

2018 CURRENT EXPENSE BUDGET



Boston Water and Sewer Commission



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Prepared by the Finance Division



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For the Fiscal Year Beginning

January 1, 2017

Christopher P. Morill

Executive Director

The Government Finance Officers Association of the United States and Canada (GFOA) presented a Distinguished Budget Presentation Award to the Boston Water & Sewer Commission, Massachusetts for its annual budget for the fiscal year beginning January 1, 2017.

In order to receive this award, a government unit must publish a budget document that meets program criteria as a policy document, as an operations guide, as a financial plan, and as a communicative device.

This award is valid for a period of one year only. We believe our current budget continues to conform to program requirements, and we are submitting it to GFOA to determine its eligibility for another award.

Table of Contents

| <u>Table of Contents</u> | | <u>Page</u> |
|---------------------------------|---|--------------------|
| I. | Budget Message..... | 1 |
| | <i>Management Objectives.....</i> | <i>2</i> |
| | <i>MWRA Five Year Rate Forecast.....</i> | <i>6</i> |
| II. | Plans, Policies and Procedures..... | 9 |
| | Financial Planning Process | 9 |
| | Program Based Budgeting | 9 |
| | Goal Setting Process | 9 |
| | Capital Improvement Program Budget Development..... | 9 |
| | Direct Expense and Current Expense Budget Development | 10 |
| | Rate Setting Process..... | 11 |
| | 2018 Budget Process Schedule | 12 |
| | Policies..... | 13 |
| | <i>Financial Policies</i> | <i>13</i> |
| | <i>Policy for the Investments of BWSC Funds</i> | <i>13</i> |
| | <i>Commercial Banking Policy Statement</i> | <i>13</i> |
| | <i>Banking Policy.....</i> | <i>14</i> |
| | <i>Funding and Utilization of Reserve Funds</i> | <i>14</i> |
| | <i>Operating</i> | <i>15</i> |
| | <i>Insurance.....</i> | <i>15</i> |
| | <i>Renewal and Replacement</i> | <i>15</i> |
| | <i>Stabilization</i> | <i>15</i> |
| | <i>Departmental Program Plans and Budgets.....</i> | <i>16</i> |
| | <i>Development, Monitoring & Amendment of the CEB.....</i> | <i>17</i> |
| | <i>Development, Monitoring & Amendment of the CIP.....</i> | <i>17</i> |
| | <i>Establishment of Water and Sewer Rates, Fees and Other Charges</i> | <i>17</i> |
| | <i>Other Commission Policies.....</i> | <i>18</i> |
| | Current Expense Budget Process | 19 |
| | <i>Budget Allocations</i> | <i>20</i> |
| | <i>Budget Variance Monitoring & Analysis.....</i> | <i>20</i> |
| | Capital Improvement Program Process | 21 |
| | <i>Development</i> | <i>22</i> |
| | <i>Capital Project Funding</i> | <i>23</i> |
| | <i>Capital Budget Amendments.....</i> | <i>24</i> |
| | <i>Capital Budget Reallocations</i> | <i>24</i> |
| | <i>Capital Program Monitoring and Reporting.....</i> | <i>24</i> |
| | Debt Plan..... | 25 |
| | Debt Service Coverage Requirements | 26 |
| | Debt Service Coverage Calculation | 26 |
| | Five-Year Debt Service Requirements | 27 |

Table of Contents

| | |
|---|-----------|
| Additional Bonds & Refunding Bonds | 27 |
| III. Budget Overview | 35 |
| 2017 Financial Position..... | 35 |
| 2017 Revenues and Expenses | 35 |
| Requirements and Future Impact | 37 |
| Budgeting and Accounting Basis | 38 |
| 2018 Budget Summary | 39 |
| Historical Financial Analysis | 40 |
| Revenue Sources | 41 |
| Rate Revenue | 43 |
| Adjustments to Rate Revenue | 44 |
| Prior Year Net Operating Surplus | 46 |
| Miscellaneous Revenue | 47 |
| <i>Late Charge Fees</i> | 47 |
| <i>Investment Income</i> | 48 |
| <i>Fire Pipe Fees</i> | 49 |
| <i>Other Income</i> | 50 |
| Total Expenses | 51 |
| Direct Expense Budget Comparison | 52 |
| Direct Expense Budget | 53 |
| 2018 Direct Expense Budget by Division | 54 |
| Budget Comparison by Line Items, 2018 v. 2017 | 55 |
| <i>Wages and Salaries</i> | 55 |
| <i>Overtime</i> | 58 |
| <i>Labor Related Costs/Benefits</i> | 59 |
| <i>Supplies and Materials</i> | 60 |
| <i>Repair and Maintenance</i> | 61 |
| <i>Utilities</i> | 62 |
| <i>Professional Services</i> | 63 |
| <i>Space and Equipment Rentals</i> | 64 |
| <i>Other Services</i> | 65 |
| <i>Insurance</i> | 66 |
| <i>Inventory</i> | 67 |
| <i>Capital Outlay</i> | 68 |
| <i>Travel / Training / Seminars</i> | 69 |
| <i>Damage Claims</i> | 70 |
| Indirect Expenses | 71 |
| 2018 v. 2017 Budgeted Indirect Expenses | 72 |
| <i>MWRA Assessment</i> | 73 |
| <i>Capital Improvements</i> | 75 |
| <i>Debt Service</i> | 76 |
| <i>Contractual Funding Obligations</i> | 80 |
| <i>Safe Drinking Water Act Assessment</i> | 81 |

Table of Contents

| | |
|--|------------|
| Fund Balances | 82 |
| <i>Flow of Funds</i> | 83 |
| <i>Revenue</i> | 84 |
| <i>Operating & Maintenance</i> | 85 |
| <i>Senior Debt Service</i> | 86 |
| <i>Senior Debt Service Reserve</i> | 87 |
| <i>Operating Reserve</i> | 88 |
| <i>Insurance Reserve</i> | 89 |
| <i>MWRA Assessment</i> | 90 |
| <i>Renewal and Replacement Reserve</i> | 91 |
| <i>General</i> | 92 |
| <i>Stabilization</i> | 93 |
| IV. Program Goals and Budgets | 95 |
| Commission Organization | 95 |
| Commission-Wide Organizational Chart..... | 96 |
| Customer Base | 97 |
| 2017 Commission Results..... | 99 |
| Commission Budget Summary | 101 |
| Commission Personnel Summary | 102 |
| Commission Goals, 2018..... | 103 |
| Executive Division | 104 |
| Organizational Chart..... | 104 |
| Division Organization | 105 |
| Mission..... | 105 |
| Budget Summary | 105 |
| Explanation of Major Variances | 105 |
| Personnel Summary | 106 |
| Explanation of Personnel Changes | 106 |
| <i>Office of Executive Director</i> | 107 |
| <i>Organizational Diversity</i> | 109 |
| <i>General Counsel</i> | 112 |
| <i>Human Resources</i> | 117 |
| <i>Safety and Training</i> | 120 |

Table of Contents

| | |
|---|----------------|
| Operations Division | 123 |
| Organizational Chart..... | 123 |
| Division Organization..... | 124 |
| Mission..... | 124 |
| Budget Summary | 124 |
| Explanation of Major Variances | 124 |
| Personnel Summary | 125 |
| Explanation of Personnel Changes | 125 |
| <i>Office of Operation Services</i> | 126 |
| <i>Water & Sewer Services</i> | 128 |
| <i>Support Services</i> | 137 |
| <i>Customer Service & Compliance</i> | 147 |
| <i>Asset Management & CMOM</i> | 156 |
| Engineering Division..... | 167 |
| Organizational Chart..... | 167 |
| Division Organization..... | 168 |
| Mission..... | 168 |
| Budget Summary | 168 |
| Explanation of Major Variances | 168 |
| Personnel Summary | 169 |
| Explanation of Personnel Changes | 169 |
| <i>Office of Chief Engineer Officer</i> | 170 |
| <i>Planning</i> | 172 |
| <i>Design</i> | 175 |
| <i>Construction</i> | 180 |
| Administration Division | 183 |
| Organizational Chart..... | 183 |
| Division Organization..... | 184 |
| Mission..... | 184 |
| Budget Summary | 184 |
| Explanation of Major Variances | 184 |
| Personnel Summary | 185 |
| Explanation of Personnel Changes | 185 |
| <i>Office of Chief Administrative Officer</i> | 186 |
| <i>Meter Services</i> | 188 |
| <i>Account Services</i> | 191 |
| <i>Communication and Community Services</i> | 196 |
| <i>Facilities & Support Services</i> | 199 |
| <i>Information Technology</i> | 202 |
| Finance Division | 206 |
| Organizational Chart..... | 206 |
| Division Organization..... | 207 |
| Mission..... | 207 |

Table of Contents

| | |
|--|------------|
| Budget Summary | 207 |
| Explanation of Major Variances | 207 |
| Personnel Summary | 208 |
| Explanation of Personnel Changes | 208 |
| <i>Office of Chief Financial Officer</i> | 209 |
| <i>Budgets</i> | 212 |
| <i>Financial Services</i> | 215 |
| <i>Revenues</i> | 219 |
| <i>Accounting</i> | 223 |
| <i>Procurement</i> | 227 |
| V. Capital Improvement Program (CIP) | 231 |
| Management Objectives and Accomplishments | 231 |
| Capital Improvements Cash Flows | 235 |
| Capital Improvements Funding Source | 235 |
| Project Highlights | 236 |
| Projects Associated With Consent Decree & Water Quality Improvements | 237 |
| <i>Background</i> | 239 |
| <i>Water Distribution System Expenditures</i> | 240 |
| <i>Sewer System Expenditures</i> | 240 |
| <i>Support Project Expenditures</i> | 241 |
| <i>Stormwater Project Expenditures</i> | 242 |
| MWRA..... | 242 |
| Funding Sources and Financial Impact..... | 244 |
| Impact of CIP on Current Expense Budget..... | 245 |
| Water Distribution System..... | 245 |
| Water Distribution System Capital Program | 246 |
| Water Main Replacement Program..... | 247 |
| Water Main Replacement Program Summary | 248 |
| Water System | 249 |
| <i>Water Replacement</i> | 249 |
| <i>Water Distribution System Special Projects</i> | 253 |
| Sewer System..... | 256 |
| <i>Sewer System Capital Program</i> | 260 |
| <i>Sewer Renewal and Replacement</i> | 262 |
| <i>Increased Capacity Projects</i> | 267 |
| <i>Sewer Separation</i> | 268 |
| <i>Infiltration and Inflow</i> | 270 |
| <i>Sewer System Special Projects</i> | 271 |
| Support Projects | 274 |
| <i>Metering</i> | 275 |
| <i>Information Technology Systems</i> | 276 |
| <i>Administrative Equipment</i> | 277 |
| <i>Stormwater/Green Infrastructure/Low Impact Development</i> | 280 |

Table of Contents

| | | |
|--------------|---|------------|
| VI. | Long Range Forecast | 283 |
| | Financial Modeling Results | 283 |
| | <i>MWRA Assessment</i> | 283 |
| | <i>Forecasted MWRA Rate Increases</i> | 284 |
| | <i>Forecast Assumptions</i> | 285 |
| | <i>Financial Projections</i> | 286 |
| | <i>Five Year Pro Forma</i> | 286 |
| | Reserve Fund Levels | 287 |
| | BWSC Rate Increases | 288 |
| | Household Charges | 289 |
| VII. | Demographics | 291 |
| | City of Boston Overview | 291 |
| | <i>Population</i> | 292 |
| | <i>Employment</i> | 294 |
| | <i>Unemployment</i> | 296 |
| | <i>Industry</i> | 297 |
| | <i>Education</i> | 298 |
| | <i>Consumer Spending</i> | 299 |
| | <i>Commercial Market</i> | 300 |
| | <i>Housing Market</i> | 301 |
| | <i>Tourism</i> | 302 |
| | <i>Commission Background</i> | 304 |
| | <i>Sources</i> | 308 |
| VIII. | Personnel Summary | 309 |
| | Overview | 309 |
| | <i>Executive</i> | 309 |
| | <i>Local 6</i> | 313 |
| | <i>Local 888</i> | 315 |
| | <i>Council 93</i> | 316 |
| | <i>Local 100</i> | 317 |
| IX. | Glossary | 319 |
| X. | Index..... | 325 |

2018 Budget Message from the Executive Director

The Commission was established in 1977 pursuant to a “home rule” petition adopted by the City of Boston (the “City”) and enacted by the Legislature of The Commonwealth of Massachusetts as the Boston Water and Sewer Reorganization Act of 1977, Chapter 436 of the Acts of 1977 of the Commonwealth (the “Act”). Under the Act, the Commission has been constituted as a public instrumentality, a body politic and corporate and a political subdivision of the Commonwealth. The Act provided for the transfer to the Commission of the ownership and responsibility for the operation of the water distribution system and the wastewater collection and stormwater drainage systems of the city. The Act authorizes the Commission to operate, maintain and construct all necessary improvements to the systems, establish and collect rates and charges for its services (which rates and charges are not subject to regulation by any other governmental body), and finance its operations and improvements through revenue collections and the sale of bonds and notes payable solely from the Commission’s revenues. The Act further provides that any revenue surpluses earned by the Commission in any Fiscal Year shall be credited to the next year’s rates or returned to the City of Boston. Since its inception, the Commission has generated a surplus in each year of its operations and has credited the surplus to the reduction of the next year’s rates. The Act may be amended only by means of further “home rule” petitions of the City enacted by the Massachusetts Legislature, or by means of state legislation affecting generally all water and sewer districts within the Commonwealth.

In 2017, the Commission was recognized locally and national for its continued excellence in maintaining a safe and quality water and sewer service to the rate payers of the City of Boston.

National Association of Clean Water Agencies (NACWA) has been the nation’s recognized leader in legislative, regulatory and legal advocacy on the full spectrum of clean water issues, as well as a top technical resource for water management, sustainability and ecosystem protection interests. NACWA awarded the Commission the Gold Award for Utility Excellence in recognizing its strong record of effective utility management. The Gold Award’s criteria are based on the Ten Attributes of Effectively Managed Water Sector Utilities and the Keys to Management Success, which were developed by a blue ribbon committee of water industry executives at the request of U.S. EPA.

The National Municipal Stormwater and Green Infrastructure Awards program, led by the Water Environment Federation (WEF) through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), was established in 2015 to distinguish high-performing regulated Municipal Separate Stormwater Sewer Programs (MS4s). WEF recognized the Commission for demonstrating a significant achievement in design, operation, maintenance and process change resulting in demonstrated long-term water quality improvement.

The Commission took home the 2017 award for “New England’s Best” drinking water in a contest held at the New England Water Works Association’s annual conference in Brewster, Massachusetts. This year, Boston’s drinking water competed against ten other samples from throughout New England. The award now makes Boston eligible to compete against other cities from across the United States, Canada, and Mexico at the American Water Works Association’s annual conference scheduled for 2018.

Budget Message

The Commission received The Regional Recognition Award for outstanding performance and achievements in 2016. The Massachusetts Department of Environmental Protection (MassDEP) recognized the Commission as a model public water agency that puts forth exemplary efforts in every area of water treatment and distribution including the Lead Service Replacement Program.

The Commission was presented with the Commonwealth of Massachusetts Governor's Citation in recognition of dedicated service to maintaining a safe and abundant supply of clean water and commitment to protecting the environment. This award gives formal recognition by the Commonwealth to those who provide meaningful contributions, which distinguish them from their peers. These special awards focus attention on consistent, positive achievements by both individuals and teams of state employees, and recognize those who demonstrate: innovation and dedication to their work, concern for the public trust and commitment to excellence.

