **Other Services**, an increase of \$98,000 or 33.3% as compared to FY17 Budget. The increase is due primarily to additional funding for the membership to the Water Research Foundation and the annual membership for the Mystic River Invasive Species Control Water Chestnut Education Program. Operations Administration will continue funding annual memberships to the National Association of Clean Water Agencies (NACWA), Association of Metropolitan Water Agencies (AMWA), American Water Works Association (AWWA), and Boston NOW (formerly the Boston Harbor Association (BHA)).

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

FY18 Proposed Current Expense Budget OPERATIONS, ENGINEERING & CONSTRUCTION

LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 58,134,027	\$ 59,064,518	\$ 62,296,146	\$ 63,836,882	\$ 1,540,736	2.5%
OVERTIME	4,222,642	4,061,318	3,946,827	4,234,658	287,831	7.3%
FRINGE BENEFITS	78,482	81,089	72,882	76,269	3,387	4.6%
CHEMICALS	9,749,142	9,297,550	9,110,407	10,414,788	1,304,381	14.3%
UTILITIES	20,951,802	18,604,355	21,402,348	25,606,471	4,204,122	19.6%
ONGOING MAINTENANCE	23,269,390	25,825,070	25,100,448	26,625,479	1,525,030	6.1%
TRAINING & MEETINGS	100,706	112,363	134,525	137,925	3,400	2.5%
PROFESSIONAL SERVICES	329,896	577,363	906,233	790,076	(116,157)	-12.8%
OTHER MATERIALS	1,722,903	1,584,675	1,615,484	1,451,207	(164,277)	-10.2%
OTHER SERVICES	17,755,909	18,002,497	18,043,566	17,684,985	(358,581)	-2.0%
TOTAL	\$ 136,314,899	\$ 137,210,798	\$ 142,628,866	\$ 150,858,739	\$ 8,229,873	5.8%

The Operations, Engineering & Construction Section is composed of the Wastewater Treatment, Field Operations, and Engineering and Construction departments. In total, the budgets for these programs represent 86% of the Operations Division's FY18 Proposed Budget and 63% of MWRA's FY18 Proposed Direct Expense Budget.

FY18 Proposed Current Expense Budget OPERATIONS, ENGINEERING & CONSTRUCTION by Programs

PROGRAM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WASTEWATER TREATMENT	\$ 63,852,040	\$ 62,673,573	\$ 65,381,119	\$ 71,502,447	\$ 6,121,328	9.4%
FIELD OPERATIONS	65,308,951	67,189,014	69,213,696	71,147,863	1,934,168	2.8%
ENGINEERING & CONSTRUCTION	7,153,909	7,348,211	8,034,051	8,208,429	174,377	2.2%
TOTAL	\$ 136,314,899	\$ 137,210,798	\$ 142,628,866	\$ 150,858,739	\$ 8,229,873	5.8%

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

FY18 Proposed Current Expense Budget WASTEWATER TREATMENT							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 18,914,089	\$ 19,445,011	\$ 19,931,717	\$ 20,690,088	\$ 758,371		3.8%
OVERTIME	1,257,123	1,096,446	1,176,082	1,640,531	464,449		39.5%
FRINGE BENEFITS	26,236	24,511	18,343	25,795	7,452		40.6%
CHEMICALS	3,481,612	3,582,519	3,277,843	4,359,371	1,081,528		33.0%
UTILITIES	11,697,399	10,227,294	11,886,677	15,522,730	3,636,052		30.6%
ONGOING MAINTENANCE	12,976,875	12,729,618	13,707,179	14,190,484	483,305		3.5%
TRAINING & MEETINGS	12,213	14,470	26,500	41,100	14,600		55.1%
PROFESSIONAL SERVICES	171,644	105,470	146,401	171,701	25,300		17.3%
OTHER MATERIALS	599,711	666,760	606,925	647,525	40,600		6.7%
OTHER SERVICES	14,715,139	14,781,473	14,603,452	14,213,123	(390,329)		-2.7%
TOTAL	\$ 63,852,040	\$ 62,673,573	\$ 65,381,119	\$ 71,502,447	\$ 6,121,328		9.4%

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 41% of the Operations Division's FY18 Proposed Budget and 30% of MWRA's FY18 Proposed Direct Expense Budget.

FY18 Proposed Current Expense Budget WASTEWATER TREATMENT by Program							
PROGRAM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
DEER ISLAND	\$ 46,817,125	\$ 45,563,018	\$ 48,931,257	\$ 55,264,657	\$ 6,333,400		12.9%
RESIDUALS	15,375,189	15,158,205	14,529,501	14,159,435	(370,066)		-2.5%
CLINTON	1,659,726	1,952,350	1,920,361	2,078,355	157,994		8.2%
TOTAL	\$ 63,852,040	\$ 62,673,573	\$ 65,381,119	\$ 71,502,447	\$ 6,121,328		9.4%

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 (Deer Island or DITP) 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

FY18 Proposed Current Expense Budget DEER ISLAND TREATMENT PLANT

LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 18,188,028	\$ 18,646,944	\$ 19,123,441	\$ 19,828,177	\$ 704,737	3.7%
OVERTIME	1,200,367	1,038,987	1,121,082	1,583,881	462,799	41.3%
FRINGE BENEFITS	25,501	23,620	17,343	24,795	7,452	43.0%
CHEMICALS	3,171,902	3,244,071	2,951,471	4,024,367	1,072,896	36.4%
UTILITIES	11,463,089	10,043,480	11,660,311	15,294,027	3,633,716	31.2%
ONGOING MAINTENANCE	12,004,627	11,787,238	13,236,665	13,666,265	429,600	3.2%
TRAINING & MEETINGS	12,213	14,470	23,000	37,600	14,600	63.5%
PROFESSIONAL SERVICES	122,390	65,149	130,000	130,000	-	0.0%
OTHER MATERIALS	451,412	518,679	444,800	484,900	40,100	9.0%
OTHER SERVICES	177,596	180,380	223,145	190,645	(32,500)	-14.6%
TOTAL	\$ 46,817,125	\$ 45,563,018	\$ 48,931,257	\$ 55,264,657	\$ 6,333,400	12.9%

Program Description and Goals:

The **Deer Island Wastewater Treatment Plant** (Deer Island or DITP) budget accounts for 31% of the Operations Division's FY18 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. Process Control 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, predictive, and corrective maintenance repairs on all equipment, utilizing a computerized maintenance management system (CMMS) to coordinate scheduling and document all work completed. Staff has 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 Operations and Maintenance. 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 DITP community and external constituents, and ensures quick access to plant drawings and technical information for operational and maintenance needs.
- O&M Support 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 FY18 Proposed Budget assumes treatment of an average flow of 336 mgd based on ten years of historical data. The projected quantity of digested sludge to be pumped to FRSA (TSS basis) is 99.6 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 FY18 Proposed Budget accounts for the impact of self-generation of electricity from the steam turbine generators (STG), combustion turbine generators (CTG), hydroelectric generators, wind turbine generators, and photovoltaic panels. These assets will provide approximately 52% of the total energy requirements. Historically, these assets would only provide approximately 30% of Deer Island's total requirements, but due to the HEEC Cable Protection Project (HEEC Project), which is included in the FY18 Proposed Budget, the CTGs will be operational July through October 2017 for the final phase of the project. Over this period of time, the CTGs are estimated to generate approximately 30.4 million kWh. The CTGs will be operating continuously producing enough energy to allow Deer Island to be entirely off Eversource's power feed during that time. The timing and duration of the HEEC Project is subject to change.

Deer Island continues to comply with the conditions of the current National Pollutant Discharge Elimination System (NPDES) Permit, which has administratively continued since expiring in FY06. Given the uncertainty regarding the timing of the permit renewal from the Environmental Protection Agency (EPA), Deer Island's FY18 Proposed Budget does assume that a new permit will be in effect for only six months in FY18. 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.

FY18 Goals:

- Meet or surpass environmental compliance standards for the Deer Island Wastewater Treatment Plant as required by the NPDES permit and air quality permits.
- Operate the CTGs to allow Eversource to complete the HEEC Project within the established time period.
- Maintain DITP assets over the long term at the lowest possible life cycle cost and acceptable risk and 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.

FY18 Major Initiatives:

- Continue to implement the North Main Pump Station Butterfly Valve Replacement capital project which involves replacement of valves, magnetic flow meters, piping, actuators, and other parts.

- Implement projects in CIP according to schedule including issuing Notices to proceed for key projects and phases such as Expansion Joint Repair Construction 3, Cathodic Protection Design, and North Main Pump Station Motor Control Center Phase 2 Design.
- Complete the upgrade for the 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.
- Continue to implement projects and operational changes recommended by Eversource DITP energy audits.

FY17 Mid-Year Accomplishments:

- Met secondary permit limits at all times, treating on average more than 99% of flows with full secondary treatment.
- Provided approximately 32% of required power through self-generation, with 25.5% from renewable generation.
- Completed 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 FY17.
- On average, more than 96.2% of all digester gas generated was utilized at the Thermal/Power Plant in FY17.
- Awarded Notices to Proceed for key capital project phases including DSL Pump Replacement Phase 2.
- For the sixth straight year, staff met goal of 100% completion of all assigned Preventive Maintenance Work Orders. Also maintained availability of critical equipment 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 FY18 Proposed Budget is \$55.3 million, an increase of \$6.3 million or 12.9% compared to the FY17 Budget, primarily due to the \$4.5 million incremental impact of the HEEC Project which includes increases for overtime and utilities (more diesel fuel usage offset by avoided electricity costs).
- \$19.8 million for **Wages and Salaries**, an increase of \$705,000 or 3.7%, compared to the FY17 Budget primarily due to wage increases associated with collective bargaining agreements. The FY18 Proposed Budget also includes \$196,000 for stand-by pay to support operational and maintenance needs primarily during storms and emergencies.
- \$1.6 million for **Overtime**, an increase of \$463,000 or 41.3%, compared to the FY17 Budget primarily due to additional overtime requirements to support the HEEC Project. The FY18 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).
- \$4.0 million for **Chemicals**, an increase of \$1.1 million or 36.4% compared to the FY17 Budget, of which approximately half is due to the expectation that a new NPDES permit will be in effect for six months. The remainder of the increase is due to the net effect of usage and price adjustments. The FY18 Proposed Budget, which is based on multi-year historical usage trends and projected market prices, includes \$1.5 million for sodium hypochlorite, \$873,000 for ferrous chloride, \$394,000 for hydrogen peroxide, \$328,000 for activated carbon, \$299,000 for polymer, and \$90,000 for sodium hydroxide.
- \$15.3 million for **Utilities**, an increase of \$3.6 million or 31.2% primarily due to projected increases in diesel fuel offset in part by lower purchased electricity due to the HEEC Project. The FY18 Proposed Budget includes \$6.1 million for electricity, \$7.5 million for diesel fuel, and \$1.7 million for water. The budget reflects the impact of running the CTGs while the HEEC Project is underway from July 2017 through October 2017. The Budget also incorporates usage reductions associated with implemented and planned energy efficiency projects such as the optimized steam turbine generators, secondary optimization and lighting retrofits throughout the plant.
- \$13.7 million for **Maintenance**, an increase of \$430,000 compared to FY17 Budget. The FY18 Proposed Budget includes \$5.8 million for materials and \$7.9 million for services. Of the total, \$8.5 million or 62% is for plant and machinery services and materials, \$1.9 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. It also includes contractor and preferred service agreement costs in support of the HEEC Project.
- \$130,000 for **Professional Services**, which is level funded with the FY17 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.
- \$485,000 for **Other Materials**, an increase of \$40,000 or 9.0% from the FY17 Budget primarily due to increases in health and safety equipment and office furniture and equipment replacements. The

FY18 Proposed Budget includes \$192,000 for health and safety materials, \$98,000 for work clothes, \$58,000 for vehicles expenses (mileage and gas), and \$37,000 for office supplies.

- \$191,000 for **Other Services**, a decrease of \$33,000 or 14.6%, from the FY17 Budget. The FY18 Proposed Budget includes \$44,000 for permit fees, \$54,000 for health and safety hazardous safety services, \$36,000 for telephones, \$34,000 for membership dues and subscriptions, \$20,000 for freight charges, and \$6,000 for printing services. The budget is based on historical averages for most items in this category.

RESIDUALS

FY18 Proposed Current Expense Budget RESIDUALS MANAGEMENT PROGRAM							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 130,260	\$ 137,835	\$ 141,273	\$ 145,086	\$ 3,813	2.7%	
ONGOING MAINTENANCE	699,035	444,885	-	-	-	-	
TRAINING & MEETINGS	-	-	3,200	3,200	-	0.0%	
PROFESSIONAL SERVICES	19,144	(2,775)	15,001	1	(15,000)	-100.0%	
OTHER MATERIALS	15,844	2,390	15,125	15,125	-	0.0%	
OTHER SERVICES	14,510,907	14,575,870	14,354,902	13,996,023	(358,879)	-2.5%	
TOTAL	\$ 15,375,189	\$ 15,158,205	\$ 14,529,501	\$ 14,159,435	\$ (370,066)	-2.5%	

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 commenced 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 FY18 Proposed Budget is based on the assumption of 99.6 average tons per day (TPD; TSS basis), consistent with historical averages from recent years.
- 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.

FY18 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.

FY18 Major Initiatives:

- Oversee the NEFCo contract to ensure successful pelletization and distribution of an average of 99.6 TPD of sludge.
- In conjunction with NEFCo, continue implementation of the extended contract and initiate all planned capital projects scheduled for FY18.
- Continue marketing efforts for Bay State Fertilizer.
- Oversee the contractual disposal of an estimated 5,996 tons of grit and screenings.

FY17 Mid-Year Accomplishments:

- NEFCo successfully processed, pelletized, and distributed an average of 93.7 TPD of sludge.
- MWRA sold Bay State Fertilizer through retail outlets and distributed pellets to public sector clients.
- MWRA's contractor disposed of 2,453 tons of grit and screenings.

Budget Highlights:

- The FY18 Proposed Budget is \$14.2 million, a decrease of \$370,000 or 2.5%, from the FY17 Budget.
- \$145,000 for **Wages and Salaries**, which funds one permanent position and 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 funding for **Professional Services** in FY18 which is a decrease of \$15,000 from the FY17 Budget due to the exclusion of funding for bi-annual stack testing which will not be required in FY18 per regulatory requirements.
- \$14.1 million for **Other Services**, a decrease of \$359,000 or 2.5% from the FY17 Budget primarily due to lower projected inflation rates for components of the sludge processing contract based on market indices. The two major items funded in the FY18 Proposed Budget include \$1.2 million for grit and screenings disposal and \$12.9 million for sludge pelletization services, both provided through contracts with private vendors. Projected FY18 budget quantities, which are based on recent historical averages, include sludge tonnage of 99.6 average tons per day (TPD) and 5,996 tons for grit and screenings.

CLINTON

FY18 Proposed Current Expense Budget CLINTON WASTEWATER TREATMENT PROGRAM							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 595,801	\$ 660,232	\$ 667,003	\$ 716,825	\$ 49,821		7.5%
OVERTIME	56,756	57,460	55,000	56,650	1,650		3.0%
FRINGE BENEFITS	735	891	1,000	1,000	0		0.0%
CHEMICALS	309,710	338,448	326,372	335,004	8,632		2.6%
UTILITIES	234,310	183,814	226,367	228,703	2,336		1.0%
ONGOING MAINTENANCE	273,213	497,495	470,514	524,219	53,705		11.4%
TRAINING & MEETINGS	-	-	300	300	-		0.0%
PROFESSIONAL SERVICES	30,110	43,096	1,400	41,700	40,300	2878.6%	
OTHER MATERIALS	132,454	145,692	147,000	147,500	500		0.3%
OTHER SERVICES	26,637	25,223	25,405	26,455	1,050		4.1%
TOTAL	\$ 1,659,726	\$ 1,952,350	\$ 1,920,361	\$ 2,078,355	\$ 157,994		8.2%

Program Description and Goals:

The Clinton Wastewater Treatment Plant provides advanced wastewater 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. A new NPDES permit issued March 1, 2017 imposes additional requirements on phosphorus removal. As such, additional facilities are being added to meet more stringent phosphorus removal requirements and lower discharge limits.

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 FY18 Proposed Budget reflects the fifth 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 FY18 Proposed Budget assumes the requirements of the new NPDES permit will be in effect for the entire year. The new permit requires year around limits for phosphorus discharge, which impacts the use of Ferric Chloride. Ferric chloride and polymer will be utilized along with a disc filter operation as part of the new phosphorus reduction facility currently under construction. The supply of Ferric Chloride for FY18 will cost more than the previous contract because of a factory shutdown in the supply chain. The FY18 Proposed Budget includes estimates for numerous maintenance projects including \$250,000 for a periodic painting and coating job for an aerated grit tank. The FY18 Proposed Budget also reflects the transition to the use of natural gas to fuel the boilers in lieu of using fuel oils.

FY18 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.

FY18 Major Initiatives:

- Continue to make substantial progress on the painting and coating of the plant facilities and equipment.
- Bring the Phosphorus Reduction building online in October of 2017 and commence use of Natural Gas from the new line in order to fuel the plant's boilers.
- Implement enhanced phosphorus control at the Clinton Wastewater Treatment Plant to comply with the requirements of the new NPDES permit.
- Commence the Clinton Roofing Rehabilitation CIP Project which is expected to be substantial completed by December 2017.