Management Objectives

The Commission was created to ensure adequate funding is available to maintain and improve the long-term quality and reliability of Boston's water and sewer services. The Commission is committed to these primary goals:

To maintain and improve the Water Distribution and Sewer Systems. The Commission is committed to a number of improvements to the water distribution and wastewater collection systems, including following an aggressive renewal and replacement program, reducing unaccounted-for water, encouraging conservation and improving the environment.

To establish and administer a billing and collections system that is fair and efficient. The Commission has worked to establish a rate structure that fully reflects its costs, fairly distributes the financial obligation concerning its customer base and encourages water conservation. The metering, billing and collection process is a central focus of the Commission's full management team and the Commission is committed to maintaining its strong record in this area.

To maintain a strong financial structure The Commission consistently employs conservative financial projections and budgeting assumptions, maintains adequate reserves and strikes a balance between debt funding and rate funding of capital expenses.

Sustaining effectiveness of Investments / Compliance of Regulations. The Commission is committed to complying with all its regulatory obligations under federal and state laws, including the Safe Drinking Water Act ("SDWA"), Clean Water Act ("CWA") and its National Pollutant Discharge Elimination System ("NPDES") permitting obligations for both its stormwater system and combined sewer system. Compliance obligations also extend to meeting and exceeding the goals and requirements of the Boston Harbor Cleanup project started in 1985 and the Consent Decree executed in 2012 with the Environmental Protection Agency ("EPA") related to stormwater discharges.

The overall objectives of the Commission 2018-2020 CIP are to ensure the delivery of high quality potable water for consumption and fire protection, as well as the efficient collection of sewage for transport and delivery to a treatment facility or for approved discharge.

Budget Message

A new Stormwater Category was created in 2017 that focuses on stormwater management. The primary purpose of the Stormwater Category in the 2018-2020 Capital Improvement Program is to encourage participation in the Boston Harbor pollution abatement projects and implement green infrastructure to improve the water quality of discharges to the local receiving waters. The goal is also to study existing conditions and make recommendations for placement of new best management practices designed to promote improved water quality, ensure compliance with state and federal regulations, minimize flooding and strategically manage stormwater throughout the City of Boston.

The Commission's CIP includes projects to improve overall efficiency and to enhance the Commission's ability to provide services to its customers. The projects included in this CIP are intended to accomplish these objectives in the most efficient and cost-effective manner. Some of the major projects for improving Boston's water and wastewater infrastructure in the 2018-2020 Capital Improvement Program are listed below:

- Water Main Replacement Program
- Inspection and Rehabilitation of Steel Water Mains
- Sewer and Drain Replacement Program
- Sewer & Drain Rehabilitation & Replacement in the North End
- Sewer Separation and System Improvements in South Boston
- Sewer Separation in Roxbury
- City-wide Illegal Connections Investigations
- Upgrades to Union Park Pumping Station & Satellite Stations
- Upgrade of Customer Information System (CIS)
- Projects affiliated with the Consent Decree; includes cleaning and televising ninety miles of sewer and drains
- Implement Stormwater/Green Infrastructure designed to improve water quality, the environment and manage stormwater resources.
- Improvements to Information Technology

Budget Message

Since its creation the Boston Water and Sewer Commission has provided the City of Boston with reliable, quality water. A program, which began as an aggressive 17 miles of water pipe replaced or rehabilitated yearly based on age and the City's construction schedule, has transformed into a successful asset management approach. The Commission utilizes effective conservation measures through continued efforts to eliminate leaks across the system through advanced leak detection technology and proactive maintenance of the system's water mains. As a result, the Commission has averaged just 35 water pipe failures compared to the industry benchmark of average 275 main breaks per 1,000 miles of water pipes per year, and has witnessed its unbilled water drop 48% to 15%.

In 2011, the Commission completed a Water Distribution Study, which provided a thorough understanding of the water system and how to best manage it. The study gave all stakeholders a better sense of the history of Boston's water infrastructure and provided key insights into current conditions. The study has been responsible for the development of best management practices in value maintenance, main flushing and more effective methodology of selecting pipe to be replaced under the Capital Improvement Plan. Not only do these tools assist current Commission employees with an understanding of the system, they also provide future employees with a roadmap for optimal system maintenance.

The three-year study was divided into two phases. The first phase was to have both Commission staff and a hired contractor collect 93 pipe samples (coupons). The samples were taken from every neighborhood and varied in size and pipe material. The age of the water pipes ranged from 18 years old to 147 years old and included cast iron, ductile iron and a mix of cement lined and unlined. The pipes and soil sample which were also taken from the location were analyzed. The analysis consisted of physical observations and measurements, microscopic examination, mechanical properties test, and chemical composition analysis. The soil sample obtained at each location was also analyzed to determine its corrosiveness. The results of the tests performed were matched with locations on Commission maps, and corrosion rates were correlated with fill areas, electrified rail locations and groundwater levels.

The second phase was to create a sustainable distribution system by developing a risk-based measure for selecting pipe to be included in the annual CIP budget. This phase employed sophisticated models that levered all the data collected in phase one, data the Commission collects in its GIS, Citiworks, and hydraulic model to determine the appropriate level of pipe rehabilitation and replacement needed to achieve the Commission's goals. The pipe selected is based on a risk-based assessment. The framework is derived from asset management principles, which consider the highest risk of pipe to be the probability of a failure, and what the consequences of an event occurring could be (hospital flooding or critical customers without water). In addition to the samples taken during the three-year study, the Commission obtains 20 pipe and soil samples every year. Once the results of the analysis are received the information is uploaded into the Commission's database to continue selecting the most vulnerable pipe.

On August 23, 2012, the Commission entered in a Consent Decree with the Environmental Protection Agency (EPA). Under the terms of the Consent Decree the Commission implemented a Capacity, Maintenance, Operations and Management ("CMOM") self-assessment study in 2012 that analyzed all aspects of the Commission's sanitary sewer and storm drainage facility operations and maintenance. The Commission finalized a CMOM Corrective Action Plan in

Budget Message

July 2013 and developed a CMOM Program Document in May 2014. The CMOM Program synchronizes infrastructure maintenance and operations goals with long-term CIP planning to achieve Clean Water Act compliance with the Commission's NPDES permit and ultimately improve water quality.

As part of the CMOM Corrective Action Plan filed with the EPA, the Commission must increase its inspection and assessment of its sewer and drainage systems. The program represents progressive increases in the amount of pipes cleaned and televised with an end goal of completing approximately 10% of the system annually.

The Consent Decree offers an unprecedented opportunity for the Commission to increase its role as an environmental steward for Boston's waterways. The Commission is committed to meeting and surpassing the benchmarks outlined in the Consent Decree. To fulfill this commitment, the Commission has begun implementing both short-term and long-term measures that are designed to improve water quality, increase public awareness, and protect the environment.

The City of Boston, the Commission and its ratepayers have helped clean up Boston Harbor and Boston's waterways to a level where they are accessible for the public use 98% of the time. South Boston's beaches are recognized as the cleanest urban beaches in the U.S. and the Charles River has been recognized as one of the cleanest urban rivers in America. The Commission's illicit discharge detection protocol and sampling program have been cited as an example and standard by EPA. These achievements are a direct result of the Commission's investment in improved sewer and stormwater infrastructure, implementation of best management practices and working with other stakeholders in the City of Boston. The Commission will continue on a tenable, sustainable path to improve water quality and maintain outstanding access to the City's waterways.

For the past five years, the Commission has implemented a number of green infrastructure/low impact development (GI/LID) projects in collaboration with other Boston city agencies. The latest such effort takes advantage of the Boston Public Schools (BPS) comprehensive Educational and Facility Master Planning process known as BuildBPS to construct GI pilot projects at five schools throughout the city, all of which are located in areas of high phosphorus loading. Washington Irving Middle School completed in 2017, is the largest of the pilot schools, has the most GI/LID features and is affectionately referred to as the "flagship" project. The Washington Irving project includes a large, outdoor classroom space containing an extensive bioretention feature surrounded by boulders where students can sit, play and interact with the feature; side-by-side concrete and vegetated swales, so that students can make a visual comparison between "grey and green" stormwater management; and a new turf field ringed with trench drains, stormwater tree pits and a track.

Budget Message

When construction on all five schools is complete, BPS will have many new GI/LID features that serve dual purposes. The first is to better manage stormwater on site and improve overall stormwater quality in Boston to meet the water-quality goals for the Charles River required by the Consent Decree. The second is to provide stormwater education opportunities for students, teachers and community members. By educating students about GI/LID, parents will directly receive these important lessons when children talk about their day. Educational signage will also be installed at each of the five schools for community members to read and understand the myriad benefits of green stormwater management.

Effective January 1, 2018 the Commission increased its water and sewer rates by an average of 4.75%. The 2018 Current Expense Budget (“CEB”), as outlined in the following pages, details \$368.1 million in anticipated revenues and expenses. This represents a 1.9% increase over the 2017 budget.

The Commission’s fiscal priorities for 2018 include adhering to management objectives and mitigate the effects of the Massachusetts Water Resources Authority (“MWRA”) five-year projected wholesale rate increases. Successful achievement of these priorities will allow the Commission to accomplish its main goal of: providing Boston with the highest quality water and sewer service at the lowest possible price.

MWRA Five-Year Rate Forecast

The MWRA regularly updates its estimates of anticipated revenues and expenses over a multi-year planning horizon. These planning estimates provide a context for budget discussions and a planning tool for the MWRA and those affected by its rate revenue requirements. Increasing debt service to finance the capital improvement program is the most important factor driving estimates of future budget increases. New water system improvements and the impact of recent financing strategies will increase capital financing costs over the next several years.

The payment of the cost of such MWRA programs will be included in the MWRA’s assessments to its Member Communities for the supply of water and sewer services. Because the Commission is approximately one-third of the MWRA’s rate revenue requirement, it is expected that these programs will have a significant financial impact on the Commission, inevitably leading to increased water and sewer rates for our customers.

In developing future rate projections, the Commission must utilize the most current rate and future projections, which have been issued by the MWRA. The MWRA Assessment is based on an actual 3.2% for 2018, a projected 3.8% for 2019 to 2022. These anticipated rate increases are based on the MWRA fiscal year, which began on July 1, 2018.

The 2018 budgeted assessment of \$226.1 million is anticipated to escalate to \$262.1 million by the year 2022. This forecast amount represents approximately 61.9% of the total expenses of the Commission for that year. Consequently, the current rate increase to Boston’s ratepayers for 2018 is 4.75%, with forecasted increases of 4.75% each year from 2019 through 2022.

Budget Message

The Commission will aggressively pursue all available state relief funding, grant and low interest loans, and continue to control total expenses, in an effort to offset these rate increases. Based on the projected rate increases for 2018-2022, annual household charges for the typical Commission customer are forecast into an average dollar cost increase from \$1,102 in 2018 to \$1,326 in the year 2022.

The 2018 Current Expense Budget enables the Boston Water and Sewer Commission to fulfill its commitment to our ratepayers. That commitment is to operate the water, wastewater, stormwater systems in a modern and efficient manner; provide the highest quality and most cost effective water distribution and wastewater collection services; while improving the water quality in Boston Harbor, its beaches and tributary rivers.

A handwritten signature in blue ink that reads "Henry F. Vitale". The signature is written in a cursive, flowing style.

Henry F. Vitale,
Executive Director

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The Financial Planning Process

The Commission's annual financial planning process adheres to established procedures in completing each vital planning phase in the implementation of the Commission's overall financial plan. The phases, described below in chronological order, are the Goal Setting Process, the Capital Improvement Program ("CIP") Budget Process, Direct Expense and CEB Development and the Rate Setting Process. Together, these phases outline the level of expenses for which the Commission must secure necessary financial resources, the revenue requirement to meet these expenses and the sources of the funds to implement these spending plans. The primary source for funding the current expenses for each fiscal year is customer water and sewer charges.

Program Based Budgeting

In 1989 the Commission implemented the "Program Based Budgeting" methodology. Under this methodology each operating unit within the Commission identifies areas of concern on an annual basis and declares new goals and objectives, which outline the mission and the duties of each operating unit. Program goals and objectives when successfully completed result in reduced costs, increased operating efficiencies and elevated levels of service being provided to our customers.

The Goal Setting Process

The Goal Setting Process commences in June each year. Division Chiefs and Department Managers submit preliminary goals and objectives to the Budget and Financial Planning Department staff ("Budget staff") for review. The goals are categorized as Monthly Management Report Goals, Goals included in the Commission-wide Report Status Update, Tactical Goals and Strategic Goals. Monthly Management Report Goals are those, which carry out the core duties and responsibilities of an operating unit within the Commission for delivery of basic water and sewer services. Goals included in the Commission-wide Report Status Update are reports submitted by staff for internal distribution or as required by law or permit to be completed and submitted to any external agency. Tactical Goals are one-time improvements and/or enhancements to a technical or service-oriented process. Strategic Goals outline the long-range plans and direction of each division and department in the Commission. In each case, the Division Chiefs and Department Managers must declare goals and objectives which meet at least one of the following criteria: cost control, revenue enhancement, service improvement or environmental protection. Each division and department must explain how the progress of the objective is to be measured - the measurement criteria. After review by Budget staff, proposed goals are forwarded to the Chief Financial Officer ("CFO") for review and comment. The final goals for the ensuing year are then reviewed and approved by the Executive Director.

The Capital Improvement Program Budget Development

The Commission is required under its Enabling Act and the General Bond Resolution, adopted on December 6, 1984, and supplemental resolutions ("the Resolution") to annually publish a CIP for the succeeding three years. The ultimate goal of the CIP is to ensure the uninterrupted

Plans, Policies and Procedures

delivery of high quality water and wastewater services while minimizing water loss and the pollution of Boston Harbor and its tributary waters. The CIP process, which also begins in June each year, outlines the improvements, which are necessary to maintain and enhance the infrastructure. The overall objectives of the CIP are to ensure the adequate delivery of high quality potable water for consumption and fire protection and the efficient and environmentally sound collection of wastewater for transport and delivery to a treatment facility or for approved discharge. The projects included in the CIP are divided into three categories: water distribution system projects, sewer system projects and support projects. Commission staff establishes a time line for the design and construction phases of each project along with projected cash flow requirements based on engineering information and a priority ranking system. As part of the CIP development process the Commission solicits input from private and public entities regarding planned capital projects and any potential impact on the Commission's systems and/or CIP. Project information is then submitted to Budget staff for review and compilation into the annual CIP. The proposed CIP is then forwarded to the CFO for review and comment, after which it is forwarded to the Executive Director for review and approval. In accordance with the Enabling Act the proposed CIP must be delivered to the Mayor of the City of Boston on or before November 1, annually. Prior to adoption of the CIP, the Enabling Act requires that the Commission hold a public hearing on its proposed CIP for the purpose of allowing interested parties the opportunity to review and comment. After the public hearing, the Commission maintains a fifteen-day open comment period for the public to present views or arguments on the proposed CIP. The Commission responds to these public comments and the final CIP is presented to the Board of Commissioners for adoption in December each year.

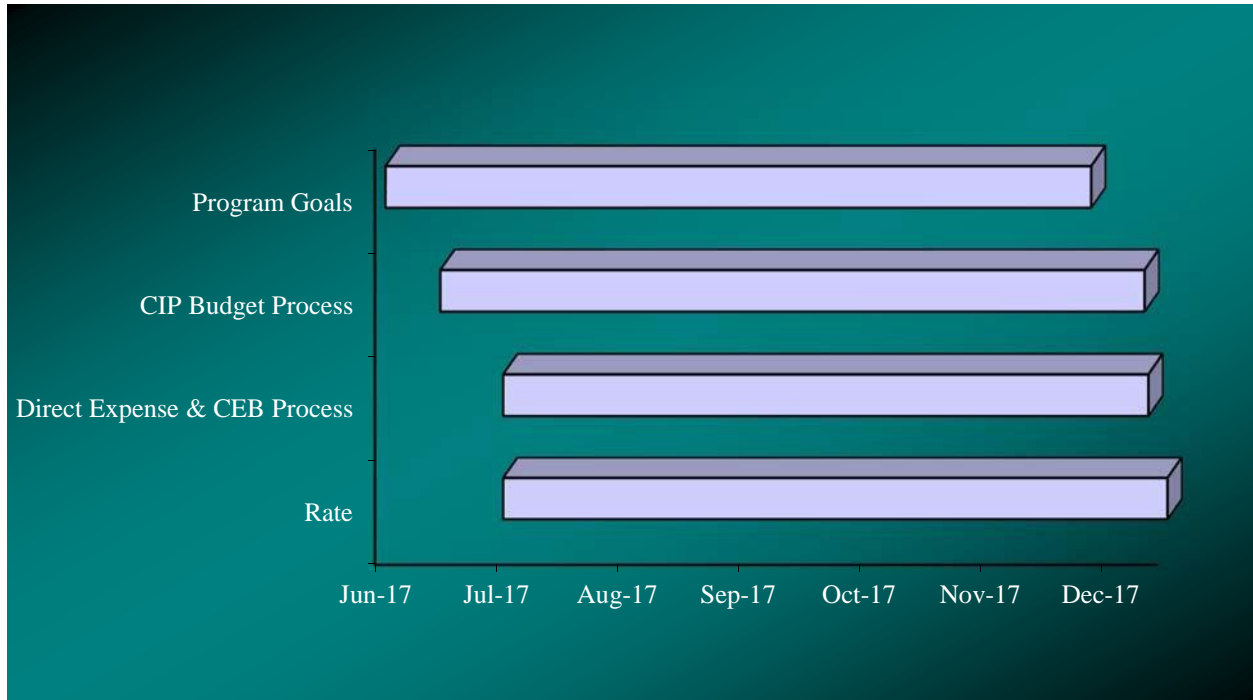
Direct Expense and Current Expense Budget Development

In July, the process for the Direct Expense Budget and CEB Development begins. Initially, Division Chiefs and Department Managers submit their requests for the funding necessary to fulfill the duties, responsibilities and new goals for the following fiscal year. Budget staff evaluates these requests in light of the current level of spending, historical spending patterns, availability of resources and the tactical and strategic goals declared by each department. Based on this analysis, the Budget staff determines a recommended level of funding. This recommendation is then submitted to the CFO for review and modification before finalizing the Direct Expense Budget at the Executive Director's Planning Meeting with Senior Management. The Commission then determines the total level of expenditures, which will be required to operate and maintain the systems, provide basic services and fulfill all financial obligations for the next fiscal year. Staff considers all financial obligations such as the wholesale costs of water and sewer services paid to the MWRA, the Direct Expenses as determined above, rate revenue funded costs of renewal and replacement of the water and sewer systems as included in the CIP, the Safe Drinking Water Act ("SDWA") Assessment, payment of State Revolving Loan Fund ("SRF") debt service, principal payments on MWRA loans, total debt service expense on outstanding general revenue bonds of the Commission and required deposits to various reserve funds which are stipulated by the Resolution ("Contractual Funding Obligations"). Once the level of these expenses is determined for the following year, the Commission must determine the level of revenue required to meet these expenses and to meet the debt service coverage test, which is covenanted in the Resolution.

The Rate Setting Process

The Rate Setting Process completes the final phase of the annual financial planning process by evaluating all the financial obligations of the Commission and determining the rate revenue requirement for the ensuing fiscal year. In accordance with legislative and policy mandates, the Commission adheres to an annual process in developing and setting the level of water and sewer rates for a given year. The Commission's Rate Setting Methodology incorporates the following four phases: Legislative/Policy Analysis; Water Demand Analysis; Financial Analysis; and the Water and Sewer Rate Calculation. Legislative/Policy Analysis is undertaken annually to ensure that the Rate Setting Process is conducted in compliance with all generally accepted rate making practices and that it adheres to all existing legal and policy directives mandated by the Enabling Act and the Resolution. The Water Demand Analysis considers factors, which have an impact on the level of consumption from year to year. Analysis of changes in the composition of the Commission's customer base, the occurrence of extreme weather conditions and its effects, the impact of increasing rates and economic activity and the extent to which system-wide water conservation efforts may alter usage patterns are considered. The third component of the Rate Setting Methodology is the Financial Analysis phase, which considers the past, present, and future financial position of the Commission in determining a projection of revenues, adjustments to revenues and expenses for a given year. The result of this phase is the total projected level of expenses for the ensuing year, which is used to determine the rate revenue requirement for that year. The Commission next estimates the level of non-rate revenue, which is derived from Special service fees, investment income, late payment charges, fire pipe charges, prior year net operating income, if any, and other miscellaneous income. The amount of non-rate revenue is applied to the level of expenses plus the level of adjustments to revenue and the resulting shortfall is the rate revenue requirement for the year. The final phase of this process is Water and Sewer Rate Calculation. The rate revenue requirement is allocated between water and sewer costs to derive a water revenue requirement and a sewer revenue requirement. The percent change in rates is determined by dividing the water and sewer rate revenue requirement by the estimated revenue from current water and sewer rates. The estimated percent changes are then applied to current water and sewer rates resulting in the calculation of new water and sewer rates. The Commission implemented a rate increase of 4.75% to be effective January 1, 2018. Also in 2005, the Commission completed a rate structure study in which it was determined that the rate structure should be reduced to six blocks. The 2018 Rate Schedule calculates charges based on a six-block inclining rate structure. From 1986 to 2005, the Commission used a ten-block inclining rate structure in order to promote water conservation. The inclining block rate structure charges a higher per-unit price as a customer's average daily consumption increases. It is a pricing structure widely used by water and sewer utilities throughout the country, and has contributed to the desired decline of water consumption in Boston over the past twenty years.

Plans, Policies and Procedures



2018 BUDGET PROCESS SCHEDULE

The above chart illustrates the process, which took place in 2017 in preparation for the 2018 financial year. At the beginning of June, the Program Goals and Objectives process was initiated, followed by the start of the CIP process in mid-June. During the first week of July, development of the direct and current expense budgets commenced, along with the development of the rates required to support all planned program spending.

Financial Policies

The Commission has established specific Financial Policies, which set the parameters within which decisions of a financial or budgetary nature are made. Many of the policies establish guidelines for operation in accordance with the requirements of the Enabling Act and the Resolution. Along with the broad-reaching policies described below, departmental level policies and procedures have been designed and instituted to ensure compliance with generally accepted accounting principles (“GAAP”) and applicable laws and statutes. Under the Enabling Act, the Commission is required to maintain its books and records in accordance with GAAP and to have an annual audit performed by an independent certified public accountant or firm of certified public accountants. The Commission has complied with this requirement and has received an unqualified opinion each year since inception.

The Commission follows the accounting standards set forth in Governmental Accounting Standards Board Statement No. 62, (“GASB 62”). Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements. GASB 62 allows certain (a) revenues provided for future allowable costs to be deferred until the costs are actually incurred (deferred credits) and (b) costs incurred to be capitalized if future recovery is reasonably assured (deferred charges). These changes allow a more meaningful presentation of the results of operations in that the financial statements prepared under GAAP more closely reflect the Commission’s rate setting policies.

Policy for the Investment of Boston Water and Sewer Commission Funds

This policy sets forth the principles, which the Commission shall follow in investing all of its cash assets, with the exception of the Pension Fund. Investment of Commission funds is governed by federal and state law and is restricted to Permitted Investments as defined by the Commission’s General Revenue Bond Resolution and Supplemental Resolutions. Revenues generated from the investment of Commission funds reduce the amount the Commission must charge its customers, while any investment losses would negatively affect the Commission’s general rates and charges. Consequently, the Commission shall at all times maintain a fully invested, diversified portfolio with the objective of achieving the highest yield that is attainable in conjunction with preservation of capital.

The basic criteria that will be used in making investment decisions include the evaluation of risk/reward tradeoffs, historical price spreads between different securities, the slope of the yield curve and the anticipated cash flows of the different investment accounts of the Commission. In addition, the prudent investor rule will be applied to all investment decisions.

Commercial Banking Policy Statement

This policy statement sets forth the principles governing the Commission’s commercial bank relationships. Commercial banks serve the Commission in two primary capacities. First, they provide a range of financial services including custody, trustee, check clearing, cash management and accounting. Second, commercial bank deposit accounts, including checking accounts, non-collateralized certificates of deposit and similar general obligations of the bank,

Plans, Policies and Procedures

are forms of investment securities. Banking relationships will be evaluated from both perspectives. Bank service relationships will be evaluated based on the quality of service provided and the full cost of service relative to similar service offered by other institutions. Bank deposit accounts in excess of amounts insured by the Federal Depository Insurance Corporation (“FDIC”) will be analyzed relative to their compliance with the Resolution and their overall investment risk and return. Every attempt will be made to minimize the investment risks associated with bank deposit accounts by maintaining deposits below the level insured by the FDIC whenever possible or by requiring that bank deposits be fully-collateralized. Non-collateralized deposit accounts in excess of FDIC-insured levels will be placed to the fullest extent practicable with banks that have high credit ratings consistent with the general credit levels established by the Resolution for Permitted Investments.

Banking Policy

This policy was adopted in 1991 when operating losses, downgrades and failures spread throughout the banking industry in New England, in order to ensure the safety of the Commission’s bank deposits. This policy was designed to further restrict the list of Permitted Investments as defined in the Commission’s Resolution. The Banking Policy dictates that any funds maintained with the Trustee or any other bank would have to be invested, collateralized or otherwise secured so as to provide the Commission with the security equivalent to at least an A rating. The Resolution requires that bank deposits in excess of FDIC limits can only be maintained in banks with combined capital and surplus of more than \$50 million. This policy imposes the stricter requirement that unsecured deposits in excess of FDIC limits be maintained only in banks with commercial paper ratings of A-1/P-1 or credit ratings of A or better.

Policy on the Funding and Utilization of Reserve Funds

This policy sets forth the purposes of the contractual requirements and additional funding guidelines of the Commission’s reserve funds. At a minimum the Commission will maintain each reserve fund at the amount required by the Resolution adopted December 6, 1984 and Supplemental Resolutions. It is the intention of the Commission to augment, withdraw from, pledge or otherwise utilize its reserve funds in accordance with the Resolution and this policy in order to provide a high level of security to its bondholders and to potentially moderate future rate increases.

The Commission is self-supporting entity that provides water and sewer services to the City of Boston. The Commission has established a fund structure that ensures necessary funds are made available to meet its various responsibilities in the relative order of priority. The fund structure is prescribed in the General Resolution under which bonds are issued to fund its infrastructure needs.

The funds established under the General Resolution include the Project Fund, the Redemption Fund, the Revenue Fund, The Operating and Maintenance Fund, the Debt Service Funds, the Debt Service Reserve Funds, the Stabilization Fund, the Operating Reserve Fund, the Insurance Reserve Fund, the Renewal Replacement Fund, and the General Fund (as well as some inactive Funds not presented here).

Plans, Policies and Procedures

The funding structure requires all bond proceeds to be deposited in the Project Fund and thus, to be available for the purpose for which the bonds were issued.

The funding structure also requires revenues of the Commission to be deposited in the Revenue Fund and thereafter to be dispersed in the order stipulated in the General Resolution. The order ensures that funds are first available to meet operation and maintenance requirements of the Commission, and then to meet the debt service requirements of the Commission, and finally to maintain the reserves of the Commission. Thereafter, remaining revenues are deposited in the General Fund for use by the Commission as it sees fit.

Operating Reserve Fund

The basic purpose of the Operating Reserve Fund is to provide funds if at any time the amount on deposit in the Operating and Maintenance Fund is insufficient to pay operating expenses due, or if there are insufficient funds in the MWRA Assessment Fund to pay the MWRA charges. The Commission's Resolution requires that the Operating Reserve Fund be maintained in an amount that is equivalent to one-sixth of the Commission's operating and maintenance expenses, plus one-sixth of the MWRA water and wastewater charges assessed to the Commission.

Insurance Reserve

The purpose of the Insurance Reserve Fund is to provide funds for the payment of awards due to personal injury or property damage in excess of \$10,000 up to the amount reimbursable from available commercial insurance coverage. In accordance with the Resolution, the Commission maintains its Insurance Reserve Fund in an amount, which is determined and certified annually via an audit conducted by an insurance consultant or an engineer consultant.

Renewal and Replacement Reserve

The basic purpose of the Renewal and Replacement Reserve Fund is to provide additional funds for Renewal & Replacement projects if there are insufficient funds in the Renewal and Replacement Account to pay for these projects. The Commission's Resolution requires that the Renewal and Replacement Reserve Fund must be maintained at an amount equal to or above 25% of the current fiscal year's budgeted Renewal and Replacement expenditures.

Stabilization Reserve

The purpose of the Stabilization Reserve Fund is to provide additional security to bondholders and to moderate the impact on the Commission's ratepayers of any substantial increases in expenses or reductions in revenues. In particular, the Stabilization Reserve Fund can be utilized to offset any sharp increase in the Commission's variable rate interest obligations or large increases in wholesale water and sewer charges due from the Commission to the MWRA. The Stabilization Fund required balance, as defined in the Resolution, is 4% of the aggregate principal amount of any variable rate bonds outstanding. In the event additional variable rate bonds containing provisions for interest rate changes on an annual or more frequent basis are

Plans, Policies and Procedures

issued by the Commission, the Stabilization Fund required balance shall include an additional amount equal to 4% of such bonds.

Under guidelines pertaining to reserve funds, adopted by the Commission in October, 1990 and revised April, 1994, additional deposits may be made to the Stabilization Fund from projected audited year end surpluses realized by the Commission, in amounts equal to 50% of any savings on budgeted relative to actual MWRA charges unless otherwise approved by the Commissioners.

In December of 2000, this policy was amended to read as follows: The amount on deposit in the Stabilization Fund shall equal the greater of the Stabilization Fund Requirement or 10% of the previous fiscal year's net billed charges. If, at the start of the fiscal year, the balance of the Stabilization Fund is projected to exceed such requirement, then the Commission, on the last business day of the current fiscal year, may transfer to the Revenue Fund an amount up to the greater of 20% of such excess or \$20 million, but in either case, an amount not to exceed \$20 million in any one fiscal year.

The Commission has established supplemental guidelines for reserve fund contributions and withdrawals. In addition to the reserve fund requirements specified in the Resolution, the Commission shall manage its reserves in order to:

1. Provide additional security to bondholders where feasible and cost effective.
2. Ensure that sufficient funds are available to pay all operating and capital costs; meet, and to the extent cost-effective, exceed the net revenue requirements of the Resolution.
3. Moderate rate increases.
4. Or otherwise reduce the cost of maintaining and operating the water and sewer systems.

As part of the annual budgeting and rate setting processes the Commission shall review the funding levels of its debt service, operating, renewal and replacement, stabilization and insurance reserve funds. Withdrawals from or additional contributions to these funds shall be proposed in accordance with the Resolution and the objectives listed above.

Policy for Departmental Program Plans and Budgets

Through the 1990s the Commission has faced, and will continue to face, in the new millennium, increasing demands on its resources. At the same time the Commission must continue to improve and expand, where necessary, its services to maintain public support. In order to provide essential services and priorities, promote greater accountability and match scarce resources with critical program objectives, the Commission will annually undertake a program planning and budgeting process which defines departmental missions, sets objectives, establishes measurement criteria and projects promised levels of services which form the basis of the operating and capital budgets. The budgets, primarily the operating budget, thus reflect key performance objectives and allocate the resources needed to achieve these results.