Budget Highlights:

- \$717,000 for **Wages and Salaries**, an increase of \$50,000 or 7.5%, from the FY17 Budget due to wage increases per collective bargaining agreements and due to all positions being filled all year in FY18. Wage & Salaries represent 35% of the budget.

- \$57,000 for **Overtime** - The FY18 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.
- \$335,000 for **Chemicals**, an increase of \$8,600 or 2.6% from the FY17 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 FY18 Proposed Budget assumes the new NPDES permit will be in effect for the full year. Chemicals represent 16% of the budget.
- \$229,000 for **Utilities**, an increase of \$2,000 or 1.0% from the FY17 Budget. The budget includes \$188,000 for electricity, \$26,000 for natural gas, \$10,000 for water, and \$4,500 for fuel. Electricity is based on an average of FY14-FY16 actual usage plus the engineer's estimate of kWh required for nine months use of the new Phosphorus Building. The budget also assumes the plant will phase in use of the new natural gas line and phase out fuel use for the boilers. Utilities represent 11% of the FY18 Proposed Budget.
- \$524,000 for **Maintenance**, an increase of \$54,000 or 11.4% from the FY17 Budget due to project priorities. The FY18 Proposed Budget includes \$250,000 for painting to address issues with the aerated grit tank as well as \$106,500 for major projects based on the most current rolling priority list. The remainder of the budget is for routine materials and services. Maintenance represents 25% of the FY18 Proposed Budget.
- \$42,000 for **Professional Services**, an increase of \$40,000 due to the addition of funding for engineering services for numerous maintenance projects.
- \$148,000 for **Other Materials**, which includes \$135,000 for clean fill for the landfill operation.
- \$26,000 for **Other Services**, which includes \$13,000 for permit fees, \$5,000 for telephones, and \$3,300 for railroad easement expenses.

FIELD OPERATIONS

FY18 Proposed Current Expense Budget						
FIELD OPERATIONS						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 32,197,907	\$ 32,407,304	\$ 34,470,507	\$ 35,073,077	\$ 602,570	1.7%
OVERTIME	2,906,531	2,900,372	2,704,780	2,528,165	(176,615)	-6.5%
FRINGE BENEFITS	52,103	56,426	54,039	50,224	(3,815)	-7.1%
CHEMICALS	6,267,530	5,715,031	5,832,564	6,055,417	222,854	3.8%
UTILITIES	9,254,403	8,377,061	9,515,671	10,083,741	568,070	6.0%
ONGOING MAINTENANCE	10,292,373	13,094,776	11,393,270	12,434,995	1,041,725	9.1%
TRAINING & MEETINGS	73,028	86,282	99,025	87,025	(12,000)	-12.1%
PROFESSIONAL SERVICES	158,251	471,893	759,832	618,375	(141,457)	-18.6%
OTHER MATERIALS	1,091,844	892,777	975,509	780,397	(195,112)	-20.0%
OTHER SERVICES	3,014,980	3,187,092	3,408,499	3,436,447	27,948	0.8%
TOTAL	\$ 65,308,951	\$ 67,189,014	\$ 69,213,696	\$ 71,147,863	\$ 1,934,168	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.

FY18 Proposed Current Expense Budget						
FIELD OPERATIONS by Programs						
Program	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WASTEWATER OPERATIONS	\$ 11,752,934	\$ 13,823,886	\$ 12,356,293	\$ 12,459,091	\$ 102,798	0.8%
WATER OPERATIONS & MAINT	27,560,341	26,896,291	29,237,034	30,537,940	1,300,906	4.4%
METRO MAINTENANCE	16,140,065	16,763,160	16,425,078	17,477,301	1,052,223	6.4%
OPERATIONS SUPPORT	4,793,945	4,924,451	5,802,773	5,497,572	(305,201)	-5.3%
FOD ADMIN	5,061,666	4,781,225	5,392,518	5,175,959	(216,559)	-4.0%
TOTAL	\$ 65,308,951	\$ 67,189,014	\$ 69,213,696	\$ 71,147,863	\$ 1,934,168	2.8%

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 Brutsch 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.

FY18 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.

Metropolitan Maintenance

- 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.
- Continue to maximize staff productivity and efficiency for the maintenance of these facilities.
- 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.

FY18 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
- Continue to support the various CIP projects (Chelsea Creek Headworks Rehabilitation, Alewife Brook Pump Station Rehabilitation, etc)

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.
- Continue the rehabilitation of the cathodic protection system of water system assets.
- Continue to support the various CIP pipeline projects (Northern Intermediate High; Southern Extra High) with valve operations.

Metropolitan Maintenance

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

Operations Support

- Develop Graphics Standards for use in CIP PLC replacement projects and ongoing and future construction projects (WAPS, CCHW, Alewife, Comm. Ave. East)
- Test, select and upgrade SCADA network firewalls
- Roll out configuration management platform

FY17 Mid-Year Accomplishments:

Wastewater Operations

- Wastewater Operations staff is working with construction staff and the contractor for the Alewife Brook Pump Station rehab. The contractor installed one of the bypass pumping discharge pits and poured the walls for the discharge chamber. Operations locked out/tagged out the dry weather pump (#4) so the contractor could inspect the downstream 24-inch sewer line.

- Operations Staff performed 100% of their scheduled preventative maintenance work orders during the second quarter of FY17. Operations Staff reviewed all work orders and preventive maintenance activities to ensure the availability of all equipment and to ensure corrective maintenance tasks were performed in a timely manner.
- Operations staff continue to assist Construction staff and the contractor with the upgrades to the Chelsea Screen House. Staff provided onsite operational support and attended bi-weekly meetings regarding. All gates and screens have been installed and tested by the contractor.
- Wastewater Operations staff are providing onsite operational support for construction staff and the contractor for Caruso Pump Station improvements. Operations placed the facility on the loop, when needed, for the breaker replacement work related to the new facility generator.
- Operations staff completed the renewal of the contract for the Management, Operation and Maintenance of the Union Park Pumping Station/CSO Facility, which was awarded to Woodard & Curran. The notice to proceed is scheduled for 3/2/17.

Water Operations and Maintenance

- Three of the eight JJCWTP sodium hypochlorite tanks were relined.
- The new pipeline to the McLaughlin hatchery was put into service to supply approx. 6MGD.
- A contract was procured to replace the WPS intake screens and the work will be done this spring.
- Continued invasives removal work in the Stillwater, Sudbury Reservoir, and Chestnut Hill reservoirs.
- Completed the A-side modifications for the WAPS Project during annual half-plant shutdown of the Carroll Water Treatment Plant (B-side will be completed this spring), 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
- Replaced nine main line valves and retrofitted five blow-off valve sites.
- Identified and repaired 11 leaks, most with the pipelines remaining in service.
- Overall valve operability is 94%-100%, a result of continued valve exercising, repair, and replacement.
- Assisted thirteen customer communities with valve, leak detection, and water quality issues.

Metropolitan Maintenance

- Staff performed 492 manhole inspections.
- Cleaned and maintained 18.28 miles of the MWRA's sewer system
- Inspected 17 siphon barrels and cleaned 36 siphon barrels.

Operations Support:

- Implemented Multi Protocol Label Switching network on Wastewater and Water SCADA networks to replace Frame Relay System. Further MPLS expansion is ongoing.
- Procured contract to implemented Active Directory for water and wastewater SCADA networks.

Budget Highlights:

- The FY18 Proposed Budget is \$71.1 million, an increase of \$1.9 million or 2.8% from the FY17 Budget.
- \$35 million for **Wages and Salaries**, an increase of \$603,000 million or 1.7%, from the FY17 Budget mainly due to wage increases associated with collective bargaining agreements. This line item accounts for 49% of the FY18 Proposed Budget. The budget also includes \$446,000 for stand-by pay to ensure support for operational and maintenance needs during wet weather and emergencies and \$59,000 for interns to provide support in several areas including Operations Engineering and SCADA.
- \$2.5 million for **Overtime**, a decrease of \$177,000 or 6.5% from the FY17 Budget. The budget, which incorporates collective bargaining increases, includes \$1.3 million for emergency related overtime; \$636,000 for planned overtime; and \$592,000 for operational coverage needs. The budget for planned overtime is decreasing significantly due to completion in FY17 of the North Main Pump Station (NMPS)/ Winthrop Terminal Facility Valve Replacement project.
- The FY18 Proposed Budget includes \$6.1 million for **Chemicals**, which is \$223,000 or 3.8% higher than the FY17 Budget. The budget includes \$5.8 million for water treatment and \$292,000 for wastewater treatment and is based on multi-year historical usage trends and projected market prices. The Budget includes \$3.4 million for Soda Ash, \$1.1 million for Sodium Hypochlorite, \$450,000 for Liquid Oxygen, \$361,000 for Hydrofluosilicic Acid, \$315,000 for Carbon Dioxide, \$204,000 for Aqua Ammonia, \$92,000 for Sodium Bisulfite, \$78,000 for Other Oxidizers, and \$45,000 for Sodium Hydroxide.
- \$10 million is included for **Utilities**, which is \$568,000 or 6.0% higher than FY17 Budget. The FY18 Proposed Budget includes \$7.8 million for electricity, \$1.2 million for diesel fuel, \$564,000 for natural gas, \$506,000 for water and \$58,000 for propane. The largest change is in electricity which increases 9.4% due to approved utility rate increases and updated estimates of usage at the Spot Pond Water Storage Facility based on actual trends during its first year in service.
- \$12.4 million for **Maintenance**, an increase of \$1.0 million or 9.1% from the FY17 Budget due to project priorities and projected needs. The FY18 Proposed Budget includes \$4.9 million in day-to-day needs, \$3.5 million for services, \$3.6 million in major projects, and \$450,000 for energy initiatives. Some of the major projects included for the FY18 Proposed Budget are:

BW/IPS and Chelsea Admin Building Air Handler Upgrades	\$400,000
Manhole Rehabilitation Contract	\$360,000
South Boston CSO - Inspection and Cleaning	\$350,000
Invasives Control - Stillwater Basin - DASH	\$203,250
Annual tank cleaning	\$100,000
Prison Point - Replace wash down piping @ detention tanks	\$80,000
- \$87,000 for **Training and Meetings**, a decrease of \$12,000 or 12.1% from the FY17 Budget. The budget covers training required for work duties, health and safety compliance, cyber-security and SCADA technical training, and job-related licensures and certifications.

- \$618,000 for **Professional Services**, a decrease of \$141,000 or 18.6% from the FY17 Budget primarily due to the expected completion of several projects in FY17. The FY18 Proposed Budget includes \$464,000 for engineering services, which is made up of \$141,000 for as-needed engineering services to support CEB-funded maintenance projects; \$311,000 for a multi-year dam safety contract; and \$13,000 for evaluation of spill prevention, control, and countermeasure plans. Additionally, the Professional Services budget also includes \$66,000 for an annual macrophyte survey at the reservoirs; \$75,000 for quality assurance services for macrophyte harvesting; and \$10,000 for energy audits at various facilities.
- \$780,000 for **Other Materials**, a decrease of \$195,000 or 20% from the FY17 Budget primarily due to lower gas prices for vehicles and the shift of transponder costs to the Fleet Services budget. The FY18 Proposed Budget includes \$114,000 for vehicle expenses for gas, mileage reimbursements, and tolls; \$268,000 for work clothes; and \$210,000 for health and safety supplies.
- \$3.4 million for **Other Services**, an increase of \$28,000 or 0.8%, from the FY17 Budget. The FY18 Proposed Budget includes \$1.9 million for annual lease payments for the Chelsea office building; \$852,000 for telephones, and \$458,000 for police details.

ENGINEERING AND CONSTRUCTION

FY18 Proposed Current Expense Budget ENGINEERING AND CONSTRUCTION							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 7,022,031	\$ 7,212,203	\$ 7,893,921	\$ 8,073,717	\$ 179,795	2.3%	
OVERTIME	58,989	64,500	65,965	65,962	(3)	0.0%	
FRINGE BENEFITS	143	152	500	250	(250)	-50.0%	
ONGOING MAINTENANCE	142	676	-	-	-	-	
TRAINING & MEETINGS	15,466	11,610	9,000	9,800	800	8.9%	
OTHER MATERIALS	31,349	25,138	33,050	23,285	(9,765)	-29.5%	
OTHER SERVICES	25,790	33,932	31,615	35,415	3,800	12.0%	
TOTAL	\$ 7,153,909	\$ 7,348,211	\$ 8,034,051	\$ 8,208,429	\$ 174,377	2.2%	

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.

FY18 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.

FY18 Major Initiatives:

- Award contracts and issue Notice to Proceed for numerous contracts including the following major phases
 - NIH Redundancy & Storage: Section 89/29 Redundancy – Rehab – Design
 - Nor Low Service Rehab Section 8: Section 57 Water & 21/2-/19 Sewer Design/ESDC/REI
 - Winsor Station Pipeline Improvements: Winsor Power Station Final Design/CA/RI
 - Metropolitan Tunnel Redundancy: Conceptual Design ERI
 - Watershed Division Capital Improvements: Quabbin Admin Bldg Rehab Design CA/RI
 - Central Monitoring System: Waterworks SCADA/PLC Upgrades
 - Facility Asset Protection: Pump Station & CSO Condition Assessment
 - New Connect Mains-Shaft 7 to WASAM 3: Replacement Sections 25, 75, 59 & 60 DES CA/RI
 - Metropolitan Redundancy Interim Improvements: Design CA/RI
 - NIH Water Main
- Substantially complete numerous contracts including the following major phases
 - Section 80 Rehabilitation: Construction
 - Winsor Station Pipeline Improvements: Hatchery Pipeline Construction
 - Spot Pond Storage Facility – Owners’ Representative
 - NIH Redundancy & Storage: Section 89 & 29 Redundancy Phase 1B Construction
 - Waterworks Facility Asset Protection: Cosgrove/Gillis PS/CF CSO Flat Roof Replacement
 - Facility Asset Protection: Alewife Brook Pump Station Rehabilitation Construction
 - Facility Asset Protection: Interceptor Renewal 1, Reading Ext. Sewer Construction
 - Clinton Phosphorus Removal
 - CVA Intake Screen – Motorized Screen Replacement
- Complete the following regarding the Combined Sewer Overflow plan:
 - Cambridge Sewer Separation: Design/CS/RI

FY17 Mid-Year Accomplishments:

- Awarded contracts and/or issued Notice to Proceed for numerous phases including the following major phases:
 - Facility Asset Protection: Prison Point Rehab – Design/CA/RI
 - New Connect Mains Shaft 7 to WASM 3: CP3 Final Design/CA/RI
 - Facility Asset Protection: Chelsea Creak Upgrades – REI
 - Facility Asset Protection: Chelsea Creak Upgrades – Construction
 - SEH Redundancy
 - Cathodic Protection at Shaft 5/5A
- Substantially completed numerous contracts including the following major phases:
 - Carroll Water Treatment Plant: Southborough Water Quality Laboratory Upgrades

- Dorchester Bay Sewer Separation: Commercial Point Design
- Dorchester Bay Sewer Separation: Commercial Point Construction
- Spot Point Supply Mains Rehabilitation: Sect 4 Webster Avenue Bridge Pipe Rehab Construction
- Weston Aqueduct Supply Mains: Section 36/W11/S 9-A11 Valve

Budget Highlights:

- The FY18 Proposed Budget is \$8.2 million, an increase of \$174,000 or 2.2%, as compared to the FY17 Budget.
- \$8.1 million for **Wages and Salaries**, an increase of \$180,000 or 2.3% compared to the FY17 Budget primarily due to collective bargaining raises, internal promotions, and new hires. This funding supports 75 filled positions or 74.2 FTEs after accounting for part-time adjustments. Wages and Salaries represent 98% of the FY18 Proposed Budget.
- \$66,000 for **Overtime**, which is based on planned projects for FY18 and 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.
- \$10,000 for **Training & Meetings** to cover attendance at conferences and technical seminars.
- \$23,000 for **Other Materials**, a decrease of \$10,000 or 29.6%, compared to the FY17 Budget. The FY18 Proposed Budget is based on historical spending. The FY18 Proposed Budget decrease is due to the move of payment for the Fast Lane transponder fees to the Fleet Services budget beginning in FY18. The remaining budget covers office supplies, health and safety supplies, and survey equipment.
- \$35,000 for **Other Services**, an increase of \$3,800 or 12% compared to the FY17 Budget. The FY18 Proposed Budget increase is due to historical actuals running higher. Funding is based on historical spending and 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

FY18 Proposed Current Expense Budget PROGRAMS, POLICY & PLANNING						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 13,288,828	\$ 13,964,566	\$ 14,719,600	\$ 15,546,029	\$ 826,429	5.6%
OVERTIME	165,876	188,350	181,985	189,749	7,764	4.3%
FRINGE BENEFITS	2,124	2,652	2,325	2,546	221	9.5%
CHEMICALS	-	-	-	-	-	-
UTILITIES	22,881	23,842	24,500	24,500	-	0.0%
ONGOING MAINTENANCE	556,931	431,182	612,343	663,106	50,763	8.3%
TRAINING & MEETINGS	19,085	30,666	37,400	40,000	2,600	7.0%
PROFESSIONAL SERVICES	1,463,086	1,599,057	1,666,043	1,763,568	97,525	5.9%
OTHER MATERIALS	1,396,234	1,686,670	1,419,535	1,597,042	177,507	12.5%
OTHER SERVICES	391,779	419,585	558,771	492,148	(66,623)	-11.9%
TOTAL	\$ 17,306,823	\$ 18,346,571	\$ 19,222,502	\$ 20,318,688	\$ 1,096,186	5.7%

The Programs, Policy & Planning Section is composed of the Toxic Reduction and Control, Environmental Quality (EnQual), Laboratory 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 11.5% of the Operations Division's FY18 Proposed Budget and 8.5% of MWRA's FY18 Proposed Direct Expense Budget.

FY18 Proposed Current Expense Budget PROGRAMS, POLICY & PLANNING by Program						
PROGRAM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
TOXIC REDUCTION & CONTROL	\$ 3,764,566	\$ 3,929,956	\$ 3,975,931	\$ 4,605,633	\$ 629,703	15.8%
ENVIRONMENTAL QUALITY	4,275,976	4,837,375	4,915,414	5,138,216	222,802	4.5%
LAB SERVICES	5,932,398	6,264,136	6,584,524	6,858,092	273,568	4.2%
PLANNING	3,333,883	3,315,104	3,746,634	3,716,747	(29,886)	-0.8%
TOTAL	\$ 17,306,823	\$ 18,346,571	\$ 19,222,502	\$ 20,318,688	\$ 1,096,186	5.7%

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

FY18 Proposed Current Expense Budget TOXIC REDUCTION AND CONTROL						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 3,582,311	\$ 3,719,990	\$ 3,764,568	\$ 4,389,270	\$ 624,703	16.6%
OVERTIME	62,997	69,228	73,185	73,185	-	0.0%
FRINGE BENEFITS	1,221	1,419	1,200	1,200	-	0.0%
ONGOING MAINTENANCE	3,034	16,438	11,500	11,500	-	0.0%
TRAINING & MEETINGS	-	-	1,500	1,500	-	0.0%
OTHER MATERIALS	109,971	114,810	115,978	115,978	-	0.0%
OTHER SERVICES	5,032	8,070	8,000	13,000	5,000	62.5%
TOTAL	\$ 3,764,566	\$ 3,929,956	\$ 3,975,931	\$ 4,605,633	\$ 629,703	15.8%

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.

FY18 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.
- Finalize the re-organization of the 8M and Direct Connection permit process and personnel into TRAC.
- Review Clinton system local limits study and update as needed. Submit new limits to EPA in compliance with new Clinton Plant permit.
- Complete cross media electronic reporting, in concert with MIS, to comply with EPA requirements.

FY18 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.

FY17 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. Through December 2016, MWRA collected \$1.7 million in fees from discharge permit holders.
- Through December 2016, TRAC conducted 144 annual Significant Industrial User (SIU) inspections required by EPA, 881 inspections of industrial users other than annual SIU inspections, 398 oil/water separator inspections, and 74 inspections of septage hauling companies and receiving sites. Staff issued 111 permits to industrial users during the period including 15 permits issued to SIUs.
- Through December 2016, the Monitoring group conducted approximately 709 SIU and 67 Non SIU sampling events as required by EPA and the monitoring plan. Additionally, TRAC dealt with 970 non-industrial sampling events (e.g. emergencies, Combined Sewer Overflow, Clinton NPDES permit, Carroll Water Treatment Plant NPDES permit, SPSULF, Oakdale and Cosgrove NPDES permit).

Budget Highlights:

- The FY18 Proposed Budget is \$4.6 million, an increase of \$630,000 or 15.8%, from the FY17 Budget.
- \$4.4 million for **Wages & Salaries**, an increase of \$625,000 or 16.6% from the FY17 Budget due to the transfer of five employees related to the 8-M permitting process from FOD to TRAC, as well as collective bargaining increases. The budget also includes \$40,000 for stand-by pay for wet weather sampling events.
- \$73,000 for **Overtime** to cover sampling and monitoring during off-hours, emergencies, and wet weather events.
- \$12,000 for **Ongoing Maintenance**, no change from the FY17 Budget. This funds sampling equipment, materials, and maintenance of equipment used in sampling industrial discharges at permitted industries.
- \$116,000 for **Other Materials**, no change from the FY17 Budget. Funding in this line item mainly supports lab and testing supplies, health and safety materials, and work clothes.
- \$13,000 for **Other Services**, an increase of \$5,000, or 62.5% from the FY17 Budget, due to the shift of cell phone service costs from MIS to TRAC. This line item also 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

FY18 Proposed Current Expense Budget ENVIRONMENTAL QUALITY						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 2,734,691	\$ 2,865,105	\$ 3,149,351	\$ 3,142,284	\$ (7,067)	-0.2%
OVERTIME	3,708	9,780	4,800	8,564	3,764	78.4%
FRINGE BENEFITS	25	129	200	196	(4)	-2.0%
CHEMICALS	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
ONGOING MAINTENANCE	97,896	81,982	50,000	130,000	80,000	160.0%
TRAINING & MEETINGS	4,709	16,202	19,400	22,000	2,600	13.4%
PROFESSIONAL SERVICES	1,290,537	1,432,258	1,510,863	1,509,768	(1,095)	-0.1%
OTHER MATERIALS	35,065	311,952	60,330	211,330	151,000	250.3%
OTHER SERVICES	109,346	119,966	120,470	114,074	(6,396)	-5.3%
TOTAL	\$ 4,275,976	\$ 4,837,375	\$ 4,915,414	\$ 5,138,216	\$ 222,802	4.5%

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 designated libraries, and post many of these reports on its Harbor and Bay web pages. EnQual-WW manages environmental data and monitors and reports on the quality of sewage influent and effluent; Boston Harbor and its tributary rivers, and Massachusetts Bay. EnQual-WW also keeps current with upcoming and draft regulations, providing comments and evaluating potential impacts on MWRA operations.

FY18 Proposed Current Expense Budget ENVIRONMENTAL QUALITY by Program						
PROGRAM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
ENQUAL	\$ 2,715,087	\$ 2,770,877	\$ 2,951,353	\$ 2,997,826	\$ 46,473	1.6%
WATER QUALITY ASSURANCE	1,560,889	2,066,498	1,964,061	2,140,391	176,329	9.0%
TOTAL	\$ 4,275,976	\$ 4,837,375	\$ 4,915,414	\$ 5,138,216	\$ 222,802	4.5%

FY18 Goals:

EnQual-Water

- Water quality monitoring:
 - Continue to develop and expand the comprehensive Contaminant Warning System, which includes a network of monitoring stations.
 - Continue to develop and improve the Contaminant Response Program, as part of an Authority Consequence Management Plan.
 - Maintain and improve the reservoir monitoring system at Wachusett Reservoir.

- Provide on-call staffing for off-hour emergency response to monitoring alarms.
 - Complete the fit-out of the Mobile Water Quality Trailer to provide field monitoring capabilities.
 - Develop a water quality monitoring program for emergency standby reservoirs, including a plan to ensure readiness of emergency supplies.
- 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.
 - Continue to work with UMass Amherst, under an Interdepartmental Service Agreement with MWRA, to assess impacts from a potential chemical spill, and how treatment at CWTP can mitigate those effects.

EnQual-Wastewater

- Provide technical and scientific support for the development of the EPA-required CSO Program performance assessment.
- Continue to implement the reporting requirements of DITP and Clinton NPDES permits. Respond to EPA and MassDEP NPDES regulatory changes and program initiatives, including electronic reporting requirements and any new permits.
- Continue to develop and manage a monitoring program for Boston Harbor and its tributary rivers, and Massachusetts Bay, reflecting permit and variance requirements, relevant current concerns, and long-term interests of the area.
- Continue to produce scientific reports and manage environmental monitoring data; make data and analysis available in-house and for use in presentations to regulators, environmental groups and other interested parties.
- Provide on-call staffing for off-hour required regulatory notifications and public right-to-know reporting on sanitary sewer overflows and CSO facility activations.

FY18 Major Initiatives:

EnQual-Water: FY18

- 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.

- Collect samples and evaluate data to develop a program for the emergency standby reservoirs, including management goals to ensure these are ready, from a water quality perspective, in the event of an emergency.
- Develop and train staff in preparation for the US EPA Unregulated Contaminant Monitoring Rule 4 program which commences in 2018 and continues into 2020.

EnQual-Wastewater: FY18

- 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, Engineering and Construction, and Operations, continue work on 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.
- To meet the future water quality assessments expected in the CSO variance areas of the Mystic and Charles Rivers, develop an intensified level of data analysis bringing together disparate datasets such as localized rainfall data, metered and modeled CSO discharges, and receiving water quality.
- Prepare materials and meet with EPA and DEP staff regarding an updated DITP NPDES Permit.
- In FY18, EnQual-WW will procure services for the next three years of permit-required Massachusetts Bay water quality modeling.
- To respond to public interest and improve timeliness of accurate reporting, EnQual-WW will finish development of a system to more quickly gather accurate SSO location and volume data.

Joint EnQual Water / Wastewater initiatives: FY18

- Develop improved database for monitoring CMS maintenance activities.
- More fully utilize Maximo as appropriate for preventive and corrective job tasks for equipment, as well as scheduling and tracking of inspections and filing requirements.
- Apply for a new permit for the Carroll Water Treatment Plant maintenance discharges, which expires in 2018. The permit application will also include cooling water discharges from the Wachusett Aqueduct Pump Station, so that we have applied for coverage under the permit before that facility begins operation.

FY17 Mid-Year Accomplishments:

EnQual-Water: FY17

- Replaced and enhanced monitoring capabilities on the Wachusett Reservoir with following equipment: new profiling buoys with water quality and petroleum sensor technology, a towable petroleum sonde, and both water quality and petroleum handheld sondes.
- Staff have designed and are in the process of installing 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 CMS alarms.
- Prepared reports to assess potential WQ impacts of drought impacted communities blending MWRA water with their local supplies.
- Successfully completed all DEP-required drinking water sampling and reporting to date in FY17.

EnQual-Wastewater: FY17

- Published ten technical reports during the first half of FY17.
- Procured 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 to Cape Cod Bay, or explore monitoring technology development, or other topics related to MWRA's activities.
- EnQual-WW staff have developed procedures to meet the new reporting requirements for a new permit issued for the Clinton Advanced Wastewater Treatment Plant in FY17.
- Staff have submitted the following permit-related information:
 - Permit renewals for applying pesticides or alum to reservoirs for algae control.
 - Routine monthly, quarterly, and annual reports, and required notifications under Part II of permits, Contingency Plan, DITP blending order, and Clinton copper order.
 - Successful applications for NACWA Peak Performance awards for DITP and Clinton.
 - Annual interpretive report summarizing Ambient Monitoring studies in CY15 as required in the DITP NPDES permit.
- Reviewed and analyzed impact on MWRA of several new draft or final DEP and EPA regulations. These included CSO variances for the Charles and Alewife/Mystic, and a proposed mandatory survey of POTW nutrient removal, general updates to the NPDES regulation, and proposed new water quality criteria for copper and for an indicator of viruses. Analyzed historical wastewater and receiving water bacteria data to identify potential issues in complying with possible future permit limits.
- Created and launched new web page with near-real-time reporting of combined sewer overflow (CSO) facility discharges.

Budget Highlights:

- The FY18 Proposed Budget is \$5.1 million, an increase of \$223,000 or 4.3%, from the FY17 Budget.
- \$3.1 million for **Wages and Salaries**, including \$3 million for 32 filled positions or 31.6 FTEs due to adjustments for a part-time employee. The budget also includes \$68,000 for interns to assist with data analysis, water quality sampling, and technical support and \$43,000 for stand-by pay associated with wet weather and water quality monitoring programs.
- \$9,000 for **Overtime** to support wet weather and water quality monitoring programs.
- \$130,000 for **Maintenance**, an increase of \$80,000 or 160% from the FY17 Budget primarily due to the addition of equipment at MWRA's reservoirs for water quality contamination monitoring. MWRA is establishing maintenance schedules for this relatively new equipment inventory valued at approximately \$1.5M.
- \$22,000 for **Training and Meetings** to cover staff participation in professional conferences and technical and software training.
- \$1.5 million for **Professional Services**, level funded with the FY17 Budget. The budget supports laboratory testing for MWRA's Harbor and Outfall Monitoring (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 FY18 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.

- \$211,000 for **Other Materials** which is a \$151,000 or 250% increase from the FY17 Budget primarily due to the purchase of additional equipment for reservoir water quality contaminant monitoring as the program ramps up. The budget includes \$55,000 for lab and testing supplies for reservoir water quality monitoring. It also includes \$148,000 for equipment to continue funding parts and replacements for the drinking water Contaminant Monitoring System and S::CAN drinking water analysis equipment. The equipment budget also funds two water quality monitoring pilot projects including radiological monitoring (\$50,000) and Telog backup to the CMS system (\$20,000).
- \$114,000 for **Other Services**, a decrease of \$6,000 or 5% from the FY17 Budget. The major items in the budget include \$90,000 for Verizon fees associated with operating the CMS at the reservoirs and \$11,000 for memberships in EnQual-Wastewater, primarily for MWRA's sustaining membership in the Northeastern Regional Association of Coastal Ocean Observing Systems (**NERACOOS**) which operates coastal monitoring buoys.

LABORATORY SERVICES

FY18 Proposed Current Expense Budget LABORATORY SERVICES							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 4,249,159	\$ 4,483,094	\$ 4,827,198	\$ 4,927,828	\$ 100,630	2.1%	
OVERTIME	99,170	107,890	104,000	108,000	4,000	3.8%	
FRINGE BENEFITS	873	1,099	875	1,100	225	25.7%	
CHEMICALS	-	-	-	-	-	-	
UTILITIES	22,881	23,842	24,500	24,500	-	0.0%	
ONGOING MAINTENANCE	201,737	291,458	312,350	348,405	36,055	11.5%	
TRAINING & MEETINGS	3,679	2,909	7,000	7,000	-	0.0%	
PROFESSIONAL SERVICES	169,449	162,123	152,080	253,000	100,920	66.4%	
OTHER MATERIALS	1,097,396	1,104,836	1,067,452	1,096,109	28,657	2.7%	
OTHER SERVICES	88,054	86,886	89,069	92,150	3,081	3.5%	
TOTAL	\$ 5,932,398	\$ 6,264,136	\$ 6,584,524	\$ 6,858,092	\$ 273,568	4.2%	

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 or Deer Island), 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 cryptosporidium, giardia and radioactivity.

FY18 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%).

FY18 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 and 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. The renovation of the roof and the HVAC system at Southboro Lab is nearing completion. Replacement of the HVAC system and fume hoods at the Central Lab is in the design phase with construction expected to commence in late FY17.
- **School Lead Testing Initiative** – This special project began in FY16 and is continuing into FY17. Thousands of samples have been tested.

FY17 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 FY17 was as follows:

- 89% of lab results were completed on time versus goal of > 95%. The goal was missed due to the high backlog of school lead samples.
- Turnaround time averaged 7.6 days versus goal of < 9 days
- 98% of quality control tests were within specifications versus goal > 98%
- Completed 128% of targeted laboratory work (goal 100% of budget). This goal was exceeded due to the high volume of School Lead samples.

Several projects and activities in mid-FY17 are noteworthy including;

- **School Lead Testing Initiative** – As of mid-FY17, this department completed 20,000 lead and copper tests on school samples since the beginning of 2016.
- **Southboro Laboratory Renovation.** In December 2016, the Southboro laboratory operation restarted when the renovation was completed.

Budget Highlights:

- The FY18 Proposed Budget is \$6.8 million, an increase of \$274,000 or 4.2% compared to the FY17 Budget, primarily due to Wages and Salaries and Professional Services.
- \$4.9 million for **Wages and Salaries**, an increase of \$101,000 or 2.1% compared to the FY17 Budget.

- \$108,000 for **Overtime** to cover work associated with peak periods, emergencies, and special initiatives.
- \$25,000 for **Utilities**, which covers the purchase of gases and cryogenic liquids used for various laboratory instruments.
- \$348,000 for **Maintenance**, an increase of \$36,000 or 11.5% compared to the FY17 Budget due to projected needs. 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.
- \$7,000 for **Training and Meetings** which funds attendance at the EPA Environmental Laboratory Advisory Board (ELAB) Forum on Lab Accreditation/National Environmental Monitoring Conference and the Association of Public Health Laboratories (APHL) annual meeting. Also included are several new conferences and seminars to keep staff technically knowledgeable.
- \$253,000 for **Professional Services**, an increase of \$101,000 or 66.4% compared to the FY17 Budget. The increase is due to the start of the UCMR4 water quality project. 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.
- \$1.1 million for **Other Materials**, an increase of \$29,000 or 2.7% compared to the FY17 Budget primarily due to projected needs. This includes laboratory supplies and laboratory instrument replacements.
- \$92,000 for **Other Services**, an increase of \$3,000 or 3.5% compared to FY17. This 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

FY18 Proposed Current Expense Budget						
PLANNING						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 2,722,668	\$ 2,896,378	\$ 2,978,483	\$ 3,086,647	\$ 108,164	3.6%
OVERTIME	-	1,451	-	-	-	-
FRINGE BENEFITS	5	5	50	50	-	0.0%
CHEMICALS	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
ONGOING MAINTENANCE	254,264	41,304	238,493	173,201	(65,292)	-27.4%
TRAINING & MEETINGS	10,697	11,555	9,500	9,500	-	0.0%
PROFESSIONAL SERVICES	3,100	4,677	3,100	800	(2,300)	-74.2%
OTHER MATERIALS	153,802	155,073	175,775	173,625	(2,150)	-1.2%
OTHER SERVICES	189,348	204,662	341,232	272,924	(68,308)	-20.0%
TOTAL	\$ 3,333,883	\$ 3,315,104	\$ 3,746,634	\$ 3,716,747	\$ (29,886)	-0.8%

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.