Policy for the Development, Monitoring and Amendment of the Current Expense Budget

The CEB of the Commission should provide for the Commission's essential services and current priorities promote greater accountability by division and match scarce resources with critical program objectives. The CEB is developed in conjunction with departmental program plans and performance objectives. It therefore serves as both a planning document and a management tool for monitoring financial and operational performance. The Commission will utilize the CEB development and monitoring process to minimize its total costs of operation, consistent with its responsibilities to operate reliable and efficient water and sewer systems, conserve water and protect the natural resources available to the City.

The CEB is intended to be a balanced budget. The Commission believes a balanced budget is one where all available resources equals or exceeds budgeted expenditures. Available resources must include the use of the prior year's surplus and may include a transfer from the Stabilization Fund with the intent of mitigating the impact of projected rate increases. With each budget, the Commission expects at the end of that fiscal year to produce a small revenue surplus, typically less than \$1,000,000, which would be carried forward as available funds for next fiscal year.

Policy for the Development, Monitoring and Amendment of the Capital Improvement Program

The Commission's CIP is a comprehensive plan for the enhancement of the basic infrastructure and support facilities necessary to provide water distribution, wastewater collection and storm drainage services throughout the City. The primary goals of the CIP are to protect public health and the environment, improve the reliability of water, wastewater and storm drainage systems and minimize the long-term costs of operating these systems.

As part of the Commission's annual budgeting and rate-setting process, departments shall prepare capital project requests and submit them to the Finance Division for review and analysis. The Finance Division will estimate the financial feasibility of the proposed projects and will develop a draft CIP based on prioritized criteria. These criteria are intended to present a framework for project selection and elimination, are not all-inclusive and are subject to modification as part of the annual capital budget process.

Policy for the Establishment of Water and Sewer Rates, Fees and Other Charges

The Commission shall set its rates and charges in accordance with generally accepted accounting principles, generally accepted rate-setting practices of the utility industry and applicable federal and state law. The Commission has established the following rate-setting objectives in addition to the above requirements:

1. To establish fees, rates and charges on just and equitable standards such that all consumers pay their fair share of the costs of these services.

Plans, Policies and Procedures

2. To minimize the financial burden on its customers, consistent with the Commission's statutory responsibilities to operate the water and sewer systems in an efficient and financially self-sustaining manner.
3. To ensure that cash receipts and net revenues are at least sufficient to meet the fund transfers, debt service coverage ratios and reserve provisions required by the Commission's Resolution and the CEB.
4. To design its rates in order to promote the conservation, protection and improvement of increasingly scarce water sources.
5. To establish fees, rates and charges that will protect and preserve, to the extent possible, the natural resources available to the people of the City.

Other Commission Policies

In addition to the Financial Policies detailed above the Commission has established other Commission-wide policies and procedures. The purpose of the following policies and procedures is to set forth guidelines and principles, which the Commission shall follow.

1. Continue to comply with applicable laws and policies in obtaining needed professional services to ensure fair and full public competition in the solicitation and award of contracts.
2. Provide a safe and healthy work environment through in-house safety programs such as defensive driving, back injury prevention, confined space entry, right-to-know law, cardiopulmonary resuscitation and first aid and cultural diversity sensitivity training.
3. Maintain a 25% minority employment rate on all construction contracts employing a crew of four or more.
4. Maintain a 50% Boston resident employment rate on all construction contracts employing a crew of six or more.
5. Encourage all employees to enhance their knowledge and skills through education, to maintain and improve their capabilities in their position and to foster employee commitment. The Commission offers a Tuition Assistance Program and will also reimburse an employee for authorized attendance and travel related expenses at conferences, seminars and other training, educational or professional meetings.
6. Provide an Employee Assistance Program, which will help employees, and all members of their household, cope with various professional, personal or family problems.
7. Continue to comply with applicable laws, safety and health articles by promoting a safe and healthy work environment by reducing the health risk associated with the exposure to burning tobacco smoke. The Commission has adopted a Clean Air Policy to inform all employees that smoking in non-designated smoking areas will not be tolerated.

Plans, Policies and Procedures

8. Continue to disseminate current employment information to various minority agencies and local newspapers, to allow all residents of the City of Boston the equal opportunity to apply for employment with the Commission. City of Boston residency is required for all employees hired after January 1, 1991.
9. Maintain a Drug-Free Workplace policy, which prohibits the use of alcohol and/or drugs by employees during their work shift.
10. Encourage and provide the greatest possible participation of Minority Business Enterprises (MBEs) and Women Business Enterprises (WBEs) in the awarding of all contracts including contracts for supplies and equipment, services, design selection and consultants.
11. To ensure Commission employees the ability to provide efficient, high quality water and sewer services, so they will be entrusted with the public's confidence.
12. The Commission has adopted a Code of Conduct, which addresses conflict of interest, appropriate conduct, attitude and demeanor, as well as providing for a discrimination free and sexual harassment free work place.
13. To provide for the safety of Commission employees in emergency situations, with a comprehensive emergency evacuation plan that has been designed to execute the timely and orderly evacuation from Commission facilities in the event of an emergency.

Current Expense and Capital Improvement Plan Budget Process

The Commission has developed an integrated financial plan which encompasses all of its current expenses and capital improvement needs, provides for the efficient and financially self-sustaining operation of the water and sewer systems and allocates costs to all consumers in a just and equitable manner.

Current Expense Budget Process

The CEB provides for the Commission's essential services and current priorities, promotes greater accountability by departments and matches scarce resources with critical program objectives. The CEB is developed in conjunction with departmental program plans and performance objectives. The Commission's CEB is developed utilizing the full accrual method in which revenues are recognized when earned and expenses recognized when incurred, as opposed to when cash is received or spent.

The Commission's Enabling Act requires that the Commission recover its full costs of operation through fees, rates, rents, assessments and special charges. The CEB defines the operational activities and other costs that must be funded from these revenue sources during the fiscal year. The budget includes the costs of operations, maintenance and repair programs, MWRA charges for water supply and wastewater treatment, the SDWA assessment, R & R projects funded from current revenues, insurance, debt service and additions to reserves.

Plans, Policies and Procedures

The CEB is based on program priorities and objectives developed by each department. The budget process has two distinct, but interrelated aspects. The Finance Division works with each department of the Commission to develop a mission statement, a list of divisional programs and a set of specific measurable objectives for the upcoming year.

Based on the stated program performance objectives, Department Managers prepare and submit their budget requests to the Finance Division. Subsequently, the Finance Division compiles and analyzes the budget requests and allocates recommended resources according to the program priorities of each cost center. The proposed CEB is reviewed with Division Chiefs before submission to the Executive Director and the Commissioners for their final approval.

Budget Allocations

The Finance Division allocates the approved budget, by month, object code and department. Monthly allocations for MWRA Assessments, debt service and additions to reserves are determined by the Finance Division in accordance with the approved budget and the Commission's bond resolution. They also develop forecasts of monthly-billed water and sewer charges and revenue adjustments, as well as special charges and investment income. The monthly distribution serves as the basis for planned revenues, expenditures and accruals for each of the twelve months of the year, which will be compared to actual revenues, and expenses as reported in the Commission's monthly variance reports. The Finance Division produces the Budget Variance Reports and distributes to all cost center managers.

Budget Variance Monitoring and Analysis

At the close of a monthly accounting period the budget staff of the Finance Division prepares the monthly Budget Variance Reports. These reports set forth a comparison of planned expenses by object code and department for the month and year to date. Budget staff then distributes the Budget Variance Report to each Division Chief and Department Manager.

- (A) *Variance Analyses:* Division Chiefs are responsible for monitoring variance reports and for explaining variances between planned and actual expenditures and accruals by department when those variances exceed either plus or minus 10% and \$5,000. Budget staff then prepares a Budget Variance Analysis Report by department and by subsidiary account based on the written explanations given by the Division Chiefs. The Budget Variance Analysis Report is distributed to senior management, the Executive Director and the Commissioners on a monthly basis.
- (B) *Budget Reallocation and Amendments:* The Commission's CEB sets forth planned expenditures in certain categories for various areas of responsibility of the Commission and for the Commission as a whole. In addition, Divisions allocate planned expenditures by month for all departments and object codes. Changes during the year in BWSC priorities or in conditions upon which expenditure plans are predicated may require the reallocation of resources. This section delineates the authority and procedures for making reallocations of approved expenditures. It is intended to provide flexibility and discretion to Commission management and to respond to actual circumstances as they arise.

Plans, Policies and Procedures

Reallocations of the expenditure plan may occur at the end of the first, second or third fiscal quarters, as part of the Budget Variance Analysis process. All budget reallocations are documented on CEB Reallocation forms. Budget staff will consolidate these requests and prepare a forecast of the year-end expenditures by division and by subsidiary account. The quarterly year-end forecast will accompany the Budget Variance Analysis Report for distribution.

Division Chiefs may make any reallocations within their Department's budget provided that the reallocation does not change a division object code budget by either the greater of more than plus or minus \$10,000 or 5%. The Executive Director has full authority to approve budget reallocations, over the amount and percentage stated above.

The Executive Director or a Division Chief may initiate proposed budget reallocations using the CEB Budget Reallocation form. All reallocations within the authority of a Division Chief must be filed with budget staff before they are deemed to be in effect. All reallocations, which require approval by the Executive Director, must be submitted to budget staff for analysis and recommendation before approval.

Budget Staff is responsible for notifying Division Chiefs and the Accounting Department of any approved or disallowed budget reallocations. The Finance Division will also prepare a quarterly report for the Commissioners detailing all approved budget reallocations.

- (C) *Budget Amendment:* An amendment to a Commission CEB shall be defined as follows:
- a.* Any increase in total Commission current expenses; or
 - b.* An increase of 5% or more in total expenses for any division of the Commission; or
 - c.* An addition or deletion of a specific new program or initiative, the cost of which is greater than 1% of total current expenses, less the MWRA assessment for that fiscal year.

The Executive Director must submit all proposed budget amendments to the Commissioners for their approval prior to the amendment going into effect.

Capital Improvement Program Process

The Commission's CIP is a comprehensive plan for the enhancement of the basic infrastructure and support facilities necessary to provide water distribution, wastewater collection and storm drainage services throughout the City of Boston. The primary goals of the CIP are to protect public health and the environment, improve the reliability of water, wastewater and storm drainage systems and minimize the long-term costs of operating these systems.

Plans, Policies and Procedures

The Commission is required by the Enabling Act and the Resolution to annually update a CIP for the three succeeding fiscal years. The proposed CIP must be submitted to the Mayor of the City of Boston on or by November 1st. In addition the Commission must hold a public hearing relating to the proposed CIP, prior to adoption of the CIP by the Board of Commissioners. Three types of capital projects are considered for inclusion in the annual CIP:

1. Projects involving expansion and improvement to the water distribution and wastewater collection systems including studies, planning, etc.
2. Projects involving the renewal and rehabilitation of the existing system (in-kind replacement).
3. Improvements to other facilities and equipment owned or leased by the BWSC.

Capital expenditures are considered for inclusion in the CIP if the estimated cost of the resulting tangible asset is \$10,000 or more and have a useful life of five years or more. In addition, projects involving improvements to the water distribution system or wastewater collection system are required to have a minimum useful life of ten years. Facility improvements should have a minimum useful life of seven years and equipment five years. For non-tangible assets (studies, improvement plans, etc.) the cost must be \$50,000 or more and have an expected benefit period of five years or more. Normal maintenance costs, emergency repair costs and recurring annual expenditures for system maintenance are generally not capitalized.

Development of the Capital Improvement Program

As part of the Commission's annual budgeting and rate-setting process, departments will prepare capital project requests and submit them to the Finance Division for review and analysis. The Finance Division will estimate the financial feasibility of the proposed projects and will develop a draft CIP based upon the following criteria:

Priority One: This priority should be assigned to the most critical projects. Projects that are included in this category must meet urgent Commission needs as defined by the following criteria:

- i. The project is required by a statutory or regulatory requirement, court order or consent decree; or
- ii. The project is necessary to correct an immediate threat to public health and safety; or
- iii. The project is necessary to correct an immediate threat to worker health and safety; or
- iv. The project is necessary to prevent imminent failure of the water or wastewater systems.

Plans, Policies and Procedures

Priority Two: This category includes projects that are essential to maintain current service levels, which protect the environment, or that directly reduce costs and/or increase revenues. Projects that are included in this category must meet one or more of the following criteria:

- i. The project is necessary for environmental protection; or
- ii. The project is part of the Wastewater Facilities Plan, Water Distribution Plan, Water Conservation Plan, or other, similar Commission endorsed improvement plan; or
- iii. The project corrects a chronic water discoloration problem; or
- iv. The project directly results in a net decrease in Commission operating and/or capital costs.

Priority Three: The projects in this category are necessary to provide improved service that meets the following criteria:

- i. The project will insure proper long-term operation of the distribution and collection systems.

These criteria are intended to present a framework for project selection and elimination. They are not all-inclusive and are subject to modification as part of the annual capital budget process. Any modification of the priority framework, however, will be reviewed with the Commissioners.

Capital Project Funding

Capital projects are funded through several mechanisms: Commission general revenue bonds, current year rate revenues, traditional grant reimbursements, subsidized loans through the SRF, and funding programs provided by the MWRA. In general, BWSC bond proceeds are used to fund projects that expand or improve the water distribution and wastewater collection system. Current rate revenues are used to fund projects resulting in renewal and rehabilitation of the existing system. Intergovernmental grants and loans and MWRA funding are generally available for projects, which provide specific benefits. Grant and loan funding has been and will continue to be aggressively sought.

Capitalized costs paid for through contributed capital (grant funds) are not charged to system users through rates. Yearly debt service on outstanding BWSC revenue bonds is included in the annual calculation of rates. The Commission amortizes costs over a period not to exceed that of the estimated useful life of the obtained asset. In the case of non-tangible assets, costs are amortized over a period not longer than ten years. The Commission may elect to amortize capital costs over a shorter period than that indicated on original depreciation schedules.

Plans, Policies and Procedures

Capital Budget Amendments

All amendments to the current CIP require the approval of the Commissioners. Amendments are defined as the following:

1. Any deletion, in total, of a capital project or program specifically budgeted in the current CIP or any addition of a previously un-budgeted capital project to the current CIP; or
2. Any increase in the budget for a particular project currently contained in the CIP where the increase has a dollar value greater than 10% of the current year budget for that project; or
3. Any increase in the total three-year budget of the current CIP.

In addition to the CIP amendments, as defined above, Commission approval will be required on all change orders which increase contract bid amounts as described in the Commission's Change Order Policy. Any other changes to the CIP are deemed as reallocations.

Capital Budget Reallocations

Reallocations are changes to the current CIP, which do not require the approval of the Commission. Reallocations are defined as any change in the budget for a particular project or program, not specified as Capital Budget Amendments.

Reallocations will be governed by the following procedure. The department managing the project will notify the Finance Division, in writing, of the proposed reallocation. The notification will include the following:

1. A description of the proposed project change.
2. An explanation of why the change is necessary.
3. An indication of the monetary impact the change will have on the capital budget.
4. An indication of the impact on the project schedule.

The notification must take place as soon as the managing department is aware that a project revision is necessary. The Finance Division will review the proposed project change for its impact on cash flow and will respond with relevant recommendations within five working days. Approval of the Executive Director is required for all reallocations. A quarterly report must be submitted to the Commissioners detailing all capital budget reallocations.