FY18 Proposed Current Expense Budget						
PLANNING by Program						
PROGRAM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
PLANNING	\$ 2,350,379	\$ 2,404,530	\$ 2,640,890	\$ 2,653,039	\$ 12,149	0.5%
METER DATA	983,504	910,574	1,105,743	1,063,708	(42,035)	-3.8%
TOTAL	\$ 3,333,883	\$ 3,315,104	\$ 3,746,634	\$ 3,716,747	\$ (29,886)	-0.8%

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, lead service line replacement funding, 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.

FY18 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, lead service line replacement, 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.

FY18 Major Initiatives:

- Oversee implementation of the wastewater meter upgrade project.
- Provide computer modeling support for major capital programs including the Metropolitan Tunnel Redundancy Project and the CSO Program performance evaluation.
- Update reports on green house gas tracking and energy efficiency efforts 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.
- Update the Water and Wastewater Master Plan with extensive coordination across all MWRA Departments.
- Continue coordination with member communities for distribution of grants and loans for local sewer, water, and lead service line removal projects.
- Continue to manage the Community Leak Detection Task Order Contract and work with Procurement to solicit bids for new contracts for spring 2018.
- Continue outreach and coordination to schools and child care facilities on lead testing and remediation. Evaluate and revise as necessary the joint MWRA/MDPH lead testing project for homes with children with elevated blood lead levels.

FY17 Mid-Year Accomplishments:

- Distributed \$8.9 million in grants and interest-free loans to member sewer communities.
- Distributed \$13.9 million in Local Water System Assistance Program interest-free loans to member water communities including \$2 million under the Lead Service Line Replacement Loan Program.
- Conducted major community briefing on lead issues.
- Kicked off and coordinated outreach and reporting for new 'lead-in-schools' sampling program.
- Managed the Community Leak Detection Task Order Contract with 14 separate leak detection surveys completed for member communities.
- Provided support for many pipeline design and maintenance projects including substantial modeling and mapping support for the Metropolitan Tunnel Redundancy Project.

Budget Highlights:

- The FY18 Proposed Budget is \$3.7 million, a decrease of \$30,000 or 0.8% as compared to the FY17 Budget. The Planning Department includes funding for two sub cost centers: the Planning Unit and the Meter Data Unit.
- \$3.1 million for **Wages and Salaries**, an increase of \$108,000 or 3.6% as compared to the FY17 Budget primarily due to wage increases. The FY18 Proposed Budget also includes \$10,000 for two summer interns to assist with GIS work and policy research.
- \$173,000 for **Maintenance**, a decrease of \$65,000 or 27.4% as compared to the FY17 Budget. Reduced funding is primarily due to the wastewater community testing temporary metering which is transitioning to a new contract during FY18 and thus will be included.
- \$9,500 for **Training and Meetings**, which is level funded as compared to the FY17 Budget. The budget covers participation in training and conferences primarily focused on water quality regulations and geographic information systems.
- \$800 for **Professional Services** costs associated with the translation of the Consumer Confidence Report (CCR) and also programming of the GIS user interface.
- \$174,000 for **Other Materials** which includes funding of \$150,000 for postage and mailing of the CCR, \$15,000 for water conservation kits, \$7,000 for mapping supplies, \$2,000 for office supplies, \$1,000 for vehicle expenses, and \$900 for work clothes for employees in the Meter Data section.
- \$273,000 for **Other Services**, a decrease of \$68,000 or 20.0% as compared to the FY17 Budget. The budget reduction is primarily due to telephones for meters which continue to be half the cost than in previous years due to the transitioning to one service for all telephone lines for meters in the Meter Data Unit. The budget also includes \$60,000 for printing of the CCR, \$10,000 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

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.

FY18 Proposed Current Expense Budget						
LAW DIVISION						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 1,642,863	\$ 1,647,085	\$ 1,734,478	\$ 1,776,797	\$ 42,319	2.4%
OVERTIME	572	4,945	-	-	-	-
TRAINING & MEETINGS	787	1,622	1,000	1,000	-	0.0%
PROFESSIONAL SERVICES	88,186	366,643	200,000	300,000	100,000	50.0%
OTHER MATERIALS	4,892	4,160	5,984	5,984	-	0.0%
OTHER SERVICES	26,653	20,479	25,947	27,947	2,000	7.7%
TOTAL	\$ 1,763,952	\$ 2,044,933	\$ 1,967,409	\$ 2,111,728	\$ 144,319	7.3%

FY18 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.

FY17 Mid-Year Accomplishments:

- Continued to prosecute and defend the litigation commenced by the Army Corps of Engineers through the U.S. Attorney regarding an alleged permit violation for failure to place the submerged cable that provides Deer Island’s primary electric power in the location required by permit.
- Provided review and approval of six DCR watershed parcel acquisitions.

Budget Highlights:

- The FY18 Proposed Budget is \$2.1 million, a decrease of \$144,000 or 7.3%, as compared to the FY17 Budget.
- \$1.7 million for **Wages and Salaries**, an increase of \$42,000 or 2.4%, as compared to the FY17 Budget, mainly due to anticipated contractual increases. The FY18 Proposed Budget includes funding for 16 positions, the same as the FY17 Budget.
- \$300,000 for **Professional Services**, an increase of \$100,000 or 50%, as compared to the FY17 Budget, based on anticipated spending in FY18 for outside legal counsel.

LAW DEPARTMENT	FY17 FTEs	FY18 FTEs
LAW	16	16
TOTAL	16	16



Administration Division Budget

ADMINISTRATION DIVISION

Administration

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

FY18 Proposed Current Expense Budget ADMINISTRATION						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 11,939,698	\$ 12,346,277	\$ 13,357,147	\$ 13,723,208	\$ 366,061	2.7%
OVERTIME	130,645	99,637	62,964	81,971	19,007	30.2%
FRINGE BENEFITS	18,244,973	19,047,398	20,167,117	21,436,319	1,269,202	6.3%
WORKERS' COMPENSATION	2,307,123	2,350,369	2,344,190	2,322,980	(21,210)	-0.9%
CHEMICALS	-	-	-	-	-	-
UTILITIES	98,846	116,670	114,229	119,237	5,008	4.4%
ONGOING MAINTENANCE	3,942,483	4,123,573	4,868,199	4,555,896	(312,302)	-6.4%
TRAINING & MEETINGS	226,456	183,744	201,991	166,541	(35,450)	-17.6%
PROFESSIONAL SERVICES	491,663	696,524	971,922	1,011,422	39,500	4.1%
OTHER MATERIALS	1,074,880	1,089,384	1,217,717	1,647,301	429,584	35.3%
OTHER SERVICES	3,304,073	3,163,677	3,331,442	3,503,208	171,766	5.2%
TOTAL	\$ 41,760,840	\$ 43,217,254	\$ 46,636,917	\$ 48,568,083	\$ 1,931,167	4.1%

The **Administration Division** is responsible for managing the support service functions of the Authority. It is comprised of seven departments: Director's Office; Facilities; Fleet Services; Human Resources; Management Information Systems (MIS); Procurement; and Real Property and Environmental Management.

FY18 Proposed Current Expense Budget ADMINISTRATION by Department						
DEPARTMENT	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
ADMIN DIRECTOR'S OFFICE	-	153,254	154,402	235,283	80,881	52.4%
HUMAN RESOURCES	22,797,542	23,638,247	24,862,437	26,077,884	1,215,447	4.9%
MIS	10,162,225	10,345,574	12,359,507	12,648,306	288,798	2.3%
FACILITIES MANAGEMENT	2,312,496	2,321,285	2,488,673	2,514,176	25,503	1.0%
FLEET SERVICES	1,775,292	1,620,246	2,002,630	2,174,382	171,752	8.6%
PROCUREMENT	4,064,066	4,470,678	4,126,009	4,116,110	(9,899)	-0.2%
REAL PROPERTY / ENVIRONMENTAL MGMT	649,218	667,971	643,258	801,942	158,685	24.7%
TOTAL	\$ 41,760,840	\$ 43,217,254	\$ 46,636,917	\$ 48,568,083	\$ 1,931,167	4.1%

FY18 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 and create an environment that fosters safety consciousness and productive work.
- Update construction contract documents and procurement policies and procedures.
- Support more than 1,150 MWRA IT users, including those at the Charlestown Navy Yard (CNY), Chelsea, Deer Island, Southboro, Carroll Water Treatment Plant, and other remote sites by providing secure information processing services and applications
- 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.

FY18 Major Initiatives

- Continue to support the Authority's succession planning activities in anticipation of continued retirements.
- Conclude successor collective bargaining negotiations for all 5 bargaining units.
- Lead procurement of first design services contract for tunnel redundancy project, including working with engineering staff on procurement and contract documents.
- Enterprise Resource Planning (ERP) System upgrades.
- Telog Upgrade and Private Wireless Network Conversion.
- Coordinate implementation of the anticipated air quality operations permit renewal for the DI Treatment Plant.

FY17 Mid-Year Accomplishments:

- Continued to work with the landlord to implement facility improvements as provided in our lease agreements for Charlestown Navy Yard headquarters.
- Successfully upgraded Maximo, Asset Management.
- Developed specifications for replacement vehicles and equipment the majority of which will utilize alternative fuel, consistent with the Authority's goal of purchasing environmentally friendly products.

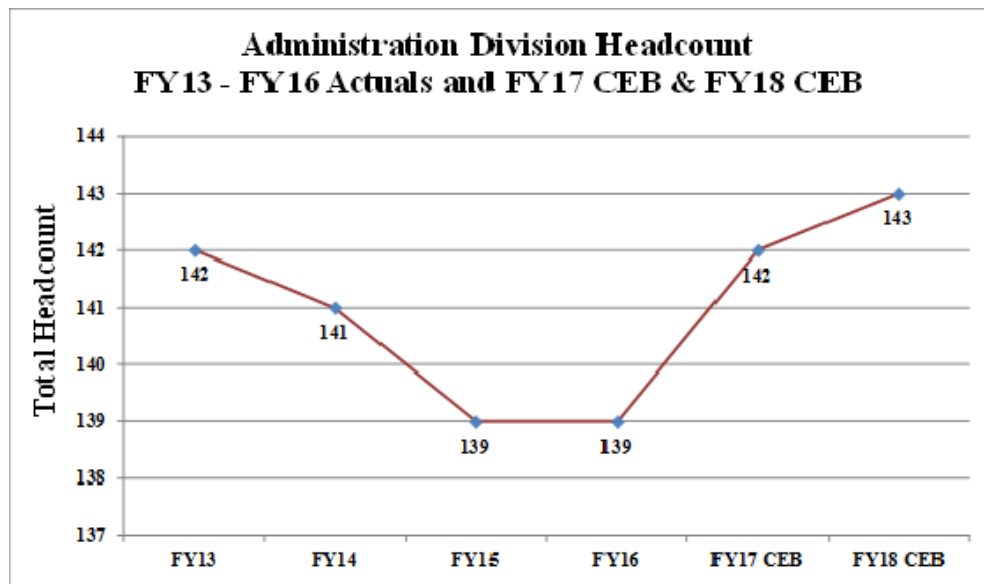
- Continued use of fuel diesel powered vehicles/equipment with bio-diesel. The MWRA is rated as one of the largest bio-fuel users by the Massachusetts Alternative Fuel Coalition (MAFC).
- Awarded the replacement Automated Vehicle Locator (AVL) Tracking System contract for MWRA vehicles.
- Completed a 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, OSHA 8-Hour Annual Refresher, Supervisory Development, Business Writing, Vehicle Maintenance, CDL Drug & Alcohol Awareness, Workzone Safety, Spot Pond Start-up, Lockout/Tagout, Electrical Safety, CPR First Aid, Advance First Aid, Underground Storage Tanks, Hands-on Microbiology, Chemistry for Water & Wastewater, Harassment Prevention, Project Management Professional Exam Preparation, Excavation Safety Competent Person, Keolis & MBTA Track Safety, and Sampling for NPDES Permits & Process Control. Recertified 70 employees as Flaggers.
- Competitively bid Class II Renewable Energy Portfolio Standard (RPS) certificates which resulted in mid-year FY17 revenues of \$27,135. In addition, received mid-year FY17 revenues of \$472,254 from forward marketing of Class I and Solar Carve-Out RPS certificates.
- Awarded major Capital Improvement Program Contracts:
 - Engineering Services for
 - Prison Point CSO Facility Improvements;
 - Rehabilitation of Sections 23, 24 and 47 Water Mains;
 - Sewer Sections 4, 5, 6 and 186 Study;
 - DITP Motor Control Center and Switchgear Replacement;
 - Nut Island Headworks Odor Control and HVAC Improvements;
 - Shaft 12 Isolation Gate;
 - Dorchester Interceptor Sewer (Sections 240/241/242) Rehabilitation;
 - Cambridge Branch Sewer Study;
 - Commonwealth Avenue Pump Station Improvements.
 - Construction for
 - Chelsea Creek Headworks Upgrade;
 - Northern Intermediate High Sections 110 and 112 – Stoneham and Wakefield;
 - Section 80 Repair – Weston;
 - Chicopee Valley Aqueduct Intake Traveling Screen Replacement;
 - Personnel Dock Rehabilitation – DITP;
 - Western Operations Maintenance Facility – Marlborough.
- Awarded Other Contracts Necessary for Operations and Maintenance:
 - Struvite, Scum, Sludge and Grit Removal Services at the DITP;
 - Purchase and Supply of Electric Power for MWRA's Profile Accounts;
 - Automated Vehicle Locator Tracking System;
 - Supply and Delivery of Sodium Hypochlorite to DITP;
 - Security Equipment Maintenance and Repair Services;
 - Harbor and Outfall Monitoring 2017-2020;
 - Cooperative Research Project to Conduct Water Quality Monitoring in Cape Cod Bay;

- Supply and Delivery of Ferrous Chloride to DITP;
- Janitorial Services at the Chelsea Facility;
- Management, Operation and Maintenance of the Union Park Pump Station/CSO Facility and Unmanned Stations;
- Janitorial Services at the DITP;
- Financial Audit Services;
- Drug and Alcohol Testing Program;
- Electrical Equipment Testing – DITP;
- Oxygen Generation Services – DITP;
- Combustion Turbine Generator Maintenance – DITP.

Budget Highlights:

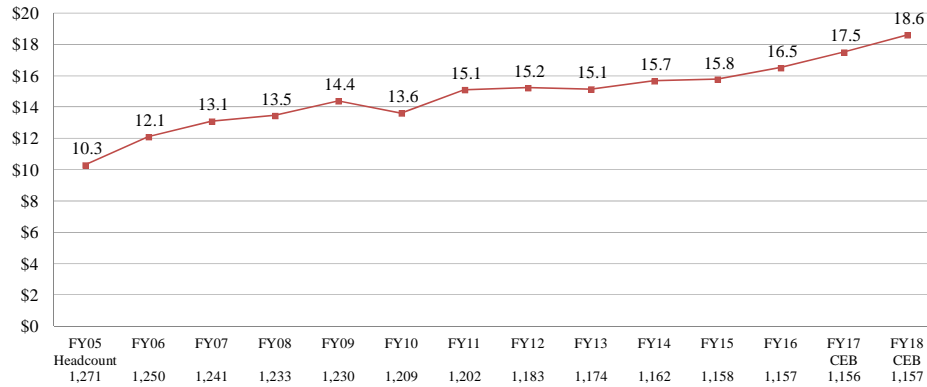
- The FY18 Proposed Budget is \$48.6 million, an increase of \$1.9 million or 4.1% as compared to the FY17 Budget.
- \$13.7 million for **Wages and Salaries**, an increase of \$366,000 or 2.7% as compared to the FY17 Budget. The FY18 Proposed Budget funds 143 positions accounting for 142 FTEs, one more than the FY17 Budget.
- \$82,000 for **Overtime**, an increase of \$19,000 or 30.2% as compared to the FY17 Budget. Increase is primarily for snow emergency coverage.

FTEs ADMINISTRATION by Department		
DEPARTMENT	FY17 FTEs	FY18 FTEs Proposed
ADMIN DIR OFFICE	1	2
HUMAN RESOURCES	18	17
MIS	55	57
FACILITIES MGMT	8	7
FLEET SERVICES	11	12
PROCUREMENT	44	43
REAL PROPERTY/ ENVIRONMENTAL MGMT	4	4
TOTAL	141	142



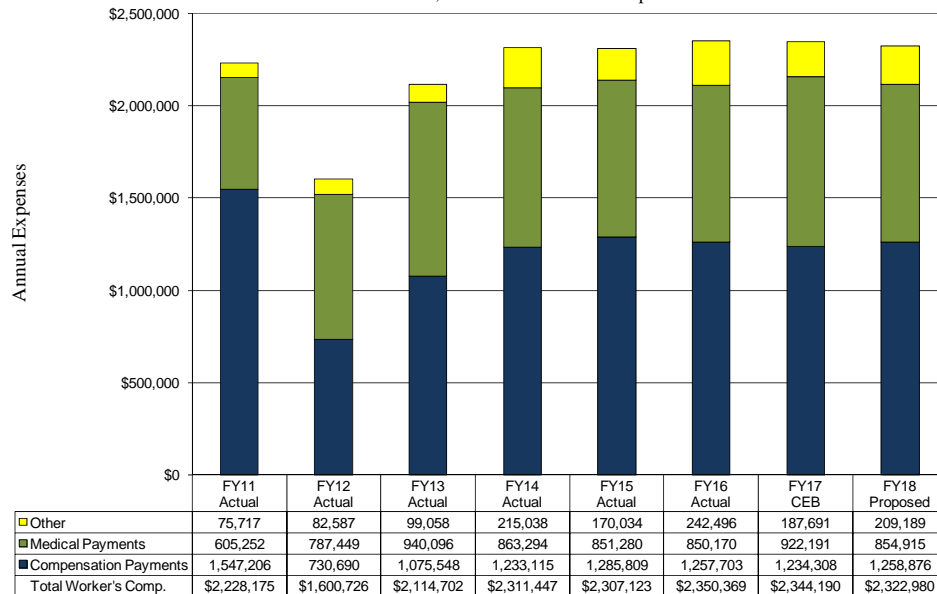
- \$21.4 million for **Fringe Benefits**, an increase of \$1.3 million of 6.3% as compared to the FY17 Budget. The main reason for the increase is the continuing rise in health insurance cost.

Health Insurance Spending (In Millions)



- \$2.3 million for **Workers' Compensation**, a decrease of \$21,000 or 0.9% as compared to the FY17 Budget. The Workers' Compensation budget is determined by using a three-year average of actual spending.

Worker's Compensation Expenses
FY11 - FY16 Actual, FY17 CEB & FY18 Proposed



- \$119,000 for **Utilities**, an increase of \$5,000 or 4.4%, as compared to the FY17 Budget, due to higher anticipated electricity prices.
- \$4.6 million for **Maintenance**, a decrease of \$312,000 or 6.4% as compared to the FY17 Budget, due to decreased in computer software licenses and upgrades costs.
- \$167,000 for **Training and Meetings**, a decrease of \$35,000 or 17.6% as compared to the FY17 Budget. The training and meeting budget supports the training needs of the division, particularly the MIS department.

- \$1.0 million for **Professional Services**, an increase of \$40,000 or 4.1% as compared to the FY17 Budget. The FY18 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.
- \$1.6 million for **Other Materials**, an increase of \$430,000 or 35.3% as compared to the FY17 Budget. Included in the Other Material funding is \$833,000 for the divisional computer hardware needs, \$552,000 for vehicle expenses mainly fuels and EZ Pass Transponders, and \$130,000 for office supplies.
- \$3.5 million for **Other Services**, an increase of \$172,000 or 5.2% as compared to the FY17 Budget. Included in the Other Services funding is \$1.8 million for Space/Lease Rentals for the Charlestown Navy Yard Headquarters and Marlboro warehouse, \$1.0 million for Telecommunications expenses for all facilities, and MIS and security data lines.

DIRECTOR'S OFFICE

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.

FY18 Proposed Current Expense Budget ADMINISTRATION DIVISION DIRECTOR'S OFFICE							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ -	\$ 152,939	\$ 154,078	\$ 234,959	\$ 80,881	52.5%	
OTHER SERVICES	-	315	324	324	-	0.0%	
TOTAL	\$ -	\$ 153,254	\$ 154,402	\$ 235,283	\$ 80,881	52.4%	

FY18 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 FY18 Proposed Budget is \$235,000, an increase of \$81,000 or 52.4% as compared to the FY17 Budget.
- \$235,000 for **Wages and Salaries**, an increase of \$81,000 or 52.5% as compared to the FY17 Budget, due to the transfer from Procurement of the staff person supporting the Director of Administration. The FY18 Proposed Budget supports two positions, one more than the FY17 Budget.

FACILITIES MANAGEMENT

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.

FY18 Proposed Current Expense Budget							
FACILITIES MANAGEMENT							
LINE ITEM	FY15	FY16	FY17	FY18	Change		
	Actual	Actual	Final	Proposed	FY17 to FY18		
WAGES & SALARIES	\$ 426,512	\$ 442,395	\$ 489,639	\$ 463,764	\$ (25,875)	-5.3%	
OVERTIME	44,493	37,842	24,154	40,000	\$ 15,846	65.6%	
FRINGE BENEFITS	85	-	-	-	\$ -	-	
UTILITIES	96,780	113,608	111,729	116,737	\$ 5,008	4.5%	
ONGOING MAINTENANCE	11,618	15,242	30,900	18,600	\$ (12,300)	-39.8%	
PROFESSIONAL SERVICES	-	-	7,500	4,000	\$ (3,500)	-46.7%	
OTHER MATERIALS	57,118	65,810	55,750	67,250	\$ 11,500	20.6%	
OTHER SERVICES	1,675,890	1,646,387	1,769,001	1,803,825	\$ 34,824	2.0%	
TOTAL	\$ 2,312,496	\$ 2,321,285	\$ 2,488,673	\$ 2,514,176	\$ 25,503	1.1%	

FY18 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.

FY17 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 FY18 Proposed Budget is \$2.5 million, an increase of \$26,000 or 1.1% as compared to the FY17 Budget.
- \$40,000 for Overtime, an increase of \$16,000 or 65.6%, based on recent spending.
- \$464,000 for **Wages and Salaries**, a decrease of \$26,000 or 5.3% as compared to the FY17 Budget, due to one less position, offset by anticipated contractual increases. The FY18 Proposed Budget funds seven positions, one fewer than the FY17 Budget.
- \$19,000 for **Ongoing Maintenance**, a decrease of \$12,000 or 39.8% as compared to the FY17 Budget based on recent spending.
- \$1.8 million for **Other Services**, an increase of \$35,000 or 2.0%, as compared to the FY17 Budget. This item includes funding for rental and operating costs for CNY headquarters facility and the Marlboro Records Center and Warehouse space.

FLEET SERVICES

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.

FY18 Proposed Current Expense Budget							
FLEET SERVICES							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 735,492	\$ 768,510	\$ 817,956	\$ 903,874	\$ 85,918	10.5%	
OVERTIME	8,728	3,918	11,000	11,000	-	0.0%	
FRINGE BENEFITS	120	28	250	250	-	0.0%	
CHEMICALS	-	-	-	-	-	-	
UTILITIES	2,066	3,062	2,500	2,500	-	0.0%	
ONGOING MAINTENANCE	559,977	552,102	701,500	701,500	-	0.0%	
TRAINING & MEETINGS	38,850	17,500	42,000	-	(42,000)	-100.0%	
PROFESSIONAL SERVICES	-	-	-	-	-	-	
OTHER MATERIALS	429,160	273,609	425,825	553,659	127,834	30.0%	
OTHER SERVICES	900	1,516	1,600	1,600	-	0.0%	
TOTAL	\$ 1,775,292	\$ 1,620,246	\$ 2,002,630	\$ 2,174,382	\$ 171,752	8.6%	

FY18 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.

FY17 Mid-Year Accomplishments:

- Developed specifications for new replacement vehicles and equipment the majority of which 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.

- Awarded the replacement Automated Vehicle Locator (AVL) Tracking System contract for MWRA vehicles.
- Continued to work with MIS & Operations staff on the implementation of Maximo system upgrade which includes a transportation module specifically designed for a fleet environment.

Budget Highlights:

- The FY18 Proposed Budget is \$2.2 million, an increase of \$172,000 or 8.6% as compared to the FY17 Budget.
- \$904,000 for **Wages & Salaries**, an increase of \$86,000 or 10.5% as compared to the FY17 Budget, mainly for the filling of a vacant position at a lower salary, the transfer of one position from Treasury to Fleet whose functions were more properly funded in Fleet, and anticipated contractual increases. The FY18 Proposed Budget funds 12 positions, one more than the FY17 Budget.
- **Training and Meeting** monies were moved to Human Resources budget under the Technical Training Professional Services budget. Human Resources manages and administers the contract for this training.
- \$554,000 for **Other Materials**, an increase of \$128,000 or 30.0% as compared to the FY17 Budget, due to consolidation of the EZ Pass transponders under fleet services. 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

FY18 Proposed Current Expense Budget							
HUMAN RESOURCES							
LINE ITEM	FY15	FY16	FY17	FY18	Change		
	Actual	Actual	Final	Proposed	FY17 to FY18		
WAGES & SALARIES	\$ 1,784,493	\$ 1,686,914	\$ 1,755,894	\$ 1,677,423	\$ (78,471)	-4.5%	
OVERTIME	209	17	-	-	-	-	
FRINGE BENEFITS	18,243,431	19,046,856	20,166,567	21,435,769	1,269,202	6.3%	
WORKERS' COMPENSATION	2,307,123	2,350,369	2,344,190	2,322,980	(21,210)	-0.9%	
CHEMICALS	-	-	-	-	-	-	
UTILITIES	-	-	-	-	-	-	
ONGOING MAINTENANCE	-	-	-	-	-	-	
TRAINING & MEETINGS	4,119	9,583	3,263	3,263	-	0.0%	
PROFESSIONAL SERVICES	435,440	516,642	559,422	601,422	42,000	7.5%	
OTHER MATERIALS	11,095	18,264	20,820	20,820	-	0.0%	
OTHER SERVICES	11,632	9,603	12,282	16,207	3,925	32.0%	
TOTAL	\$ 22,797,542	\$ 23,638,247	\$ 24,862,437	\$ 26,077,884	\$ 1,215,447	4.9%	

The **Human Resources Department** is comprised of 3 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 unit 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.

FY18 Proposed Current Expense Budget							
HUMAN RESOURCES by Unit							
UNIT	FY15	FY16	FY17	FY18	Change		
	Actual	Actual	Final	Proposed	FY17 to FY18		
EMPLOYEE/COMP/BEN	\$ 665,525	\$ 733,798	\$ 730,379	\$ 1,060,827	\$ 330,448	45.2%	
LABOR RELATIONS	1,022,949	878,031	930,662	510,034	(420,628)	-45.2%	
TRAINING	516,642	5,667,779	645,377	703,011	57,634	8.9%	
CENTRALIZED FRINGE BENEFITS	20,592,426	21,458,638	22,556,020	23,804,012	1,247,992	5.5%	
TOTAL	\$ 22,797,542	\$ 28,738,247	\$ 24,862,437	\$ 26,077,884	\$ 1,215,447	4.9%	

FY18 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, and create an environment that fosters safety consciousness and productive work.

FY18 Major Initiatives:

- Design online employment on-boarding program.
- Develop and implement an expanded orientation program.
- Continue to expand career development and job shadow training programs to support succession planning initiatives.

FY17 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 a vendor, designed and implemented online employment application program to expedite critical hiring.
- Expanded supervisory, professional, and career development training programs necessary to support succession planning initiatives including developing additional job shadowing training programs (Maintenance and Operations and Medium Voltage Programs).
- Redesigned and implemented updated employee orientation program for newly hired employees.
- Established Employee Recognition Program including Extraordinary Service Awards and Length of Service Award programs.
- Developed additional specialized recruitment sources to attract women, minorities, and veterans for difficult to fill positions including expanding social network recruiting capabilities.
- 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, OSHA 8-Hour Annual Refresher, Supervisory Development, Business Writing, Vehicle Maintenance, CDL Drug & Alcohol Awareness, Workzone Safety, Spot Pond Start-up, Lockout/Tagout, Electrical Safety, CPR First Aid, Advance First Aid, Underground Storage Tanks, Hands-on Microbiology, Chemistry for Water & Wastewater, Harassment Prevention, Project Management Professional Exam Preparation, Excavation Safety Competent Person, Keolis & MBTA Track Safety, and Sampling for NPDES Permits & Process Control. Recertified 70 employees as Flaggers.
- Researched, selected and implemented Leadership Development Program.

- Provided 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.
- Investigated complaints of violations of MWRA policies and Code of Conduct as necessary.
- Negotiated new contracts for Drug and Alcohol testing, dental insurance and the Employee Assistance Program (EAP).
- Began successor collective bargaining negotiations.

Budget Highlights:

- The FY18 Proposed Budget is \$26.1 million, an increase of \$1.2 million or 4.9% as compared to the FY17 Budget.
- \$1.7 million for **Wages and Salaries**, a decrease of \$78,000 or 4.5%, as compared to the FY17 Budget, due to the transfer of two positions to Office of Emergency Preparedness that had been supporting security functions, offset by the addition of one position in Employee Compensation and anticipated contractual increases. The FY18 Proposed Budget includes funding for 17 positions, one fewer than the FY17 Budget.
- \$21.4 million for **Fringe Benefits**, an increase of \$1.3 million or 6.3%, as compared to the FY17 Budget, mainly for anticipated increases in health insurance costs. The FY18 Proposed Budget includes \$18.6 million for health insurance, \$1.4 million for Medicare, \$1.2 million for dental insurance, \$161,000 for unemployment insurance, and \$70,000 for tuition reimbursement.
- \$2.3 million for **Workers' Compensation**, a decrease of \$21,000 or 0.9% as compared to the FY17 Budget. The Workers' Compensation budget is based on an average of the prior three years of expenditures. The Human Resources Department is responsible for the management of this program and the coordination with the third-party administrator and legal counsel.
- \$601,000 for **Professional Services**, an increase of \$42,000 or 7.5% as compared to the FY17 Budget. The increase includes the transfer of \$40,000 previously budgeted in Fleet Services that shouldThe FY18 Proposed Budget includes \$358,000 for Professional Development and Technical Training, \$108,000 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)

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 telephone systems, the department also provides library and records management services.

FY18 Proposed Current Expense Budget MANAGEMENT INFORMATION SYSTEM							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 5,048,011	\$ 5,210,551	\$ 5,781,333	\$ 6,082,694	\$ 301,360	5.2%	
OVERTIME	45,758	46,020	2,810	6,000	3,190	113.5%	
FRINGE BENEFITS	893	200	-	-	-	-	
CHEMICALS	-	-	-	-	-	-	
UTILITIES	-	-	-	-	-	-	
ONGOING MAINTENANCE	3,078,530	2,918,266	4,135,799	3,835,797	(300,002)	-7.3%	
TRAINING & MEETINGS	179,569	152,823	146,528	146,528	-	0.0%	
PROFESSIONAL SERVICES	56,223	164,162	400,000	400,000	-	0.0%	
OTHER MATERIALS	453,031	594,297	577,972	868,222	290,250	50.2%	
OTHER SERVICES	1,300,210	1,259,255	1,315,065	1,309,065	(6,000)	-0.5%	
TOTAL	\$ 10,162,225	\$ 10,345,574	\$ 12,359,507	\$ 12,648,306	\$ 288,798	2.3%	

FY18 Goals:

The goal of the MIS department is to support more than 1,150 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 Systems 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.

FY18 Major 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 FY18 initiatives are as follows:

- Establish 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).
- Complete the transition of application responsibilities to the appropriate team which matches the new organizational structure for the department.

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 and with a "proof of concept" being conducted with the Chelsea Creek Headworks Rehabilitation Project, 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. During FY18 the technology selection will be made, procured and development of MWRs e-Construction system will begin.
- ***e-Procurement Implementation:*** This project focuses on the implementation of the Contract Management module from Infor Global Solutions. The focus in FY18 will be on Professional Services contracts.
- ***Enterprise Resource Planning (ERP) System Upgrades:*** During FY18, 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 version 10 ERP Upgrade will be undertaken. New initiatives will be selecting a new and more robust Time Entry system and assisting the users with documentation of our payroll rules, planning and upgrading the Infor Lawson HR modules to the new InforGlobal HR product, planning the replacement of the existing hardware platform to support a future upgrade to version 11, and choosing a replacement for

the Budgeting Application to ensure vendor support.

Compliance Management Initiatives

- ***Electronic Laboratory Notebook (ELN):*** The objective of this project is to replace all paper log books with ELN. Phase 1, Drinking water log books, has 5 remaining logs planned and Phase 2, Wastewater Lab logs, requirements gathering and design will begin and be replaced with ELN by the end of FY19.
- ***PIMS CROMERR Compliance:*** CROMERR provides the legal framework for electronic reporting under EPA's regulatory programs. The Rule sets standards and provides a streamlined, uniform process for EPA's review and approval of electronic reporting. The CROMERR program ensures the enforceability of regulatory information collected electronically by EPA and EPA's government partners. CROMERR applies to any electronic document submission required by or permitted under any EPA program governed by EPA's regulations in Title 40 of the Code of Federal Regulations (CFR). In the case of the MWRA, TRAC administers the Pretreatment Program which falls under Title 40.

MWRA currently utilizes Inflection Point Solutions' (IPS) Pretreatment Information Management System (PIMS) software to manage its Pretreatment Program. PIMS allows our regulated users the ability to submit reports and permit applications electronically through PIMS. The requirements of CROMERR were reviewed and compared with the existing PIMS functionality. This review identified missing functionality in the current system relating to Electronic Signature and Copy of Record creation (COR). In order to become CROMERR compliant, software enhancements are needed as well as internal Standard Operating Procedures that document the TRAC business processes. The current vendor is not willing to update the application to be compliant because only one out of 5 customers require this compliance. IPS did supply an estimate \$153,000 to upgrade the application. IPS has agreed to and has provided the application programming code to the MWRA so it can be made compliant.

MWRA's MIS staff provided the EPA with the application for modifications to the system and EPA has requested additional information regarding MWRA's application. Since that time EPA has issued guidance to the regulation and has provided shared portal services to assist publicly owned treatment works (POTW) with an implementation approach. MWRA's MIS & TRAC Departments have been evaluating alternatives for responding to EPA and moving electronic reporting forward.

The MWRA team has agreed that modifying the existing application leveraging the use of EPA's shared portal services would be the most economical solution. EPA encourages this approach.