Capital Program Monitoring and Reporting

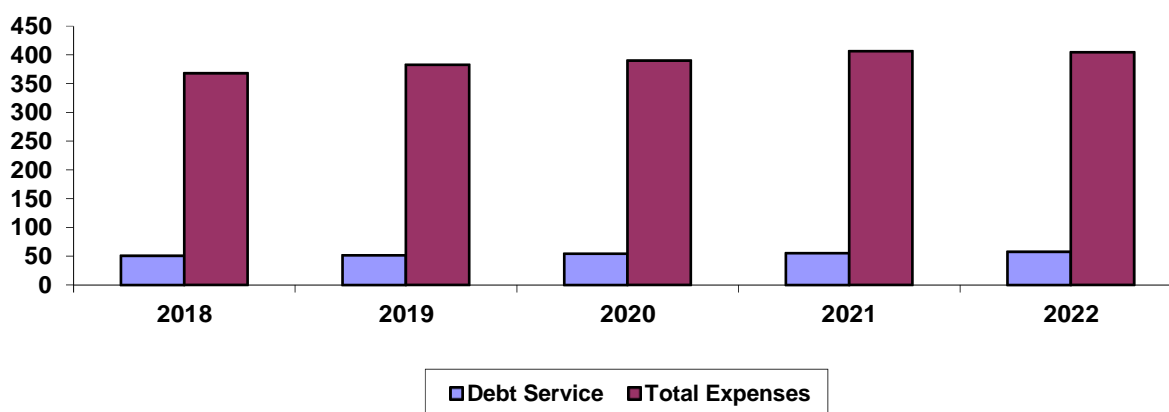
As part of the development of the CIP, Division Chiefs will develop schedules and quarterly expenditure forecasts for all capital projects. On a monthly basis actual schedule data for all capital projects are compared with the original project schedules. Capital Budget Variance Reports are produced utilizing data for actual project expenditures. These reports include an analysis of all project expenditure and schedule variances. The Commissioners receive a summary of all capital program-monitoring reports.

Plans, Policies and Procedures

Debt Plan

The Commission is empowered by the Enabling Act and the Resolution to issue bonds and notes payable solely constituted on the general obligation of the Commission. The Commission has no legal restrictions concerning the amount of debt, which it may have outstanding, subject to the coverage requirements described below.

The Commission issues General Revenue Bonds to finance portions of its CIP. The Commission's 2018-2020 CIP, which totals \$219.1 million, anticipates that projects totaling \$129.3 million or 59.0% will be funded from bond proceeds. The 2018 budget for debt service is \$51.0 million, or approximately 13.9% of the overall expenses. For the average single-family household paying \$1,102 for water and sewer services, approximately \$153 of these charges is related to debt service.



Five-year projections of debt service cost per household and five-year projections of debt service vs. total expenses are illustrated.

| Year | Average Annual Cost-Single Family Home | Debt Service Cost |
|------|--|-------------------|
| 2018 | \$1,102 | \$153 |
| 2019 | \$1,154 | \$156 |
| 2020 | \$1,209 | \$168 |
| 2021 | \$1,266 | \$172 |
| 2022 | \$1,326 | \$182 |

Plans, Policies and Procedures

The Commission currently has eight series of General Revenue Bonds outstanding at the end of 2017:

| | | |
|----------------|----------------|----------------------|
| \$13.4 | Million | 1993 Series A |
| \$16.8 | Million | 1994 Series A |
| \$9.5 | Million | 2009 Series A |
| \$20.5 | Million | 2009 Series B |
| \$5.6 | Million | 2010 Series A |
| \$102.2 | Million | 2012 Series A |
| \$99.9 | Million | 2014 Series A |
| \$72.8 | Million | 2015 Series A |
| \$60.2 | Million | 2016 Series A |
| \$84.5 | Million | 2016 Series B |
| \$78.4 | Million | 2018 Series A |

The current debt plan projects that the Commission will issue approximately \$78.4 million in new debt in 2018.

The Commission implemented a Commercial Paper Program in December of 2006 with an initial draw of \$25.0 million. The Commercial Paper Program was implemented to:

1. Provide very efficient and cost-effective access to the capital markets as needed.
2. Fund the bond-funded portion of the capital improvements implemented by the Commission prior to issuing permanent debt.
3. Act as a portion of the variable rate debt the Commission will have outstanding.
4. Ensure the timely expenditure of tax-exempt note proceeds in accordance with the Internal Revenue code.
5. Provide some relief to the upward pressure on rates by deferring a principal payment on the bonds to be issued (to retire the commercial paper) for one year.

Debt Service Coverage Requirements

The Commission's bond covenant requires that rates and charges be at least sufficient to provide revenues (i) to pay all current expenses of the Commission, (ii) to pay the principal of, premium if any, and interest on all bonds issued by the Commission as they become due and payable, (iii) to create and maintain such reasonable reserves as may be reasonably required by any trust agreement or resolution securing bonds, (iv) to provide funds for paying the cost of all necessary repairs, replacements and renewal of the systems and (v) to pay or provide for any and all amounts which the Commission may be obligated to pay or provide for by law or contract. The Commission is also required to establish and maintain rates and charges at levels sufficient so that total net revenues in each year during which bonds are outstanding will equal at least 125% of (1) the bond debt service requirement during such year less (2) the amount, if any, of bond proceeds available to pay interest becoming due in such year on bonds

Plans, Policies and Procedures

outstanding as of the first day of such year. The Commission has exceeded the 125% debt service coverage requirement of the Resolution in each year since its inception in 1977.

The table below presents the projected 2018-2022 debt service coverage.

Debt Service Coverage Calculation (000)

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|-----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | <u>Projected</u> | <u>Projected</u> | <u>Projected</u> | <u>Projected</u> | <u>Projected</u> |
| Cash Receipts | \$368,091 | \$382,703 | \$390,123 | \$406,424 | \$423,438 |
| Operating Transfers | (305,216) | (315,329) | (324,316) | (337,104) | (347,668) |
| Net Revenues | 62,875 | 67,374 | 65,807 | 69,320 | 75,770 |
| Senior Debt Service | 45,300 | 47,014 | 50,119 | 51,633 | 54,651 |
| Total Debt Service | 45,300 | 47,014 | 50,119 | 51,633 | 54,651 |
| Debt Service Coverage Ratio | 139% | 143% | 131% | 134% | 139% |

Pursuant to the Resolution, these amounts do not include principal or interest, which are expected to be paid from amounts in available escrow funds. These amounts also exclude debt service on SRF loans and loans from the MWRA.

Five-Year Debt Service Requirements

| <u>Total Debt Service (000)</u> | |
|--|----------|
| 2018 | \$45,300 |
| 2019 | \$47,014 |
| 2020 | \$50,119 |
| 2021 | \$51,633 |
| 2022 | \$54,651 |

Additional Bonds and Refunding Bonds

The Resolution permits the issuance of additional bonds for paying the cost of any project, making deposits in various funds established under the Resolution, paying Costs of Issuance, paying the principal, premium and interest on any notes issued in anticipation of additional bonds, or any combination of the above.

Plans, Policies and Procedures

Additional bonds may only be issued by the Commission upon receipt by the Trustee of:

1. A certificate of the Commission setting forth the amount of net revenues (as defined in the Resolution) for the last full fiscal year prior to the year in which bonds are to be issued, showing that the net revenues were equal to at least 125% of the bond debt service requirement and the amount, if any, of bond proceeds available to pay principal and interest coming due in such fiscal year on bonds outstanding as of the first day of the fiscal year.
2. A certificate of a consulting engineer setting forth the estimated annual net revenues for each of the five full fiscal years following the issuance of additional bonds, showing that in each of those fiscal years the estimated net revenues, together with reserved revenues, will be at least equal to 125% of the aggregate of the Senior Debt Service Reserve Fund Requirement and the Subordinated Debt Service Fund Requirement calculated as of the first day the fiscal year, less the amount, if any, of bond proceeds available or projected to be available to pay principal and interest coming due that fiscal year on bonds outstanding or projected to be outstanding as of the first day of the fiscal year.

Refunding bonds may also be issued by the Commission only upon certifying that the aggregate debt service in each fiscal year in which Refunding Bonds are outstanding will not be increased as a result of the issuance of the Refunding Bonds; provided that, in lieu of such certification, the Commission may deliver to the Trustee certificates satisfying the conditions described above for the issuance of additional bonds.

Plans, Policies and Procedures

| | | | | | |
|---------------------------------------|---------------|---|-------------|---|-------------|
| Initial Par Issue | | \$100,505,000 | | \$40,000,000 | |
| | | General Revenue Bonds | | General Revenue Bonds | |
| | | (Senior Series) | | (Senior Series) | |
| | | 1993 Series A | | 1994 Series A (1) | |
| Dated | | 9/1/1993 | | 10/20/1994 | |
| <u>Principle Due</u> | | November 1 | | November 1 | |
| <u>Year</u> | <u>Amount</u> | | <u>Rate</u> | <u>Amount</u> | <u>Rate</u> |
| 2018 | 8,205,000 | | 5.250% | 2,000,000 | |
| 2019 | 5,155,000 | | 5.250% | 2,100,000 | |
| 2020 | | | 5.250% | 2,200,000 | |
| 2021 | | | | 2,400,000 | |
| 2022 | | | | 2,500,000 | |
| 2023 | | | | 2,700,000 | |
| 2024 | | | | 2,900,000 | |
| Total Issue Outstanding | | \$13,360,000 | | \$16,800,000 | |
| Call Provisions | | Bonds maturing on or before 11/01/2003 and maturing on 11/01/2019 are not subject to optional redemption prior to maturity. All other maturities callable as a whole or in part at any payment. 11/1/03 @ 102.0% 11/1/04 @ 101.0% | | Callable as a whole or in part on any Effective Rate Date | |
| <u>Ratings</u> (Moody's/S&P/Fitch) | | Aa1/AA+/AA+ | | VMIG 1/A-1+F-1+(LOC) | |

(1) Issued in a weekly Variable Rate mode.

Plans, Policies and Procedures

| | | | | | |
|----------------------|---------------|--|---------------|--|-------------|
| Initial Par Issue | | \$81,320,000 | | \$67,335,000 | |
| | | General Revenue Bonds (Senior Series) 2009 Series A 3/26/2009 | | General Revenue Bonds (Senior Series) 2009 Series B 3/26/2009 | |
| Dated | | November 1 | | November 1 | |
| <u>Principle Due</u> | | | | | |
| <u>Year</u> | <u>Amount</u> | | <u>Amount</u> | | <u>Rate</u> |
| 2018 | 4,380,000 | 4.700% | 4,635,000 | 5.000% | |
| 2019 | 4,400,000 | 4.497% | 8,340,000 | 5.000% | |
| 2020 | 685,000 | 4.502% | | | |
| 2020 | 1,035,000 | 5.000% | 3,660,000 | 5.000% | |
| 2021 | 1,085,000 | 4.000% | | | |
| 2021 | 700,000 | 5.000% | 3,840,000 | 4.000% | |
| 2022 | 6,820,000 | 4.000% | | | |
| 2023 | 6,965,000 | 5.000% | | | |
| 2024 | 7,120,000 | 5.000% | | | |
| 2025 | 11,550,000 | 5.000% | | | |
| 2026 | 7,400,000 | 5.000% | | | |
| 2027 | 7,600,000 | 4.500% | | | |
| 2028 | 6,400,000 | 5.000% | | | |

Total Issue
Outstanding

\$9,465,000

\$20,475,000

Call Provisions

Bonds maturing after May 1, 2019 are subject to redemption at the option of the Commission, on or after Mat 1, 2019, as a whole or in part at anytime, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption.

Bonds maturing after May 1, 2019 are subject to redemption at the option of the Commission, on or after Mat 1, 2019, as a whole or in part at anytime, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption.

Ratings
(Moody's/S&P/Fitch)

Aa1/AA+/AA+

Aa1/AA+/AA+

Refunded by 2015 Bond Series A
Refunded by 2016 Bond Series A

Plans, Policies and Procedures

| | | | | | | | | |
|----------------------|---------------|--|--|--|---------------|---|-------------|--|
| Initial Par Issue | | | \$92,860,000 | | | \$107,970,000 | | |
| | | | General Revenue Bonds | | | General Revenue Bonds | | |
| | | | (Senior Series) | | | (Senior Series) | | |
| | | | 2010 Series A | | | 2012 Series A | | |
| | | | 1/20/2010 | | | 5/9/2012 | | |
| Dated | | | November 1 | | | November 1 | | |
| <u>Principle Due</u> | | | | | | | | |
| <u>Year</u> | <u>Amount</u> | | <u>Rate</u> | | <u>Amount</u> | | <u>Rate</u> | |
| 2018 | | | | | 2,795,000 | | 4.000% | |
| 2019 | 165,000 | | 4.000% | | 2,970,000 | | 5.000% | |
| 2020 | 5,400,000 | | 4.630% | | 3,790,000 | | 4.000% | |
| 2020 | | | | | 6,000,000 | | 5.000% | |
| 2021 | 5,665,000 | | 5.000% | | 5,000,000 | | 4.000% | |
| 2021 | | | | | 5,190,000 | | 5.000% | |
| 2022 | 6,010,000 | | 5.000% | | 7,585,000 | | 4.250% | |
| 2023 | 6,440,000 | | 5.000% | | 7,875,000 | | 5.000% | |
| 2024 | 6,550,000 | | 4.912% | | 8,245,000 | | 5.000% | |
| 2024 | 410,000 | | 3.500% | | | | | |
| 2025 | 6,550,000 | | 4.912% | | | | | |
| 2025 | 265,000 | | 4.000% | | 6,955,000 | | 4.000% | |
| 2026 | 7,405,000 | | 5.000% | | 3,015,000 | | 5.000% | |
| 2027 | 7,945,000 | | 5.000% | | 3,170,000 | | 4.000% | |
| 2028 | 9,885,000 | | 5.000% | | 3,295,000 | | 4.000% | |
| 2029 | 8,350,000 | | 5.000% | | 3,425,000 | | 5.000% | |
| 2030 | 8,770,000 | | 5.000% | | 3,600,000 | | 5.000% | |
| 2031 | 1,790,000 | | 4.000% | | | | | |
| 2031 | 7,420,000 | | 5.000% | | 3,775,000 | | 3.250% | |
| 2032 | | | | | 3,900,000 | | 3.375% | |
| 2033 | | | | | 4,030,000 | | 3.500% | |
| 2034 | | | | | 4,175,000 | | 3.500% | |
| 2035 | | | | | 4,320,000 | | 3.750% | |
| 2036 | | | | | 4,480,000 | | 3.750% | |
| 2037 | | | | | 4,630,000 | | 3.750% | |
| Total Issue | | | \$5,565,000 | | | \$102,240,000 | | |
| Outstanding | | | | | | | | |
| Call Provisions | | | Bonds maturing after November 1, 2019 are subject to redemption at the option of the Commission, on or after November 1, 2019, as a whole or in part, at any time, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption. | | | Bonds maturing after November 1, 2023 are subject to redemption at the option of the Commission, on or after November 1, 2022 as a whole or in part, at any time, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption. | | |
| <u>Ratings</u> | | | | | | | | |
| (Moody's/S&P/Fitch) | | | Aa1/AA+/AA+ | | | Aa1/AA+/AA+ | | |
| | | | | | | | | |
| | | | Refunded by 2015 Bond Series A | | | | | |
| | | | Refunded by 2016 Bond Series A | | | | | |