- ***Buoy Data Collection and Visualization Project:*** Presently reservoir water quality data is collected from buoys equipped with monitoring devices. This data is sent from the buoys to a PC and stored as a flat file. An MWRA developed application interface program parses these flat files and inserts data into an Oracle database. Additionally, data from the buoy weather station is also collected and stored in the Oracle database. The OMMS DCR and mobile web applications display this information to users. MWRA staff use a data profile manager to do time series plots of the data collected in the flat files.

The system is a patch work of solutions and requires significant manual intervention. This effort will stream line the data collection and management processes, meet MWRA needs related to data manipulation and export the data in a format matching DCR expectations.

- ***HOML Upgrade:*** The Harbor Outfall Monitoring and Loading database contains a set of database schemas and applications currently used for loading, checking, and querying data from both external and internal labs used to insure the integrity of data used for generating environmental reports. Since the Application Server and the OS supporting the current deployment environment are expiring, this initiative is to upgrade the system to maintain support and enhance HOML application. Completion is targeted for the beginning of FY18.
- ***Oracle Discoverer Migration to SAP Business Objects (BO):*** Oracle is planning to end support of the Oracle Discoverer product and MWRA wants to switch to SAP BO technology. SAP BO has technical/functional capabilities similar to Oracle Discoverer. There are approximately 500-600 Oracle Discoverer Workbooks that need to be migrated to SAP BO.
- ***Real Property Upgrade:*** The Authority has over 800 real property records in PDF and/or TIF formats. Many of these real property records contain a legal description of the property and recorded plan(s) showing the property boundaries. The age of these plans range from the 1800's to present time. Most are historical records inherited from the Metropolitan District Commission (MDC) and others are obtained from the Registries of Deeds. The goal is to have the boundaries of these real property takings drawn and the corresponding data and map stored in MWRA's GIS database and be ESRI compliant.
- ***Contaminate Warning System (CWS) Upgrades:*** The CWS is in need of upgrades and new functionality. The current system reports alarms through the SCADA system and all data is collected in a back end system that is at best minimally working. The upgrade will provide for new con:cube operating systems (Windows XP to Linux), new data storage and visualization capabilities and a more reliable collection and storage system. Lastly, the wireless connectivity will be upgraded from 3G to 4G LTE.

System Integration and Data Warehousing Initiatives

- ***Geographic Information System (GIS) Integration:*** The purpose of the GIS Integration project 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 field 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

- **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:** The Enterprise Telog system currently communicates over the internet. During FY18 the communication infrastructure will be moved to a private wireless network as is done with the Contaminate Warning System.
- **Maximo Control Desk:** IBM’s delay in the availability of a compatible Control Desk version will result in an early FY18 implementation of the Maximo Control Desk application to replace the legacy MIS Helpline’s Support Magic application. The new Control Desk application is designed with ITIL Service Management processes that will support enhanced management of IT services and asset management.
- **Water Quality Reporting System (WQRS)/AQUARIUS Upgrade:** WQRS is a comprehensive tool designed to help MWRA meet regulatory reporting requirements for the Ware Disinfection Facility (WDF) and the Carroll Water Treatment Plant (CWTP). It supports reporting requirements for Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP). The system automatically loads complementary data from the MWRA’s various SCADA and data acquisition systems into the AQUARIUS1 data management system. Customized scripts flag data for review based on MWRA’s specific business rules. After a manual review and approval process, quality controlled data from several data sources are consolidated into data sets that are subsequently used as inputs for custom calculations that create the specific data to be reported through the Aquarius Sharpshooter tool. The Application vendor support is expiring and this initiative is to upgrade the system to maintain vendor support and enhance WQRS application.

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 FY18 projects under this program:

- **Phase 2 of the Information Security Program Implementation:** Phase two of this program focuses on the review and formalization of draft information security policies, standards and procedures into daily operations.
- **Secure Media Destruction Program Improvements:** With the changes in technology and business processes, there has been a decrease in the volume of requests for digital media destruction. It is

anticipated that the number of requests will continue to decline, however the need to standardize this program still exists.

- **Branch Office VPN Replacement:** The hardware appliance providing network connectivity from the smaller branch offices is approaching end of support and product life. This initiative will explore VPN technologies to replace the existing solution.

Technology Infrastructure Improvement Program

The MWRA currently owns and operates 1,450 desktops, 184 laptops, 235 servers, 20 Wide Area Network Circuits and associated equipment. It also manages in excess of 23 Terabytes (TB) of data of which 8 TBs are stored in 148 database schemes and an additional 15 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). The major focus for FY18 will be on the restructuring of existing VM hosts to support vision for same Dev/Test/DR and Prod for all functional areas. This will be an ongoing effort as new technologies are introduced and business tools are developed.
- **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.
- **Office Automation Refresh Program:** Desktop, mobile, printers, MFD etc. FY18 is targeted for a complete hardware and operating system upgrade for PCs.

- **Workforce Mobilization:** Continue to explore new technologies and hardware platforms to improve efficiencies in business process. Target business units for this initiative are Engineering and Construction, Water and Wastewater Operations, Maintenance, Warehouse and Property Pass.
- **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 FY18 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 an 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.

FY17 Mid-Year Accomplishments:

Information Technology Management Program

- **MIS Reorganization:** With the hiring of a Manager of Application & System Development, other PCR amendments being approved by the Board, and the reassignment of business units to the appropriate managers, MIS has completed the organizational transformation recommended in the 5-year Strategic Plan. The transition of responsibilities for all applications is under way.

Application Improvement Program

- **Archiving & e-Discovery Project:** Suspended due to resource constraints within MIS and State Contract vendor contract. The original state contractor service provider's contract expired and a replacement is expected in Q4.
- **e-Procurement - Strategic Sourcing and Contracts Management:** Work has recently reconvened on Chapter 149 Contracts with Sub-bids and are expected to be live in Q4. Professional Services development is also scheduled to begin in Q4.
- **Miscellaneous Lawson Support:** Successfully ran payroll at DITP Disaster Recovery Site using Bottomline and Century Bank, and tested and updated all three Infor/Lawson servers with mandatory BSI Tax software updates. Several staff attended two day NELUG (New England Lawson User Group) Conference. Installed/tested a new Disaster Recovery micro check printer for the Payroll and AP check applications on Deer Island Upgraded the MUNEASE Bond Tracking application and SQL Server database. Scheduled and held six days of training and configuration workshops with the Portia vendor and users.
- **Talent Acquisition Application:** Went live with ApplicantPro, a 3rd party Talent Acquisition (Job Application) solution in September. The solution reduces the time spent receiving and entering data manually into the Lawson system for the 1,400 job applications previously received annually. It also allows applicants to submit a job application and resume electronically, automates the process of acknowledging that an application has been received and provides templates for other correspondence with candidates throughout the interview through hire process; the application also flags disqualified

candidates saving manual review of each candidate. Created training materials and provided training to agency-wide Hiring Managers. From September through March 17, 157 jobs were posted drawing 2125 applicants and automatically disqualifying 451 candidates.

- ***Library Upgrade Project:*** The new Library Resources Portal went live in December and staff ran brown bag user training sessions at various locations. The new Inmagic Presto and Genie system replaced 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. Prior to go-live, staff completed design and testing of the new Library Resources Portal Home page and search results pages, completed integration of O&M manuals into the Library catalog, created browsable collections for popular categories of documents as well as new book and journal issue displays for the home page. A new barcode scanner was ordered, label stock was selected and staff designed label layouts for book spine and card printing to re-label and re-shelve books using Library of Congress conventions.
- ***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 are reviewing Enterprise Content Management (ECM) Solutions that will also address Physical Records Tracking/Management requirements required to replace InoStar.
- ***Benefit Time Management Dashboard:*** MIS reactivated an initiative to implement a graphical dashboard display of Comp Time, Overtime, and Standby time earned and Sick time used. The dashboard has been updated to reflect the current organization changes as well as for prior organizational structure reports. The dashboard will be piloted in Operations in Q4FY17.
- ***Telog:*** An update to the Telog Enterprise system is underway. This update will move the existing environment in DEV and Production to a newer virtualized hardware environment. Additionally, the Telog system will be moved into a MWRA hosted Private Network Subnet. A Web Telog module was implemented in March 2017 that displays meter report data to MWRA staff via the MWRA intranet Pipeline Home Page.
- ***Computerized Maintenance Management System (CMMS) Enhancements:*** The Maximo Upgrade from 5.2 to 7.6 was initiated in Q1 of FY16 and the project was expected to be completed in Q4 of FY17. Phase 1, Asset Management (for non IT Operations maintenance and support) went live in January 2017. The upgrade included the development and implementation of 19 Infor/Lawson - Maximo Interfaces significantly increasing the functionality of the original 4 interfaces and allowing the tracking of assets from cradle-to-grave and eliminating numerous standalone side systems (e.g. Property Pass database, Surplus database, Vehicle database). Phase 2, Maximo Anywhere and Maximo Spatial application implementation are underway and scheduled for completion in Q4. Conducted combinations of basic, intermediate and advanced training classes to over 400 users. 90% of Maximo Crystal reports have been converted successfully to the new version. Phase 3, IBM Control Desk (ICD) will replace the existing IT Helpdesk application Support Magic, and workshops for end users are scheduled. Implementation is scheduled for Q1 FY18 contingent on the required upgraded software availability

- ***Electronic Laboratory Notebook (ELN):*** Deployed 15 ELN logs in production for Chelsea Laboratory Experiment in Q2. Began work on ELN logs for the Quabbin Laboratory. Phase 1 Drinking Water Labs, is 80% complete. The remainder 10% would involve deployment of the remaining 4 logs of the total of 20 ELN logs
- ***LIMS:*** Prepared responses for LIMS Data Reliability Assessment conducted by State Auditor's office.

Information Security Program

- ***End User Security Awareness:*** Computer Based Training was launched in Q3 of FY16 and ran through the end of the calendar year. In Nov2016 a second phishing drill was conducted to assess the effectiveness of the training. The drill results demonstrated 30% fewer employees who took the bait when compared to the initial drill, validating the effectiveness of the training and the need to continue user awareness training. As a result, End User Security Awareness Computer Based Training will be renewed in Q4 of FY17.
- ***Authority Mobile Application Delivery Implementation:*** The Proof of Concept for the Mobile Application Delivery platform was completed successfully and a full production environment was implemented. 75 iPads and 208 iPhones are being managed with the associated Mobile Device Management platform and eighteen applications are being delivered through this platform.
- ***Secure File Delivery Implementation:*** The Proof of Concept in support of Secure File Delivery was completed successfully and a full production environment was implemented. 254 employees have been setup to use the Secure File Delivery software from desktops, laptops, and mobile devices. A job aid and a quick reference guide have been posted on the intranet (Pipeline).
- ***Managed Security Services:*** All "End of Life" Information Security technologies on the MIS network have been replaced through Contract #7499, which was awarded to NWN Corporation. NWN Corporation in conjunction with Symantec will provide monitoring services for the aforementioned technologies through FY19.

Technology Infrastructure Improvement Program

- ***Distributed Antenna System (DAS):*** The design and implementation to improve external cellular coverage on DITP was completed in November 2016.
- ***Workforce Mobilization:*** 78 Mobile devices have been deployed to Engineering and Construction, Laboratory Services, Water and Wastewater Operations, and Maintenance. Leveraging the Mobile Device Management and Application Delivery platform, staff are able to access business applications while in the field.
- ***Campus Wide WIFI:*** This project upgrades and replaces all existing MWRA 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 provides redundancy. A contract was awarded to Integration Partners in January 2017 to be completed by the end of FY17.

- **Office Automation Refresh Program:** An iPhone hardware refresh program was started in November 2016 and completed in January 2017. 178 iPhones were replaced.
- **Desktop Microsoft Office Application Suite Upgrade:** This project upgrades the version of Microsoft Office Applications on the desktop to Office 2016 and will target all desktops and laptops. This initiative started in March 2017 and will be completed in Q1 FY18.
- **Server Backup Software Replacement:** The current server backup solution is complex, prone to issues and was not designed for highly virtualized environments. This initiative will implement a backup solution that will support all current server platforms, is intuitive and will provide a cost savings of more than \$300,000 over five years. Hardware, software and installation services are being procured for implementation.

Budget Highlights:

- The FY18 Proposed Budget is \$12.6 million, an increase of \$289,000 or 2.3% as compared to the FY17 Budget.
- \$6.1 million for **Wages and Salaries**, an increase of \$301,000 or 5.2% as compared to the FY17 Budget. The FY18 Proposed Budget includes funding for two positions more than the FY17 Budget.
- \$3.8 million for **Ongoing Maintenance**, a decrease of \$300,000 or 7.3%, as compared to the FY17 Budget. The FY17 budget included \$424,000 for the Authority-wide upgrade of the Microsoft Office suite. That amount is eliminated from the FY18 budget. The difference of \$124,000 is needed for expected software licenses and equipment coming off warranty.
- \$400,000 for **Professional Services**, the same as the FY17 Budget. Funding will support the improvement efforts for Water Quality Reporting System upgrade, CROMERR Implementation, and security system monitoring services.
- \$868,000 for **Other Materials**, an increase of \$290,000 or 50.2%, as compared to the FY17 Budget. The increase is to start the process of replacing the MWRA's PC's and Laptops as part of the five year MIS strategic plan.
- \$1.3 million for **Other Services**, a decrease of \$6,000 or 0.5%, as compared to the FY17 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

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.

FY18 Proposed Current Expense Budget							
PROCUREMENT							
LINE ITEM	FY15	FY16	FY17	FY18	Change		
	Actual	Actual	Final	Proposed	FY17 to FY18		
WAGES & SALARIES	\$ 3,566,438	\$ 3,624,579	\$ 3,890,659	\$ 3,876,239	\$ (14,420)	-0.4%	
OVERTIME	31,457	11,841	25,000	24,971	(29)	-0.1%	
FRINGE BENEFITS	444	314	300	300	-	0.0%	
CHEMICALS	-	-	-	-	-	-	
UTILITIES	-	-	-	-	-	-	
ONGOING MAINTENANCE	292,358	637,962	-	-	-	-	
TRAINING & MEETINGS	2,379	2,830	6,200	10,750	4,550	73.4%	
PROFESSIONAL SERVICES	-	-	-	-	-	-	
OTHER MATERIALS	124,420	137,126	136,700	136,700	-	0.0%	
OTHER SERVICES	46,570	56,026	67,150	67,150	-	0.0%	
TOTAL	\$ 4,064,066	\$ 4,470,678	\$ 4,126,009	\$ 4,116,110	\$ (9,899)	-0.2%	

FY18 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, with a focus on electronic bidding for Chapter 149 construction projects with filed sub-bids and professional services contracts.
- Review and update policies and procedures for procurement of professional services, non-professional services and goods and materials.

- Provide training to MWRA staff on various procurement policies and procedures including purchasing of goods and materials and selection committee service.
- Continue procurement staff training.
- Update construction contract documents.
- Continue staff participation in Maximo upgrade effort and Lawson-Maximo Interface redesign, including data conversation and data migration.

FY17 Mid-Year Accomplishments:

- Competitively bid Class II Renewable Energy Portfolio Standard (RPS) certificates which resulted in mid-year FY17 revenues of \$27,135. In addition, received mid-year FY17 revenues of \$472,254 from forward marketing of Class I and Solar Carve-Out RPS certificates.
- Awarded the following major contracts through March 15, 2017:
 - Prison Point CSO Facility Improvements – Design, Construction Administration and Resident Engineering Services;
 - Rehabilitation of Sections 23, 24 and 47 Water Mains – Design, Engineering Services During Construction and Resident Engineering/Inspection Services;
 - Struvite, Scum, Sludge and Grit Removal Services at the DITP;
 - Cambridge Branch Sewer Study;
 - Chelsea Creek Headworks Upgrade;
 - Purchase and Supply of Electric Power for MWRA’s Profile Accounts;
 - Automated Vehicle Locator Tracking System;
 - Supply and Delivery of Sodium Hypochlorite to DITP;
 - Security Equipment Maintenance and Repair Services;
 - Harbor and Outfall Monitoring 2017-2020;
 - Cooperative Research Project to Conduct Water Quality Monitoring in Cape Cod Bay;
 - Supply and Delivery of Ferrous Chloride to DITP;
 - Commonwealth Avenue Pump Station Improvements – Design, Engineering Services During Construction and Resident Engineering/Inspection Services;
 - Northern Intermediate High Sections 110 and 112 – Stoneham and Wakefield;
 - Section 80 Repair – Weston;
 - Chicopee Valley Aqueduct Intake Traveling Screen Replacement;
 - Janitorial Services at the Chelsea Facility;
 - Management, Operation and Maintenance of the Union Park Pump Station/CSO Facility and Unmanned Stations;
 - Sewer Sections 4, 5, 6 and 186 Study;
 - Janitorial Services at the DITP;
 - DITP Motor Control Center and Switchgear Replacement Design, Engineering Services During Construction and Resident Engineering/Inspection Services;
 - Personnel Dock Rehabilitation – DITP;
 - Audit Services;
 - Drug and Alcohol Testing Program;

- Electrical Equipment Testing – DITP;
 - Oxygen Generation Services – DITP;
 - Nut Island Headworks Odor Control and HVAC Improvements Inspections, Evaluation, Design, Construction Administration and Resident Engineering Services;
 - Shaft 12 Isolation Gate Design, Engineering Services During Construction and Resident Engineering Services;
 - Combustion Turbine Generator Maintenance – DITP;
 - Dorchester Interceptor Sewer (Sections 240/241/242) Rehabilitation Design, Construction Administration and Resident Engineering/Inspection Services; and
 - Western Operations Maintenance Facility – Marlborough.
- Continued to work with Deer Island Treatment Plant (DITP), Field Operations (FOD), and utility companies to establish energy conservation programs at DITP and FOD facilities utilizing various programs including the Green Communities Act and the utilities’ municipal programs. Continued to dispose of surplus scrap metal materials in an environmentally responsible manner.
 - Continued development of an electronic procurement bidding process.
 - Processed 4,006 purchase orders in the first half of FY17 for a total of \$21,130,579.31.
 - Maintained MWRA’s Purchasing Card Program with Bank of America NA. MWRA now receives an annual rebate based on the total Commonwealth P-Card purchasing spends. This rebate is calculated based upon spending from October 1st through September 30th of each year. The current State rebate is set at 1.43 percent. Based upon MWRA’s annual spending from October 1, 2015 through September 30, 2016, in the second quarter of FY17 MWRA received a rebate of \$4,165.55.
 - Procured 32 vehicles through the use of a “Reverse Auction” format.
 - Purchased 378,000 gallons of ultra-low-sulfur, #2 diesel fuel for the DITP Power Plant in November, 2016 at a cost of \$1.60/gallon, and 405,000 gallons in December, 2016 at a cost of \$1.7432/gallon, both lower than the FY17 budgeted price of \$2.10/gallon.
 - Continued regular meetings with DITP, Chelsea, and MIS staff to foster better communication between MWRA departments and the Purchasing Unit.
 - Continued an online vehicle and equipment auction process that resulted in revenue of \$173,807.
 - Recycled 12 tons of batteries, 13.87 tons of paper, 121.62 tons of scrap metal, and 0 pounds of stainless steel, aluminum, brass, and copper, generating \$15,403 in revenue.

Budget Highlights:

- The FY18 Proposed Budget is \$4.1 million, a decrease of \$10,000 or 0.2% as compared to the FY17 Budget.

- \$3.9 million for **Wages and Salaries**, a decrease of \$14,000 or 0.4% as compared to the FY17 Budget, primarily for one fewer position, offset by anticipated contractual increases. The FY18 Proposed Budget funds 43 positions, one less than the FY17 Budget.
- \$11,000 for **Training and Meetings**, an increase of \$5,000 or 73.4% as compared to the FY17 Budget, primarily for one additional manager to attend the annual NIGP conference.

REAL PROPERTY AND ENVIRONMENTAL MANAGEMENT

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.

FY18 Proposed Current Expense Budget							
REAL PROPERTY / ENVIRONMENTAL MANAGEMENT							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 378,752	\$ 460,389	\$ 467,588	\$ 484,255	\$ 16,667	3.6%	
OVERTIME	-	-	-	-	-	-	
FRINGE BENEFITS	-	-	-	-	-	-	
CHEMICALS	-	-	-	-	-	-	
UTILITIES	-	-	-	-	-	-	
ONGOING MAINTENANCE	-	-	-	-	-	-	
TRAINING & MEETINGS	1,540	1,008	4,000	6,000	2,000	50.0%	
PROFESSIONAL SERVICES	-	15,720	5,000	6,000	1,000	20.0%	
OTHER MATERIALS	56	279	650	650	-	0.0%	
OTHER SERVICES	268,871	190,575	166,020	305,037	139,017	83.7%	
TOTAL	\$ 649,218	\$ 667,971	\$ 643,258	\$ 801,942	\$ 158,685	24.7%	

FY18 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.

FY18 Major 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.

FY17 Mid-Year Accomplishments:

- Provided ongoing real estate planning and services to acquire additional space to support the Chelsea facility. Identified nearby Commonwealth controlled parcel, conducted title research, and began process to transfer property from Commonwealth care and control to MWRA with DCAM and DCR.
- Provided real estate services for FRSA (licenses and easements) and for surplus of MWRA property (e.g. Commercial Point).
- Managed seven (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 \$440,000 of which MWRA and the host community each receive half.
- Provided real estate support to Operations and Public Affairs for issuance of 8M permits to 1) private entities requesting use of MWRA controlled land and 2) cities and towns applying to the Aqueduct Trails Program. Annual revenue from long term 8m permit totals \$71,300.
- Provided real estate services (appraisal, negotiation, survey review and/or planning) for: Section 14 waterline easement, Malden, in coordination with the City and a private developer, Southern Extra High Service Pipeline, Dedham (acquisition of temporary easements from two private property owners and permanent and temporary easements from MBTA; Reading Extension Sewer, Stoneham, (easement needs assessment), Meter 10 relocation on private property, Chelsea.
- Updated Real Property Disposition Procedures.
- Provided deed and title research, legislative review, document review with Law Division. Responded to in-house and public regarding ongoing inquiries regarding MWRA real estate rights.
- Provided strategic and technical support in concert with MIS and Planning's GIS group to prepare scope for consultant to upgrade and streamline Real Property data base to a state-of-the-art GIS map based interface. Continued updating records and adding to database on as-needed basis.
- 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.
- 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 and oversight during construction 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. Installed a new piping sump at the Caruso Pump Station, completed one-time DEP-required integrity testing of all tank piping sumps and spill buckets, 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.
- Continued to work with the MassDEP and the responsible parties as site assessment and cleanup design continues at two hazardous material waste disposal sites that have impacts on the Sudbury Aqueduct.
- Provided technical and environmental regulatory support for the accidental sodium hypochlorite delivery release incident at the Clinton Wastewater Treatment Plant.
- Initiated the 5-year updates to the Spill Prevention, Control, and Countermeasure (SPCC) Plan for the Gillis Pump Station and Prison Point CSO Facility. Incorporated these new and revised plans into the MWRA-wide SPCC annual training program. Completed annual inspections at eleven (11) MWRA facilities where oil is used and stored in accordance with the SPCC regulations.
- Continued to prepare, coordinate and oversee the completion of annual SPCC Plan training of over 200 MWRA oil handling staff and managers.
- Provided coordination and technical support for hazardous building materials inspections and sampling at Gillis Pump Station, Braintree-Weymouth Intermediate Pump Station, Cottage CSO Facility, and Cosgrove Intake in support of roof repairs and replacements.
- Provided technical support for hazardous building materials inspections and sampling associated with the rehabilitation of the former Interim Corrosion Control facility at the Carroll Water Treatment Plant.
- Provided technical support for hazardous building materials during the rehabilitation of the water quality laboratory in Southboro.
- Continued with MassDEP-required periodic groundwater monitoring around the former wastewater holding tank at Clinton.
- Provided technical and environmental regulatory support regarding environmental regulatory compliance, contaminated soil and groundwater management, as well as geotechnical issues on various design and construction projects, including:
 - Northern Intermediate High project
 - Section 36 Watertown-Waltham Connection
 - Alewife Brook Pump Station facility upgrades
 - Southern Extra High Pipeline
 - Sudbury Aqueduct Rosemary Brook Siphon and Farm Pond facility rehabilitations
 - Section 56 Water Line Replacement
 - Section 50 and 57 Water Line Rehabilitation

- Section 23, 24, and 47 Water Line Rehabilitation
 - Reading Extension Sewer Rehabilitation
 - Metro Water Transmission System Redundancy
 - Fuel storage tank installation design at the Quincy and Hingham Pump Stations
- 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, quarterly review of data to identify any non-compliant periods of operation, timely submission of semi-annual compliance reports to EPA and ensure scheduling of the performance retesting for the 4 engines at CWTP via operating hours monitoring in accordance with EPA guidelines.
 - Submit Compliance Certification to MassDEP for the new emergency generator at Fells Covered Storage facility in compliance with MassDEP's Environmental Results Program.
 - Continued to work with Operations staff to implement maintenance and recordkeeping requirements for all emergency generators including quarterly records review of each engine to ensure compliance with maximum allowed operating hours.
 - Completed air emissions compliance testing at the DITP's Secondary Odor Control facility including submission of an official test report to MassDEP in accordance with the monitoring and testing requirements of the DITP's operating permit.
 - Completed a relative accuracy test audit of the Zurn Boilers 101 and 102 continuous emission monitoring system in accordance with the monitoring and testing requirements of the DITP's operating permit.
 - Performed extensive review of proposed amendments to MassDEP's Air Pollution Control Regulations 310 CMR 7.00 to determine any changes in applicability to MWRA.
 - Preparation and timely submission to Mass DEP of emissions compliance testing protocol for the Biosolids Processing Facility.
 - Coordinate, schedule and complete emissions compliance testing program at the Biosolids Processing facility as required by the facilities air quality permit.
 - Conduct an extensive review of the discussion draft of MassDEP's proposed regulations for greenhouse gas emissions including the submission of comments and questions via the MassDEP's on-line portal.
 - Conduct an extensive review of new amendments to 112(r) of the Clean Air Act including a historical review of the original applicability determination by MWRA staff, to understand if there would be any impact to MWRA by the promulgation of the new amendments.
 - Work with MassDEP on the drafting of the Limited Air Plan Approval for the new odor control facility to be constructed at the Chelsea Creek Headworks.

- Continue to prepare and submit quarterly, semi-annual and annual air monitoring and emissions compliance reports to EPA and DEP for DITP, Biosolids Processing Facility, Nut Island Treatment Plant, CWTP, Prison Point CSO and Cottage Farm CSO.
- Continue to provide technical and regulatory support in response to the Nut Island Headworks odor control system fire including continuous review of emissions data while the facility operates on carbon alone as the sole pollution control device.

Budget Highlights:

- The FY18 Proposed Budget is \$802,000, an increase of \$159,000 or 24.7% as compared to the FY17 Budget.
- \$484,000 for **Wages and Salaries**, an increase of \$17,000 or 3.6% as compared to the FY17 Budget, for anticipated contractual increases. The FY18 Proposed Budget includes funding for four positions, the same as the FY17 Budget.
- \$6,000 for **Training and Meetings**, an increase of \$2,000 or 50.0% as compared to the FY17 Budget.
- \$305,000 for **Other Services**, an increase of \$139,000 or 83.7% as compared to the FY17 Budget. The increase is due to the estimate for the new remediation contract.



Finance Division Budget

FINANCE DIVISION

Finance

Director's Office
Rates and Budget
Treasury
Controller
Risk Management

FY18 Proposed Current Expense Budget						
FINANCE DIVISION						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 3,641,446	\$ 3,327,444	\$ 3,662,005	\$ 3,536,377	\$ (125,628)	-3.4%
OVERTIME	-	-	-	-	-	-
FRINGE BENEFITS	-	-	-	-	-	-
WORKERS' COMPENSATION	-	-	-	-	-	-
UTILITIES	-	-	-	-	-	-
ONGOING MAINTENANCE	-	-	-	-	-	-
TRAINING & MEETINGS	1,451	1,276	3,000	3,000	-	0.0%
PROFESSIONAL SERVICES	538,383	572,658	590,060	590,060	-	0.0%
OTHER MATERIALS	5,566	11,016	6,100	11,100	5,000	82.0%
OTHER SERVICES	7,283	5,696	6,615	6,365	(250)	-3.8%
TOTAL	\$ 4,194,129	\$ 3,918,090	\$ 4,267,780	\$ 4,146,902	\$ (120,877)	-2.8%

The **Finance Division** is responsible for managing the finance functions of the Authority. It 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 also 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 Finance Division is comprised of five departments: Director's Office; Rates and Budget; Treasury; Controller; and Risk Management.

FY18 Proposed Current Expense Budget						
FINANCE by Department						
DEPARTMENT	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
DIR OFFICE (FINANCE)	\$ 378,113	\$ 250,203	\$ 244,575	\$ 273,039	\$ 28,465	11.6%
CONTROLLER	1,496,244	1,366,086	1,599,366	1,499,946	(99,421)	-6.2%
RATES AND BUDGET	830,770	820,478	880,037	908,451	28,413	3.2%
TREASURY	1,056,582	1,034,017	1,070,055	976,354	(93,701)	-8.8%
RISK MANAGEMENT	432,420	447,307	473,746	489,113	15,366	3.2%
TOTAL	\$ 4,194,129	\$ 3,918,090	\$ 4,267,780	\$ 4,146,902	\$ (120,877)	-2.8%

FY18 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 MWRA’s Board of Directors, Management, and the MWRA Advisory Board.

FY18 Major 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.

FY17 Mid-Year Accomplishments:

- Developed the FY18 Proposed Budget consistent with the FY17 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 FY18 Proposed Budget for the Finance Department is \$4.1 million, a decrease of \$121,000 or 2.8% as compared to the FY17 Budget.
- \$3.5 million for **Wages and Salaries**, a decrease of \$126,000 or 3.4% as compared to the FY17 Budget, mainly due to two fewer positions, offset by anticipated contract increases. The FY18 Proposed Budget funds 36 positions, two fewer than in the FY17 Budget.

FTEs FINANCE by Department		
DEPARTMENT	FY17 FTEs	FY18 FTEs Proposed
DIR OFFICE (FINANCE)	2	2
CONTROLLER	16	15
RATES AND BUDGET	8	8
TREASURY	8	7
RISK MANAGEMENT	4	4
TOTAL	38	36

DIRECTOR'S OFFICE

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 FY18 will be maintaining an agency-wide focus on balancing competing needs to minimize assessment increases while ensuring the provision of critical MWRA services.

FY18 Proposed Current Expense Budget FINANCE DIVISION DIRECTOR'S OFFICE								
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18			
WAGES & SALARIES	\$ 369,655	\$ 241,578	\$ 235,135	\$ 258,149	\$ 23,014		9.8%	
TRAINING & MEETINGS	1,361	635	3,000	3,000	-		0.0%	
OTHER MATERIALS	4,616	7,442	5,100	10,100	5,000		98.0%	
OTHER SERVICES	2,481	547	1,340	1,790	450		33.6%	
TOTAL	\$ 378,113	\$ 250,203	\$ 244,575	\$ 273,039	\$ 28,465		11.6%	

FY18 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 FY18 Proposed Budget is \$273,000, an increase of \$28,000 or 11.6% as compared to the FY17 Budget.
- \$258,000 for **Wages and Salaries**, an increase of \$23,000 or 9.8% as compared to the FY17 Budget, reflecting mainly the addition of funding for interns/co-op. The FY18 Proposed Budget funds two positions, the same as in FY17 Budget.
- \$10,000 for **Other Materials**, an increase of \$5,000 or 98.0% as compared to the FY17 Budget, mainly for an increase in office supplies based on actual spending.

RATES AND BUDGET

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 rate projections.

FY18 Proposed Current Expense Budget							
RATES AND BUDGET							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 829,846	\$ 818,871	\$ 878,912	\$ 907,026	\$ 28,113	3.2%	
TRAINING & MEETINGS	-	588	-	-	-	-	
OTHER MATERIALS	615	305	500	500	-	0.0%	
OTHER SERVICES	310	713	625	925	300	48.0%	
TOTAL	\$ 830,770	\$ 820,478	\$ 880,037	\$ 908,451	\$ 28,413	3.2%	

FY18 Goals:

- Continue to enhance processes and the management of resources to deliver the final CIP and CEB timely and accurately.
- Develop options and recommendations to ensure sustainable, predictable, and reasonable assessments and charges to MWRA communities at both the water and wastewater utility level.
- 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.
- Start the process of evaluating and selecting software applications to replace the CIP program.

FY17 Mid-Year Accomplishments:

- Developed the FY18 Proposed Budgets consistent with the FY17 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.
- Instituted monthly coordination meetings with Engineering and Procurement to review status of award and on-going contracts for the CIP program.

Budget Highlights:

- The FY18 Proposed Budget is \$908,000, an increase of \$28,000 or 3.2% as compared to the FY17 Budget.
- \$907,000 for **Wages and Salaries**, an increase of \$28,000 or 3.2% as compared to the FY17 Budget, for anticipated contractual increases. The FY18 Proposed Budget funds eight positions, the same as in the FY17 Budget.

TREASURY

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

FY18 Proposed Current Expense Budget						
TREASURY						
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18	
WAGES & SALARIES	\$ 705,338	\$ 609,604	\$ 674,195	\$ 580,644	\$ (93,551)	-13.9%
OVERTIME	-	-	-	-	-	-
TRAINING & MEETINGS	90	52	-	-	-	-
PROFESSIONAL SERVICES	348,072	418,966	394,060	394,060	-	0.0%
OTHER MATERIALS	183	2,050	300	300	-	0.0%
OTHER SERVICES	2,899	3,345	1,500	1,350	(150)	-10.0%
TOTAL	\$ 1,056,582	\$ 1,034,017	\$ 1,070,055	\$ 976,354	\$ (93,701)	-8.8%

FY18 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.

FY17 Mid-Year Accomplishments:

- Completed a \$104.3 million refunding bond transaction on August 2, 2016. The refunding resulted in \$9.8 million or 9.6% present value savings and \$13.2 million in gross debt service savings over the life of the bonds.
- Executed an \$8.5 million defeasance of outstanding senior principal in September 2016. This defeasance reduced the debt service requirement between FY18 and FY20 by a total of \$9.7 million reducing the rate of increase to the Rate Revenue Requirement in those years.
- 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.

Budget Highlights:

- The FY18 Proposed Budget is \$976,000, a decrease of \$94,000 or 8.8% as compared to the FY17 Budget.

- \$581,000 for **Wages and Salaries**, a decrease of \$94,000 or 8.8% as compared to the FY17 Budget, mainly due to the filling of vacant positions at lower salaries and funding seven positions in the FY18 Proposed Budget, one fewer than the FY17 Budget. The position, which is no longer funded in the Treasury Department was a position with shared duties with the Fleet Department within the Administration Division. The functions of the position were reviewed and the position has been moved to and is funded in the Fleet Department.