Plans, Policies and Procedures

| | | | | | |
|---------------------|---------------|--|-------------|--|-------------|
| Initial Par Issue | | \$100,000,000 | | \$72,760,000 | |
| | | General Revenue Bonds | | General Revenue Bonds | |
| | | (Senior Series) | | (Senior Series) | |
| | | 2014 Series A | | 2015 Series A | |
| Dated | | 7/22/2014 | | 7/23/2015 | |
| Principle Due | | November 1 | | November 1 | |
| <u>Year</u> | <u>Amount</u> | | <u>Rate</u> | <u>Amount</u> | <u>Rate</u> |
| 2018 | 100,000 | | 5.000% | | |
| 2019 | 100,000 | | 5.000% | | |
| 2020 | 500,000 | | 5.000% | | |
| 2021 | 500,000 | | 5.000% | | |
| 2022 | 700,000 | | 4.000% | | |
| 2023 | 1,000,000 | | 5.000% | 13,010,000 | 5.000% |
| 2024 | 1,000,000 | | 5.000% | 13,255,000 | 5.000% |
| 2025 | 1,000,000 | | 5.000% | 18,870,000 | 5.000% |
| 2026 | 5,000,000 | | 4.000% | 14,345,000 | 5.000% |
| 2027 | 5,000,000 | | 4.000% | 7,460,000 | 4.000% |
| 2028 | 5,000,000 | | 4.000% | 5,820,000 | 3.250% |
| 2029 | 5,000,000 | | 3.500% | | |
| 2030 | 5,000,000 | | 3.500% | | |
| 2031 | 5,000,000 | | 3.500% | | |
| 2032 | 5,000,000 | | 3.500% | | |
| 2033 | 5,000,000 | | 3.750% | | |
| 2034 | 5,000,000 | | 3.750% | | |
| 2035 | 5,000,000 | | 3.750% | | |
| 2036 | 5,000,000 | | 3.500% | | |
| 2037 | 5,000,000 | | 3.500% | | |
| 2038 | 5,000,000 | | 3.500% | | |
| 2039 | 5,000,000 | | 3.500% | | |
| 2040 | 5,000,000 | | 3.500% | | |
| 2041 | 5,000,000 | | 3.500% | | |
| 2042 | 5,000,000 | | 3.625% | | |
| 2043 | 5,000,000 | | 3.625% | | |
| 2044 | 5,000,000 | | 3.625% | | |
| Total Issue | | \$99,900,000 | | \$72,760,000 | |
| Outstanding | | | | | |
| Call Provisions | | Bonds maturing after November 1, 2024 are subject to redemption at the option of the Commission, on or after November 1, 2024, as a whole or in part, anytime, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption. | | Bonds maturing after November 1, 2025 are subject to redemption at the option of the Commission, on or after November 1, 2025, as a whole or in part, anytime, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption. | |
| <u>Ratings</u> | | | | | |
| (Moody's/S&P/Fitch) | | Aa1/AA+/AA+ | | Aa1/AA+/AA+ | |

Plans, Policies and Procedures

| | | | | |
|---------------------|---|--------|---|--------|
| Initial Par Issue | \$60,155,000 | | \$84,960,000 | |
| | General Revenue Bonds | | General Revenue Bonds | |
| | (Senior Series) | | (Senior Series) | |
| | 2016 Series A | | 2016 Series B | |
| | 8/17/2016 | | 8/17/2016 | |
| Dated | November 1 | | November 1 | |
| Principle Due | | | | |
| Year | Amount | Rate | Amount | Rate |
| 2018 | | | 500,000 | 5.000% |
| 2019 | | | 500,000 | 5.000% |
| 2020 | 475,000 | 5.000% | 500,000 | 5.000% |
| 2021 | 6,860,000 | 5.000% | 500,000 | 5.000% |
| 2022 | 12,220,000 | 5.000% | 500,000 | 5.000% |
| 2023 | | | 500,000 | 5.000% |
| 2024 | | | 500,000 | 5.000% |
| 2025 | | | 500,000 | 5.000% |
| 2026 | | | 1,000,000 | 5.000% |
| 2027 | 7,005,000 | 5.000% | 1,000,000 | 5.000% |
| 2028 | 9,295,000 | 5.000% | 1,000,000 | 5.000% |
| 2029 | 7,730,000 | 5.000% | 2,000,000 | 5.000% |
| 2030 | 8,120,000 | 5.000% | 2,000,000 | 5.000% |
| 2031 | 8,450,000 | 5.000% | 2,000,000 | 5.000% |
| 2032 | | | 4,765,000 | 5.000% |
| 2033 | | | 4,765,000 | 5.000% |
| 2034 | | | 4,765,000 | 5.000% |
| 2035 | | | 4,765,000 | 5.000% |
| 2036 | | | 4,765,000 | 5.000% |
| 2037 | | | 4,765,000 | 3.000% |
| 2038 | | | 4,765,000 | 3.000% |
| 2039 | | | 4,765,000 | 3.000% |
| 2040 | | | 4,765,000 | 3.000% |
| 2041* | | | 4,765,000 | 3.000% |
| 2042 | | | 4,765,000 | 3.000% |
| 2043 | | | 4,765,000 | 3.000% |
| 2044 | | | 4,760,000 | 3.000% |
| 2045 | | | 4,760,000 | 3.000% |
| 2046* | | | 4,760,000 | 3.000% |
| Total Issue | \$60,155,000 | | \$84,460,000 | |
| Outstanding | | | | |
| Call Provisions | Bonds maturing after November 1, 2026 are subject to redemption at the option of the Commission, on or after November 1, 2026, as a whole or in part, any time, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption. | | Bonds maturing after November 1, 2026 are subject to redemption at the option of the Commission, on or after November 1, 2026, as a whole or in part, any time, from maturities selected by the Commission at a redemption price equal to 100% of the principle amount to be redeemed, plus accrued interest to the date of redemption. | |
| Sinking Fd Remption | | | Bonds maturing November 1, 2041 & November 1, 2046 are subject to redemption from sinking fund installments at their principal amounts, without premium, plus accrued interest to the redemption date on November 1 of each of the years. | |
| *Stated Maturity | | | | |
| Ratings | Aa1/AA+ | | Aa1/AA+ | |
| (Moody's/S&P) | | | | |

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2017 Revenues and Expenses

OVERVIEW

The 2017 year-end financial position for the Boston Water and Sewer Commission (“the Commission”) resulted in an unaudited surplus of \$0.6 million. Total Revenues equaled \$353.4 million. Expenses totaled \$352.8 million, resulting in the \$0.6 million surplus for FY17. The year-end financial position was mainly a result of less than anticipated Direct Operating Expenses as well as savings realized for Indirect Operating Expenses.

REVENUES

Total Revenues for FY17 were less than originally anticipated. The total revenues equaled \$353.4 million; the budgeted amount was \$361.3 million resulting in \$8.0 million, or 2.2% less than anticipated.

Water and Sewer Revenues (excluding adjustments) represented 97.9% of revenues and equaled \$345.8 million, which was \$6.5 million, or 1.8% less than the budgeted amount of \$352.3 million. Water revenues totaled \$145.9 million; the budget amount equaled \$149.4 million, and resulted in \$3.5 million or 2.3% less than budget. Sewer revenues totaled \$199.9 million; the budgeted amount equaled \$202.9 million resulting in \$3.0 million, or 1.5% less than anticipated.

Miscellaneous Revenues totaled \$17.7 million. This amount realized in 2017 was \$1.2 million, or 6.5% less than the budget amount of \$19.0 million. Late Charges equaled \$1.2 million for the year, and resulted in an unfavorable variance of 16.8% from the budgeted amount of \$1.4 million. Investment Income totaled \$3.4 million and was \$0.2 million or 5.4% more than the budgeted amount of \$3.2 million. Fire Pipe Income totaled \$4.7 million and was \$0.1 million or 2.2% more than the budgeted amount of \$4.6 million. The amount realized for Miscellaneous Other Income totaled \$8.5 million, and was \$1.3 million, or 13.1% less than the budgeted amount of \$9.7 million.

EXPENSES

The year-end surplus was partially due to less than anticipated Direct Operating Expenses. Direct Operating Expenses in 2017 totaled \$67.9 million, which were below the budgeted amount of \$69.6 million by \$1.7 million or 2.4%. Indirect Expenses also contributed to the surplus realized in 2017. Indirect Expenses totaled \$284.9 million. The budget for the year equaled \$291.7 million resulting in a favorable variance of \$6.8 million or 2.3%. The favorable variance for Indirect Expenses was mainly due to less than anticipated expenses for Contractual Funding Obligations, and Capital Improvement. The following page illustrates the 2017 budget versus unaudited revenues and expenses.

2017 Revenues and Expenses

| | 2017 | | VARIANCE | | |
|---------------------------|-----------------|-----------------|----------------|--------|--|
| | UNAUDITED | BUDGET | \$ | % | |
| Water Revenues | \$ 145,908,294 | \$ 149,415,548 | \$ (3,507,254) | -2.3% | |
| Sewer Revenues | \$ 199,921,321 | \$ 202,905,089 | \$ (2,983,768) | -1.5% | |
| Total | \$ 345,829,615 | \$ 352,320,637 | \$ (6,491,022) | -1.8% | |
| Less: | | | | | |
| Adjustments | \$ (9,627,564) | \$ (8,808,016) | \$ (819,548) | 9.3% | |
| Discounts | \$ (1,220,207) | \$ (1,494,155) | \$ 273,948 | -18.3% | |
| Bad Debt | \$ (37,091) | \$ (352,321) | \$ 315,230 | -89.5% | |
| Subtotal | \$ (10,884,862) | \$ (10,654,492) | \$ (230,370) | 2.2% | |
| Net Billed Charges | \$ 334,944,753 | \$ 341,666,145 | \$ (6,721,392) | -2.0% | |
| Prior Year Surplus | \$ 689,086 | \$ 693,227 | \$ (4,141) | -0.6% | |
| Miscellaneous Revenues | | | | | |
| Late Charges | \$ 1,172,957 | \$ 1,409,283 | \$ (236,326) | -16.8% | |
| Investment Income | \$ 4,691,071 | \$ 4,590,020 | \$ 101,051 | 2.2% | |
| Fire Pipe | \$ 3,412,837 | \$ 3,239,523 | \$ 173,315 | 5.4% | |
| Other Income | \$ 8,459,688 | \$ 9,732,919 | \$ (1,273,231) | -13.1% | |
| Subtotal | \$ 17,736,553 | \$ 18,971,745 | \$ (1,235,192) | -6.5% | |
| TOTAL REVENUES | \$ 353,370,392 | \$ 361,331,117 | \$ (7,960,725) | -2.2% | |
| Direct Expenses | | | | | |
| Wages and Salaries | \$ 38,483,655 | \$ 38,975,572 | \$ 491,917 | 1.3% | |
| Overtime | \$ 860,783 | \$ 740,809 | \$ (119,974) | -16.2% | |
| Fringe Benefits | \$ 8,461,571 | \$ 8,945,134 | \$ 483,563 | 5.4% | |
| Supplies and Materials | \$ 2,853,443 | \$ 2,975,143 | \$ 121,700 | 4.1% | |
| Repair and Maintenance | \$ 8,628,440 | \$ 8,734,640 | \$ 106,200 | 1.2% | |
| Utilities | \$ 1,291,024 | \$ 1,612,853 | \$ 321,829 | 20.0% | |
| Professional Services | \$ 4,347,614 | \$ 4,535,270 | \$ 187,656 | 4.1% | |
| Space & Equipment Rentals | \$ 291,500 | \$ 295,784 | \$ 4,284 | 1.4% | |
| Other Services | \$ 1,895,477 | \$ 1,944,540 | \$ 49,063 | 2.5% | |
| Insurance | \$ 514,254 | \$ 528,409 | \$ 14,155 | 2.7% | |
| Inventory | \$ 23,000 | \$ 23,000 | \$ - | 0.0% | |
| Capital Outlay | \$ 88,000 | \$ 70,000 | \$ (18,000) | -25.7% | |
| Travel/Training/Seminar | \$ 75,705 | \$ 78,000 | \$ 2,295 | 2.9% | |
| Damage Claims | \$ 91,000 | \$ 150,000 | \$ 59,000 | 39.3% | |
| Total Direct Expenses | \$ 67,905,466 | \$ 69,609,154 | \$ 1,703,688 | 2.4% | |
| Indirect Expenses | | | | | |
| MWRA Assessment | \$ 218,461,866 | \$ 219,125,991 | \$ 664,126 | 0.3% | |
| Capital Improvements | \$ 14,942,070 | \$ 15,877,000 | \$ 934,930 | 5.9% | |
| Debt Service | \$ 50,344,971 | \$ 51,095,966 | \$ 750,995 | 1.5% | |
| Contractual Funding | \$ 945,000 | \$ 5,420,347 | \$ 4,475,347 | 82.6% | |
| SDWA Assessment | \$ 202,659 | \$ 202,659 | \$ - | 0.0% | |
| Total Indirect Expenses | \$ 284,896,566 | \$ 291,721,963 | \$ 6,825,397 | 2.3% | |
| TOTAL EXPENSES | \$ 352,802,032 | \$ 361,331,117 | \$ 8,529,085 | 2.4% | |
| | \$ 568,361 | SURPLUS | | | |

Requirements and Future Impact

The Commission is required by the Enabling Act to:

1. Establish fees, rates, rents, assessments and other charges to provide revenues at least sufficient to pay the current expenses of the Commission.
2. Pay the principal, premium, if any, and interest on all bonds issued by the Commission.
3. Maintain its reserve funds as stipulated by its General Bond Resolution.
4. Provide funds for paying the costs of all necessary repair, replacements, and renewals of the water and wastewater systems.
5. Pay all other amounts which the Commission by law or contract is obligated to pay.

The Commission's rates must comply with all applicable laws and statutes, and the rates must be set in a manner to ensure the eligibility for any federal and state funding.

The Proposed CEB and corresponding rate impact was presented to the Board of Commissioners for its review and comment. In accordance with the Commission's Rules of Procedure, the Commission is required to conduct a public hearing for the purpose of promulgating proposed water and sewer rate increases prior to implementation of new rates. The public hearing allows interested parties the opportunity to present data, views and arguments on the proposed schedule of fees, rates and other charges to be implemented.

Due to the financial condition of the Commission at year-end 2017, the 2018 Water and Sewer rates will increase by 4.75%.

Budgeting and Accounting Basis

The Commission is autonomous and self-sustaining, separate and apart from the City. As an enterprise fund, the Commission provides goods and services to the public, which it funds primarily through revenues it collects from user charges. Periodically, the Commission will examine revenues earned, expenses incurred and net income to determine how best to deal with issues such as capital maintenance, public policy, management control, accountability and other issues. The Commission follows Generally Accepted Accounting Principles (GAAP) and Governmental Accounting Standards Board Statement 62 (GASB 62).

The Commission's Current Expense Budget is developed using a full accrual method, a method of accounting in which revenues are recognized when earned and expenses recognized when incurred, as opposed to when cash is received or spent. Monthly deposits to all appropriate funds are made in an amount sufficient to equal the total projected level of accrued expenditures for each line item and to enable the Commission to have sufficient funds available to meet scheduled payments of all financial obligations.

The CEB includes the following:

- Anticipated operating and maintenance expenses
- Costs of wholesale water supply and wastewater treatment services provided by the MWRA
- Capital projects are funded from current rate revenues
 - ➔ renewal and replacement program
- Debt service
 - ➔ repayment of principal and interest
 - ➔ insurance
 - ➔ contractual funding obligations
 - ➔ working capital requirements

The Commission's CEB does not include (nor are its rates intended to provide for)

- Depreciation expenses
- Amortization of debt issuance costs
- Inventory expenses

2018 Budget Summary

The 2018 CEB totals \$368.1 million in Revenues, which is offset by an equal amount of Expenses. The amount budgeted for FY18 is a 1.9% increase from FY17.

In the illustration below, components of Revenues and Expenses are compared from 2018 to 2017 with variances in dollars and as a percentage changed. Dollar amounts are rounded and expressed in thousands of dollars (columns may not add up correctly due to rounding).

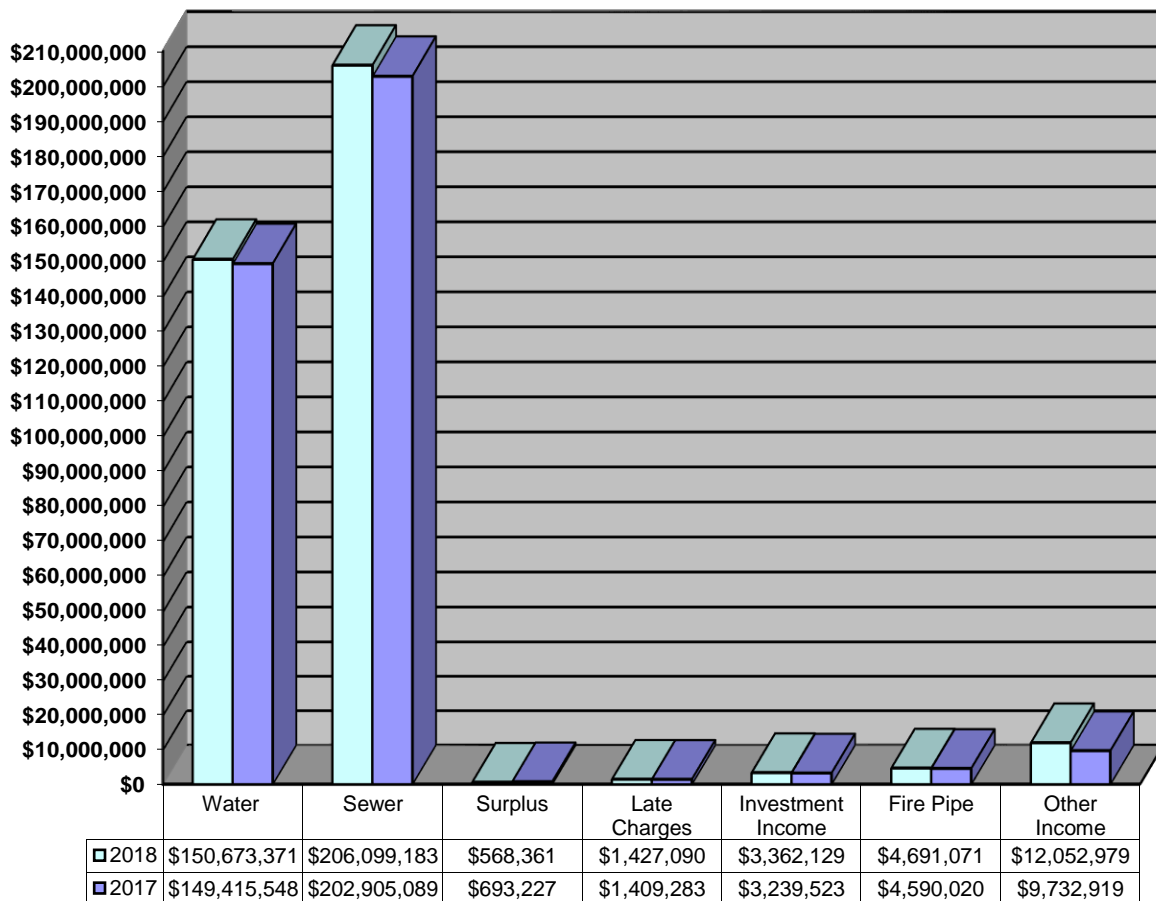
| | BUDGET 2018 | BUDGET 2017 | VARIANCE | % |
|---------------------------------|-----------------------|-----------------------|---------------------|-------------|
| Revenues | | | | |
| Water & Sewer Rate Revenue | \$ 356,772,554 | \$ 352,320,637 | \$ 4,451,917 | 1.3% |
| Less: Adjustments | \$ (8,919,314) | \$ (8,808,016) | \$ (111,298) | 1.3% |
| Discounts | \$ (1,506,734) | \$ (1,494,155) | \$ (12,579) | 0.8% |
| Bad Debt | \$ (356,773) | \$ (352,321) | \$ (4,452) | 1.3% |
| Net Operating Revenues | \$ 345,989,733 | \$ 341,666,145 | \$ 4,323,588 | 1.3% |
| Other Income | | | | |
| Prior Year Surplus | \$ 568,361 | \$ 693,227 | \$ (124,866) | -18.0% |
| Miscellaneous Income | \$ 18,171,141 | \$ 15,732,222 | \$ 2,438,919 | 15.5% |
| Investment Income | \$ 3,362,129 | \$ 3,239,523 | \$ 122,606 | 3.8% |
| Total Revenues | \$ 368,091,364 | \$ 361,331,117 | \$ 6,760,248 | 1.9% |
| Expenses | | | | |
| Direct Expenses | \$ 71,655,604 | \$ 69,609,154 | \$ 2,046,450 | 2.9% |
| MWRA Assessment | \$ 226,148,398 | \$ 219,125,991 | \$ 7,022,407 | 3.2% |
| Capital Improvement | \$ 17,236,000 | \$ 15,877,000 | \$ 1,359,000 | 8.6% |
| Debt Service | \$ 50,993,290 | \$ 51,095,966 | \$ (102,676) | -0.2% |
| Contractual Funding Obligations | \$ 1,851,226 | \$ 5,420,347 | \$ (3,569,121) | -65.8% |
| SDWA Assessment | \$ 206,846 | \$ 202,659 | \$ 4,188 | 2.1% |
| Total Current Expenses | \$ 368,091,364 | \$ 361,331,117 | \$ 6,760,248 | 1.9% |

Financial Analysis

| | ACTUAL 2013 | ACTUAL 2014 | ACTUAL 2015 | ACTUAL 2016 | UNAUDITED 2017 | BUDGET 2018 |
|-----------------------------------|----------------|----------------|----------------|----------------|-------------------|-----------------|
| Revenues: | | | | | | |
| Water Revenue | \$135,062,312 | \$139,922,776 | \$149,355,846 | \$150,391,977 | \$145,908,294 | \$150,673,371 |
| Sewer Revenue | \$171,115,529 | \$175,943,859 | \$187,450,059 | \$198,249,241 | \$199,921,321 | \$206,099,183 |
| Subtotal | \$306,177,841 | \$315,866,635 | \$336,805,905 | \$348,641,218 | \$345,829,615 | \$356,772,554 |
| Less: | | | | | | |
| Adjustments | \$ (8,342,424) | \$ (7,349,075) | \$ (8,366,706) | \$ (7,915,384) | \$ (9,627,564) | \$ (8,919,314) |
| Discounts | \$ (908,846) | \$ (912,695) | \$ (1,238,639) | \$ (1,270,584) | \$ (1,220,207) | \$ (1,506,734) |
| Bad Debt | \$ (58,617) | \$ (484,363) | \$ (223,168) | \$ (358,043) | \$ (37,091) | \$ (356,773) |
| Subtotal | \$ (9,309,887) | \$ (8,746,133) | \$ (9,828,513) | \$ (9,544,011) | \$ (10,884,862) | \$ (10,782,821) |
| Net Billed Charges | \$296,867,954 | \$307,120,502 | \$326,977,392 | \$339,097,207 | \$334,944,753 | \$345,989,733 |
| Prior Year Surplus | \$ 183,611 | \$ 211,384 | \$ 389,063 | \$ 521,428 | \$ 689,086 | \$ 568,361 |
| Miscellaneous Revenues: | | | | | | |
| Late Charges Revenue | \$ 1,266,534 | \$ 1,357,316 | \$ 1,414,957 | \$ 1,306,697 | \$ 1,172,957 | \$ 1,427,090 |
| Investment Income | \$ 2,993,410 | \$ 2,820,493 | \$ 2,824,294 | \$ 3,732,740 | \$ 4,691,071 | \$ 4,691,071 |
| Fire Pipe Revenue | \$ 4,185,692 | \$ 4,330,652 | \$ 4,486,066 | \$ 4,601,031 | \$ 3,412,837 | \$ 3,362,129 |
| Other Income | \$ 5,426,141 | \$ 5,666,579 | \$ 6,294,690 | \$ 7,093,016 | \$ 8,459,688 | \$ 12,052,979 |
| Total Revenues | \$310,923,342 | \$321,506,926 | \$342,386,462 | \$356,352,119 | \$353,370,392 | \$368,091,364 |
| Direct Operating Expenses | | | | | | |
| Salaries and Wages | \$ 34,379,928 | \$ 35,778,748 | \$ 46,923,242 | \$ 53,952,461 | \$ 38,483,655 | \$ 39,598,957 |
| Overtime | \$ 815,128 | \$ 778,642 | \$ 789,500 | \$ 752,156 | \$ 860,783 | \$ 740,809 |
| Fringe Benefits | \$ 7,077,635 | \$ 7,261,123 | \$ 7,710,203 | \$ 8,405,801 | \$ 8,461,571 | \$ 9,213,523 |
| Supplies and Materials | \$ 2,286,065 | \$ 2,526,486 | \$ 2,295,723 | \$ 2,252,917 | \$ 2,853,443 | \$ 3,033,253 |
| Repairs and Maintenance | \$ 5,157,692 | \$ 6,203,654 | \$ 6,686,471 | \$ 7,289,132 | \$ 8,628,440 | \$ 9,912,540 |
| Utilities | \$ 1,207,108 | \$ 1,207,616 | \$ 1,093,997 | \$ 1,164,922 | \$ 1,291,024 | \$ 1,696,480 |
| Professional Services | \$ 2,649,969 | \$ 3,348,408 | \$ 2,724,914 | \$ 3,634,430 | \$ 4,347,614 | \$ 4,152,000 |
| Space and Equipment Rentals | \$ 663,354 | \$ 235,693 | \$ 251,778 | \$ 271,702 | \$ 291,500 | \$ 286,664 |
| Other Services | \$ 1,294,110 | \$ 1,506,245 | \$ 1,560,244 | \$ 1,639,759 | \$ 1,895,477 | \$ 2,145,250 |
| Insurance | \$ 764,915 | \$ 629,990 | \$ 533,935 | \$ 509,104 | \$ 514,254 | \$ 546,128 |
| Inventory | \$ 15,207 | \$ 16,759 | \$ 10,778 | \$ 21,871 | \$ 23,000 | \$ 23,000 |
| Capital Outlay | \$ 64,941 | \$ 57,684 | \$ 76,327 | \$ 75,494 | \$ 88,000 | \$ 79,000 |
| Travel/Training/Seminar | \$ 30,082 | \$ 50,864 | \$ 73,004 | \$ 70,721 | \$ 75,705 | \$ 78,000 |
| Damage Claims | \$ 180,699 | \$ 66,283 | \$ 61,729 | \$ 4,850 | \$ 91,000 | \$ 150,000 |
| Total Direct Operating Expenses | \$ 56,586,833 | \$ 59,668,195 | \$ 70,791,845 | \$ 80,045,320 | \$ 67,905,466 | \$ 71,655,604 |
| Indirect Operating Expenses: | | | | | | |
| MWRA Assessment | \$191,786,231 | \$199,673,027 | \$206,839,502 | \$212,475,077 | \$218,461,866 | \$226,148,398 |
| Capital Improvement | \$ 11,110,952 | \$ 8,057,958 | \$ 8,939,628 | \$ 12,490,025 | \$ 14,942,070 | \$ 17,236,000 |
| Debt Service | \$ 45,815,575 | \$ 46,875,435 | \$ 48,105,732 | \$ 48,144,158 | \$ 50,344,971 | \$ 50,993,290 |
| Contractual Funding Obligation | \$ 5,211,606 | \$ 6,643,000 | \$ 6,990,000 | \$ 2,313,000 | \$ 945,000 | \$ 1,851,226 |
| SDWA Assessment | \$ 200,761 | \$ 200,249 | \$ 198,327 | \$ 195,452 | \$ 202,659 | \$ 206,846 |
| Total Indirect Operating Expenses | \$254,125,125 | \$261,449,669 | \$271,073,189 | \$275,617,712 | \$284,896,566 | \$296,435,760 |
| Total Current Expenses | \$310,711,958 | \$321,117,864 | \$341,865,034 | \$355,663,032 | \$352,802,032 | \$368,091,364 |
| Current Year Rate Surplus | \$ 211,384 | \$ 389,062 | \$ 521,428 | \$ 689,086 | \$ 568,361 | \$ 0 |

Revenue Sources

The 2018 CEB includes anticipated fees for Miscellaneous Revenues, Late Charges Revenue, Fire Pipe Revenue, and Investment Income (on certain operating and reserve fund balances Other Income, and Prior Year Surplus. The CEB also includes Adjustments to Revenue such as Bad Debt provisions, Discounts, and Billing Adjustments. The graph below compares the Commission's budgeted revenue sources in 2018 versus 2017.



Revenue Sources

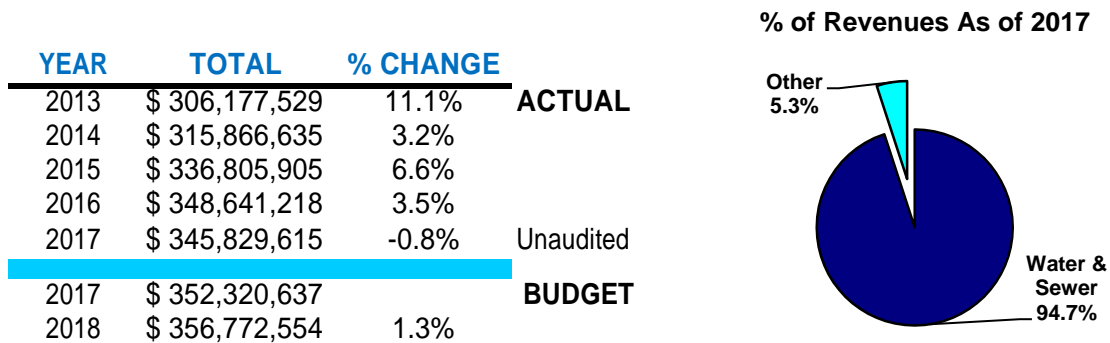
The following pages analyze each of the revenue sources in greater detail. The revenue analysis provides a brief description of each source, a five-year historical perspective and the assumptions used in preparing the 2018 budget. This information is supplemented by the utilization of various graphical displays to facilitate a better understanding of each revenue source.

The Commission's total revenues in FY18 are projected at \$368.1 million, an increase of \$6.8 million or 1.9% from FY17. The table below shows a breakdown of the revenue sources and adjustments to rate revenue. Variances from the 2018 budget to the 2017 budget are discussed on the following pages.

| | | BUDGET 2018 | BUDGET 2017 | VARIANCE | % |
|--------------------------------|----|------------------------|------------------------|-----------------|----------|
| REVENUES | | | | | |
| Water | \$ | 150,673,371 | \$ 149,415,548 | \$ 1,257,823 | 0.8% |
| Sewer | \$ | 206,099,183 | \$ 202,905,089 | \$ 3,194,094 | 1.6% |
| SUBTOTAL | \$ | 356,772,554 | \$ 352,320,637 | \$ 4,451,917 | 1.3% |
| LESS: | | | | | |
| Adjustments | \$ | (8,919,314) | \$ (8,808,016) | \$ (111,298) | 1.3% |
| Discounts | \$ | (1,506,734) | \$ (1,494,155) | \$ (12,579) | 0.8% |
| Bad Debt | \$ | (356,773) | \$ (352,321) | \$ (4,452) | 1.3% |
| SUBTOTAL | \$ | (10,782,821) | \$ (10,654,492) | \$ (128,329) | 1.2% |
| NET BILLED CHARGES | \$ | 345,989,733 | \$ 341,666,145 | \$ 4,323,588 | 1.3% |
| PRIOR YEAR SURPLUS | \$ | 568,361 | \$ 693,227 | \$ (124,866) | -18.0% |
| MISCELLANEOUS REVENUES: | | | | | |
| Late Charges | \$ | 1,427,090 | \$ 1,409,283 | \$ 17,808 | 1.3% |
| Investment Income | \$ | 3,362,129 | \$ 3,239,523 | \$ 122,607 | 3.8% |
| Fire Pipe | \$ | 4,691,071 | \$ 4,590,020 | \$ 101,051 | 2.2% |
| Other Income | \$ | 12,052,979 | \$ 9,732,919 | \$ 2,320,060 | 23.8% |
| SUBTOTAL | \$ | 21,533,269 | \$ 18,971,745 | \$ 2,561,525 | 13.5% |
| TOTAL REVENUE | \$ | 368,091,364 | \$ 361,331,117 | \$ 6,760,248 | 1.9% |

Rate Revenue

The primary source of the Commission's revenue is from billing for water and sewer services from various consumers. The Commission method for calculating water and sewer sales is to use last year's projected consumption and reduce it by 1.0%, then apply the rate increase (if any). Below annual amounts and the percentage of revenues are illustrated.