CONTROLLER

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.

FY18 Proposed Current Expense Budget CONTROLLER							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 1,334,187	\$ 1,246,698	\$ 1,440,816	\$ 1,341,446	\$ (99,371)	-6.9%	
OVERTIME	-	-	-	-	-	-	
PROFESSIONAL SERVICES	160,975	117,615	156,000	156,000	-	0.0%	
OTHER MATERIALS	152	982	200	200	-	0.0%	
OTHER SERVICES	930	791	2,350	2,300	(50)	-2.1%	
TOTAL	\$ 1,496,244	\$ 1,366,086	\$ 1,599,366	\$ 1,499,946	\$ (99,421)	-6.2%	

FY18 Goals:

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

FY18 Major Initiatives:

- Implement new cash management tool for recording cash transactions to General Ledger.
- Continue to support management initiatives with underlying documentation and detail.

FY17 Mid-Year Accomplishments:

- Successfully completed certified financial statement audit with no audit findings.
- Completed automation of multiple Payroll Department documents.

Budget Highlights:

- The FY18 Proposed Budget is \$1.5 million, a decrease \$99,000 or 6.2% as compared to the FY17 Budget.
- \$1.3 million for **Wages and Salaries**, a decrease of \$99,000 or 6.9%, as compared to the FY17 Budget, mainly due to one fewer position in the Department. As a result of a number of retirements in the last few years, the Controller Department reviewed the duties and functions of its employees. As a result, the FY18 Proposed Budget funds 15 positions, one fewer than the FY17 Budget.

RISK MANAGEMENT

The **Risk Management Department** is responsible for all MWRA insurance programs and risk management functions. Department staff manages 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 serves as liaisons to insurance industry participants including brokers, insurers, insurance consultants, and attorneys as well as providing support to all MWRA departments.

FY18 Proposed Current Expense Budget							
RISK MANAGEMENT							
LINE ITEM	FY15 Actual	FY16 Actual	FY17 Final	FY18 Proposed	Change FY17 to FY18		
WAGES & SALARIES	\$ 402,420	\$ 410,693	\$ 432,946	\$ 449,113	\$ 16,166	3.7%	
PROFESSIONAL SERVICES	29,336	36,077	40,000	40,000	-	0.0%	
OTHER MATERIALS	-	237	-	-	-	-	
OTHER SERVICES	664	300	800	-	(800)	-100.0%	
TOTAL	\$ 432,420	\$ 447,307	\$ 473,746	\$ 489,113	\$ 15,366	3.2%	

FY18 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.

FY17 Mid-Year Accomplishments:

- Successfully procured MWRA’s Insurance Program through a competitive bid process for all lines of coverage at a 1.4% reduction in program cost compared to the FY16 program.
- Staff renewed MWRA’s license to operate as a self-insured entity for workers compensation claims by completing the annual application process with the Division of Insurance.
- Received, investigated and processed more than 70 self-insured Automobile, General Liability and Property damage claims.

- Provided timely support to MWRA managers on all insurance, claims, litigation and risk management issues.

Budget Highlights:

- The FY18 Proposed Budget is \$489,000, an increase \$15,000 or 3.2% as compared to the FY17 Budget.
- \$449,000 for **Wages & Salaries**, an increase of \$16,000 or 3.7% as compared to the FY17 Budget, for anticipated contractual increases. The FY18 Proposed Budget funds four positions, the same as in the FY17 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 is approximately 30% 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, overtime meals, tuition reimbursement.

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 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 FY2017 to FY2026										
COMBINED UTILITIES										
	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027
EXPENSES										
Direct Expenses	\$238,411	\$240,638	\$247,315	\$254,236	\$261,375	\$269,050	\$276,175	\$283,992	\$292,030	\$300,343
Indirect Expenses	41,581	38,932	41,590	43,184	44,430	45,839	46,258	47,882	45,047	46,958
Capital Financing (before offsets)	469,124	498,436	519,864	547,280	577,562	579,251	565,488	559,535	598,408	575,987
Sub-Total Expenses	\$749,116	\$778,006	\$808,769	\$844,700	\$883,367	\$894,140	\$887,922	\$891,408	\$935,485	\$923,287
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	(18,000)	(8,108)
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Expenses	\$749,116	\$778,006	\$808,769	\$844,700	\$883,367	\$894,140	\$887,922	\$891,408	\$917,485	\$915,180
REVENUE & INCOME										
Non-Member and Other Revenue	\$16,623	\$15,871	\$16,015	\$16,279	\$16,553	\$16,417	\$16,668	\$16,956	\$17,171	\$17,394
Interest Income	11,255	13,756	15,673	17,373	18,261	19,184	19,993	20,643	20,741	20,905
Rate Stabilization	0	0	0	4,197	10,910	0	0	0	15,596	5,810
Total Other Revenue	\$27,878	\$29,627	\$31,688	\$37,849	\$45,723	\$35,602	\$36,661	\$37,599	\$53,509	\$44,109
Total Rate Revenue	\$721,238	\$748,379	\$777,081	\$806,851	\$837,644	\$858,538	\$851,261	\$853,809	\$863,976	\$871,071
Rate Revenue Increase	3.8%	3.8%	3.8%	3.8%	3.8%	2.5%	-0.8%	0.3%	1.2%	0.8%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$1,144	\$1,196	\$1,250	\$1,306	\$1,365	\$1,420	\$1,462	\$1,511	\$1,567	\$1,623
Based on water use of 90k gpy (weighted)	\$1,689	\$1,764	\$1,844	\$1,927	\$2,014	\$2,095	\$2,157	\$2,229	\$2,312	\$2,395
WASTEWATER UTILITY										
	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027
EXPENSES										
Direct Expenses	\$160,412	\$160,451	\$164,844	\$169,444	\$174,195	\$179,408	\$184,019	\$189,239	\$194,607	\$200,129
Indirect Expenses	11,779	9,044	10,738	11,456	11,795	12,265	11,720	12,343	10,428	11,077
Capital Financing (before offsets)	318,991	339,713	353,570	368,831	388,417	389,089	366,516	351,378	345,727	339,698
Sub-Total Wastewater Expenses	\$491,182	\$509,208	\$529,151	\$549,731	\$574,407	\$580,763	\$562,255	\$552,960	\$550,763	\$550,904
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	0	(5,783)
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Wastewater Expenses	\$491,182	\$509,208	\$529,151	\$549,731	\$574,407	\$580,763	\$562,255	\$552,960	\$550,763	\$545,122
REVENUE & INCOME										
Non-Member and Other Revenue	\$6,880	\$6,195	\$6,313	\$6,437	\$6,565	\$6,688	\$6,786	\$6,899	\$7,026	\$7,154
Interest Income	6,458	7,447	8,411	9,423	9,969	10,423	10,663	10,697	10,670	10,746
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	\$13,338	\$13,642	\$14,724	\$15,860	\$20,458	\$17,111	\$17,449	\$17,597	\$17,695	\$17,900
Wastewater Rate Revenue	\$477,844	\$495,566	\$514,427	\$533,871	\$553,950	\$563,652	\$544,805	\$535,364	\$533,067	\$527,222
Rate Revenue Increase	3.7%	3.7%	3.8%	3.8%	3.8%	1.8%	-3.3%	-1.7%	-0.4%	-1.1%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$685	\$716	\$748	\$782	\$817	\$848	\$864	\$886	\$914	\$941
Based on water use of 90k gpy (weighted)	\$1,011	\$1,056	\$1,104	\$1,154	\$1,206	\$1,251	\$1,274	\$1,307	\$1,348	\$1,389
WATER UTILITY										
	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027
EXPENSES										
Direct Expenses	\$77,999	\$80,187	\$82,471	\$84,792	\$87,180	\$89,641	\$92,157	\$94,753	\$97,423	\$100,214
Indirect Expenses	29,802	29,888	30,853	31,728	32,636	33,574	34,538	35,539	34,619	35,881
Capital Financing (before offsets)	150,134	158,723	166,294	178,449	189,145	190,162	198,972	208,156	252,681	236,288
Sub-Total Water Expenses	\$257,934	\$268,798	\$279,617	\$294,969	\$308,960	\$313,377	\$325,667	\$338,448	\$384,722	\$372,383
Debt Service Assistance	0	0	0	0	0	0	0	0	0	0
Bond Redemption Savings	0	0	0	0	0	0	0	0	(18,000)	(2,325)
Variable Rate Savings	0	0	0	0	0	0	0	0	0	0
Total Water Expenses	\$257,934	\$268,798	\$279,617	\$294,969	\$308,960	\$313,377	\$325,667	\$338,448	\$366,722	\$370,058
REVENUE & INCOME										
Non-Member and Other Revenue	\$9,743	\$9,676	\$9,702	\$9,843	\$9,987	\$9,729	\$9,882	\$10,057	\$10,146	\$10,240
Interest Income	4,797	6,308	7,263	7,950	8,292	8,761	9,329	9,945	10,071	10,159
Rate Stabilization	0	0	0	4,197	6,986	0	0	0	15,596	5,810
Prior Year Utility Surplus/Deficit Transfer	0	0	0	0	0	0	0	0	0	0
Total Other Revenue	\$14,540	\$15,984	\$16,964	\$21,989	\$25,266	\$18,491	\$19,212	\$20,002	\$35,813	\$26,209
Water Rate Revenue	\$243,394	\$252,813	\$262,653	\$272,980	\$283,694	\$294,886	\$306,455	\$318,446	\$330,909	\$343,849
Rate Revenue Increase	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%	3.9%
Estimated Annual Household Charge **										
Based on water use of 61k gpy (weighted)	\$459	\$480	\$501	\$524	\$547	\$572	\$598	\$625	\$653	\$682
Based on water use of 90k gpy (weighted)	\$678	\$708	\$740	\$773	\$808	\$844	\$882	\$922	\$963	\$1,007

** 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 DRAFT 2016 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
FY18 DRAFT Current Expense Budget - Capital Financing Detail (as of 12/31/16)

	Outstanding as of 12/31/16	Total	Sewer	Water
SRF¹				
Unrefunded (93A, 93D, 95A, 98C)	\$ 835,000	\$ 2,810	\$ 2,810	\$ -
1999E Sewer		395,614	395,614	-
1999E Water	8,288,730	577,000	-	577,000
1999F	198,475,000	20,289,146	20,289,146	-
2000E Sewer		2,829,941	2,829,941	-
2000E Water	49,160,590	573,028	-	573,028
2001C Water	1,720,000	247,022	-	247,022
2001D Sewer		386,553	386,553	-
2001D Water	2,361,232	82,299	-	82,299
2002H Sewer		2,959,589	2,959,589	-
2002H Water	72,250,000	1,434,685	-	1,434,685
2002I Sewer		100,645	100,645	-
2002I Water	1,637,769	1,489	-	1,489
2003A	560,529	70,353	-	70,353
2003B	1,554,654	220,994	-	220,994
2003C Sewer		1,371,780	1,371,780	-
2003C Water	31,013,529	963,285	-	963,285
2004C Sewer		541,084	541,084	-
2004C Water	7,987,818	91,744	-	91,744
2004D Sewer		2,691,210	2,691,210	-
2004D Water	46,790,000	641,541	-	641,541
2005C Sewer		419,322	419,322	-
2005C Water	5,175,456	68,279	-	68,279
2005D Sewer		3,042,758	3,042,758	-
2005D Water	52,374,416	800,529	-	800,529
2005E Sewer		24,961	24,961	-
2005E Water	248,461	5,479	-	5,479
2006C Sewer		483,917	483,917	-
2006D Sewer		2,805,822	2,805,822	-
2006D Water	58,828,491	1,605,297	-	1,605,297
2006E Sewer		22,883	22,883	-
2006E Water	297,899	10,281	-	10,281
2007C Sewer		306,169	306,169	-
2007C Water	3,940,135	178,215	-	178,215
2007D Sewer		1,147,310	1,147,310	-
2007E Sewer		2,738,920	2,738,920	-
2007E Water	55,677,334	1,258,497	-	1,258,497
2008G Sewer		401,368	401,368	-
2008G Water	4,143,467	82,031	-	82,031
2009C Sewer		5,578,532	5,578,532	-
2009C Water	80,359,176	1,883,318	-	1,883,318
2009D Sewer		645,881	645,881	-
2009D Water	8,906,978	85,531	-	85,531
2010 D Sewer		1,422,030	1,422,030	-
2010 D Water	38,511,577	1,435,461	-	1,435,461
2011A Sewer		381,594	381,594	-
2011A Water	8,198,849	366,805	-	366,805
2012C Sewer		524,404	524,404	-
2012C Water	9,273,596	254,789	-	254,789
2012D Sewer		2,857,902	2,857,902	-
2012D Water	43,667,361	532,505	-	532,505
2013B Sewer		2,214,838	2,214,838	-
2013B Water	34,977,514	533,809	-	533,809
2014C Sewer		283,428	283,428	-
2014C Water	9,354,687	385,186	-	385,186
2015A Sewer		2,646,943	2,646,943	-
2015A Water	61,626,073	979,653	-	979,653
2015B Sewer		260,388	260,388	-
2015B Water	5,168,555	152,123	-	152,123
2016A Sewer		2,128,970	2,128,970	-
2016A Water	52,965,112	847,924	-	847,924
Pool 20 Sewer		2,759,035	2,759,035	-
Pool 20 Water		1,715,675	-	1,715,675
Pool 21 Sewer		2,784,035	2,784,035	-
Pool 21 Water		1,510,000	-	1,510,000
Total SRF Debt	\$ 980,095,379	\$ 87,044,610	\$ 67,449,782	\$ 19,594,828

APPENDIX F
FY18 DRAFT Current Expense Budget - Capital Financing Detail (as of 12/31/16)

	Outstanding as of 12/31/16	Total	Sewer	Water
MWRA Senior Debt				
2002J Refunding	241,340,000	52,942,075	47,647,868	5,294,208
2005A Refunding	238,405,000	11,782,225	5,302,001	6,480,224
2005B Refunding	75,245,000	3,762,250	1,253,958	2,508,292
2006B Refunding	30,430,000	1,521,500	1,141,125	380,375
2007B Refunding	647,950,000	34,017,375	28,574,595	5,442,780
2009B Refunding	145,225,000	15,306,250	11,020,500	4,285,750
2010A New	1,390,000	55,600	38,920	16,680
2010B Refunding	98,645,000	15,117,250	8,768,005	6,349,245
2011B New	8,360,000	1,995,450	1,396,815	598,635
2011C Refunding	321,160,000	45,824,275	17,871,467	27,952,808
2012A New	74,590,000	5,639,700	2,819,850	2,819,850
2012B Refunding	86,775,000	4,240,325	890,468	3,349,857
2013A Refunding	142,030,000	4,934,850	2,763,516	2,171,334
2014D New	61,545,000	3,077,250	2,092,530	984,720
2014E Refunding	15,605,000	7,686,917	6,726,052	960,865
2014F Refunding	141,410,000	6,396,700	1,982,977	4,413,723
2016B New	65,970,000	4,406,850	2,203,425	2,203,425
2016C Refunding	681,615,000	32,224,400	16,434,444	15,789,956
2016D Refunding	104,260,000	4,524,000	2,940,600	1,583,400
FY17 New Money (2017)		5,740,869	2,870,435	2,870,435
FY18 New Money (2018)		3,500,000	2,801,210	698,790
Defeasance Assumption		(1,575,000)	(708,750)	(866,250)
Total Senior	\$ 3,181,950,000	263,121,111	\$ 166,832,010	\$ 96,289,100
Subordinate Debt				
1999B	\$ 58,600,000	\$ 5,925,875	\$ 3,555,525	\$ 2,370,350
2002C Refunding	35,120,000	1,229,200	409,692	819,508
2008A Refunding	234,845,000	16,593,624	14,602,389	1,991,235
2008C Refunding	101,300,000	19,654,597	18,868,413	786,184
2008E Refunding	133,640,000	8,253,606	7,593,318	660,289
2008F Refunding	50,000,000	1,750,000	157,500	1,592,500
2012E Refunding	61,415,000	3,617,523	759,680	2,857,843
2012F Refunding	58,885,000	3,528,973	741,084	2,787,889
2012G Refunding	46,900,000	12,324,843	11,831,849	492,994
2014A Refunding	50,000,000	1,750,000	157,500	1,592,500
2014B Refunding	64,755,000	12,926,425	1,163,378	11,763,047
Total Subordinate Debt	\$ 895,460,000	87,554,667	\$ 59,840,330	\$ 27,714,337
Total SRF & MWRA Debt Service²	\$ 5,057,505,379	437,720,387	\$ 294,122,122	\$ 143,598,265
Other Capital				
Water Pipeline Commercial Paper	\$ 149,000,000	4,086,863	-	4,086,863
Current Revenue/Capital ³		13,200,000	12,540,000	660,000
Capital Lease		3,217,060	1,943,377	1,273,683
Debt Prepayment ⁴		10,900,000	10,355,000	545,000
Total Other Capital	\$ 149,000,000	\$ 31,403,923	\$ 24,838,377	\$ 6,565,546
Total Capital Financing (before Debt Service Offsets)	\$ 5,206,505,379	469,124,310	\$ 318,960,499	\$ 150,163,811
Debt Service Offsets				
Debt Service Assistance				
Bond Redemption			-	-
Total Debt Service Offsets			-	-
Total Capital Financing	\$ 5,206,505,379	469,124,310	\$ 318,960,499	\$ 150,163,811

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.

⁴ Debt Prepayment will be used defeasance of bonds at end of fiscal year.