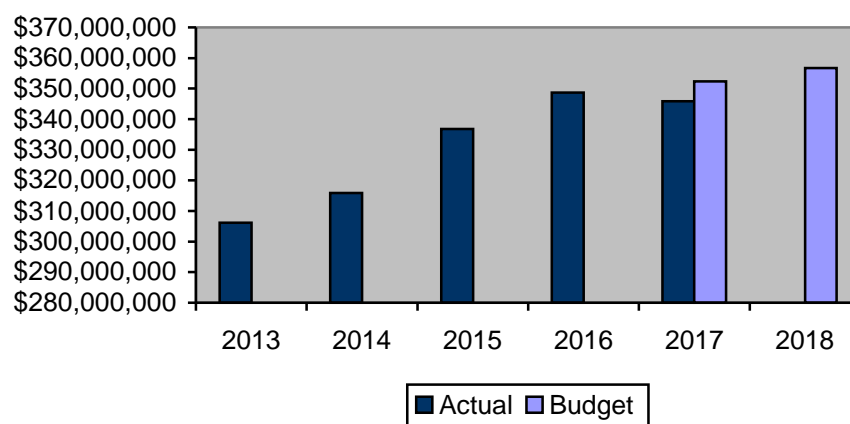
Historical Viewpoint

Due to decreasing revenues, the Commission was required to raise rates. There were rate increases in 2013, 2014, 2015, 2016 and 2017. Because of these past increases, Rate Revenues increased from \$306.2 million in 2013 to \$345.8 million in 2017 an increase of \$39.6 million, or 13.0%.

Funding

The Commission has increased rates in 2013, 2014, 2015, 2016, 2017 and plans a 4.75% increase for 2018. The Commission anticipates Water and Sewer Revenues to total \$356.8 million in 2018.

Rate Revenue



Adjustments to Rate Revenue

Adjustments to rate revenue are divided into three categories:

- I. Billing adjustments represent modifications to customer accounts, which can be attributed to a variety of factors such as inaccurate usage estimates, erroneous meter readings, sewer abatements and transfers of property ownership.
- II. Discounts are a requirement of the Commission's Enabling Act to elderly (65 years of age or older) or disabled homeowners living in structures with one to four dwelling units. These homeowners are entitled to a 30% discount on the water portion of their bills.
- III. Bad debt is the provision made for the uncollectible amount of adjusted billed revenue.

| ADJUSTMENTS | | | |
|-------------|--------------|----------|-----------|
| YEAR | TOTAL | % CHANGE | |
| 2013 | \$ 8,342,424 | 8.8% | ACTUAL |
| 2014 | \$ 7,349,075 | -11.9% | |
| 2015 | \$ 8,366,706 | 13.8% | |
| 2016 | \$ 7,915,384 | -5.4% | |
| 2017 | \$ 9,627,564 | 21.6% | |
| | | | Unaudited |
| | | | |
| 2017 | \$ 8,808,016 | | BUDGET |
| 2018 | \$ 8,919,314 | 1.3% | |

| DISCOUNTS | | | |
|-----------|--------------|----------|-----------|
| YEAR | TOTAL | % CHANGE | |
| 2013 | \$ 908,846 | -0.7% | ACTUAL |
| 2014 | \$ 912,695 | 0.4% | |
| 2015 | \$ 1,238,639 | 35.7% | |
| 2016 | \$ 1,270,584 | 2.6% | |
| 2017 | \$ 1,220,207 | -4.0% | |
| | | | Unaudited |
| | | | |
| 2017 | \$ 1,494,155 | | BUDGET |
| 2018 | \$ 1,506,734 | 0.8% | |

| BAD DEBT | | | |
|----------|------------|----------|-----------|
| YEAR | TOTAL | % CHANGE | |
| 2013 | \$ 58,617 | 31.7% | ACTUAL |
| 2014 | \$ 484,363 | 726.3% | |
| 2015 | \$ 223,168 | -53.9% | |
| 2016 | \$ 358,043 | 60.4% | |
| 2017 | \$ 37,091 | -89.6% | |
| | | | Unaudited |
| | | | |
| 2017 | \$ 352,321 | | BUDGET |
| 2018 | \$ 356,773 | 1.3% | |

Adjustments to Rate Revenue

Historical Viewpoint

Adjustments to Rate Revenue include Adjustments, Discounts, and Bad Debt. Adjustments have totaled \$8.3 million in 2013, \$7.3 million in 2014, \$8.4 million in 2015, \$7.9 million in 2016 and \$9.6 million in 2017,

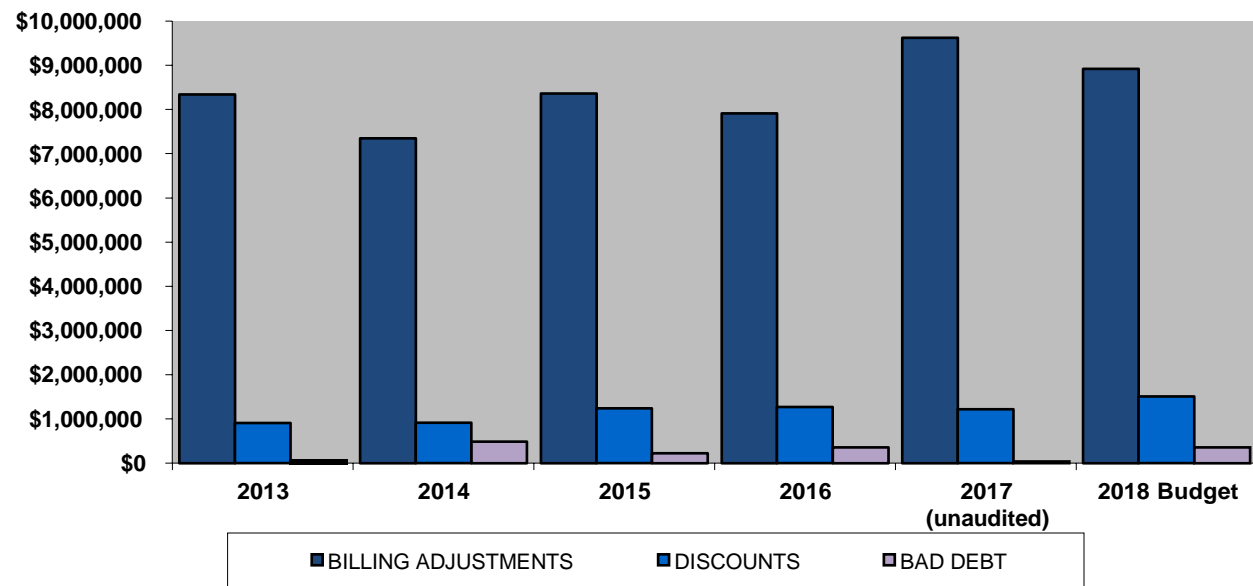
Discounts have totaled \$908,846 in 2013, \$912,965 in 2014, \$1,238,639 in 2015, \$1,270,584 in 2016 and \$1,220,207 in 2017.

Bad Debt has totaled \$58,617 in 2013, \$484,363 in 2014, \$223,168 in 2015, \$358,043 in 2016 and \$37,091 in 2017.

Funding

The funding for Adjustments to Rate Revenue is based on a percentage of water and sewer revenues. Adjustments have been budgeted at 2.5% of revenues, Discounts 1.0% (of water only), and Bad Debt at 0.1%, respectively. The amounts budgeted for these items in 2018 are Adjustments: \$8.9 million, Discounts: \$1.5 million, and Bad Debt: \$0.4 million, respectively.

Adjustments to Rate Revenue



Prior Year Net Operating Surplus

As required by the Enabling Act, the Commission must use any net operating surplus generated in any year to reduce the revenue requirement in the following year, or transfer that operating surplus to the City of Boston. In a given year, the prior year net operating surplus is determined by subtracting the previous year's actual expenses from the actual revenues. In other words, the prior year net operating surplus of the 2018 budget reflects the actual (unaudited) surplus realized in 2017. Data and Graphs are shown below for additional information.

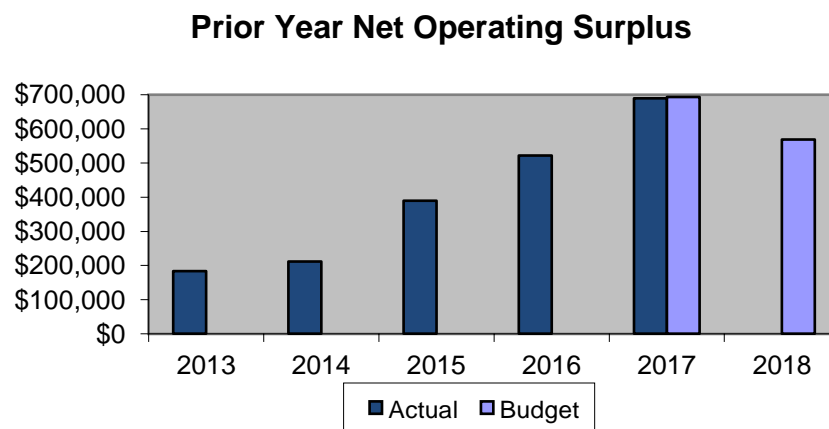
| | | | | |
|------|----|---------|--------|---------------|
| 2013 | \$ | 183,611 | 118.9% | ACTUAL |
| 2014 | \$ | 211,384 | 15.1% | |
| 2015 | \$ | 389,063 | 84.1% | |
| 2016 | \$ | 521,428 | 34.0% | |
| 2017 | \$ | 689,086 | 32.2% | |
| | | | | Unaudited |
| | | | | BUDGET |
| 2017 | \$ | 693,227 | | |
| 2018 | \$ | 568,361 | -18.0% | |

Historical Viewpoint

The Commission has experienced a prior year net operating surplus in each of the past five years presented here. In 2013, the Commission recognized \$0.2 million in prior year net operating surplus, \$0.2 million in 2014, \$0.4 million in 2015, \$0.5 million in 2016 and a prior year surplus of \$0.7 million in 2017.

Funding

The 2018 budget will utilize the 2017 surplus of \$0.6 million to offset anticipated expenditures. The Commission anticipates a similar surplus in the future.



Miscellaneous Revenue – Late Charge Fees

It is the policy of the Commission to impose a late payment charge with each billing on all amounts past due over 45 days. The imposition of late charges encourages the prompt payment of bills to prevent subsidies to customers who do not pay their bills on time. The late payment charge is 14% per annum or 0.03836% per diem.

| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|-----------|
| 2013 | \$ 1,266,534 | -0.4% | ACTUAL |
| 2014 | \$ 1,357,316 | 7.2% | |
| 2015 | \$ 1,414,957 | 4.2% | |
| 2016 | \$ 1,306,697 | -7.7% | |
| 2017 | \$ 1,172,957 | -10.2% | |
| | | | Unaudited |
| | | | |
| 2017 | \$ 1,409,283 | | BUDGET |
| 2018 | \$ 1,427,090 | 1.3% | |

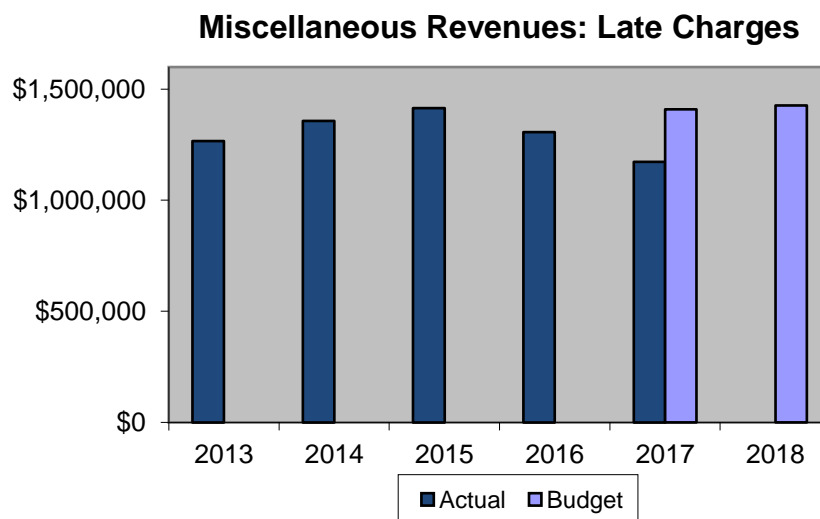
Unaudited

Historical Viewpoint

Late Charges have remained steady annually, which is a result of the Commission's efforts to collect outstanding balances. In 2013, the Commission observed \$1.3 million in Late Charges, \$1.4 million in 2014 and \$1.4 million in 2015, and \$1.3 million in 2016. In 2017, the Commission anticipates Late Charges to equal \$1.2 million.

Funding

In the 2018 budget, Late Charges are estimated at 0.4% of billed Water and Sewer charges. Thus, the 2018 budget accounts for \$1.4 million in Late Charges, which is \$17,807 or 1.3% more than the budgeted amount in 2017.



Miscellaneous Revenue – Investment Income

Large expenditures such as the MWRA Assessment and principal and interest payments on outstanding debt are paid in periodic installments. The funds accumulated to pay these expenses earn Investment Income for the Commission. In addition, according to Commission policy, certain fund balances are available for investment purposes.

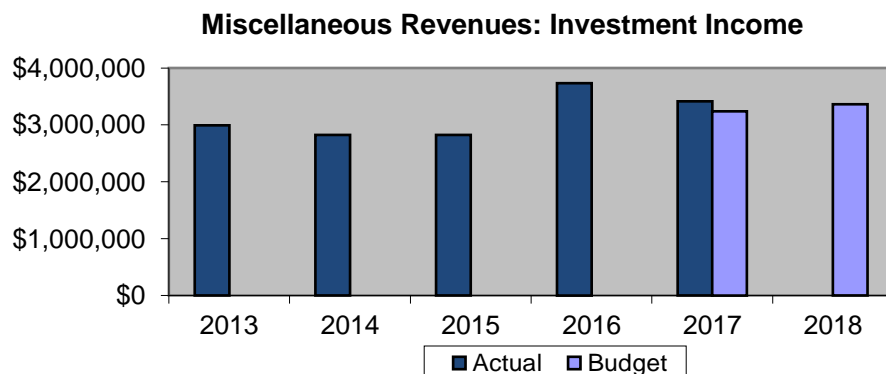
| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|-----------|
| 2013 | \$ 2,993,410 | -22.7% | ACTUAL |
| 2014 | \$ 2,820,493 | -5.8% | |
| 2015 | \$ 2,824,294 | 0.1% | |
| 2016 | \$ 3,732,740 | 32.2% | |
| 2017 | \$ 3,412,837 | -8.6% | |
| | | | Unaudited |
| | | | BUDGET |
| 2017 | \$ 3,239,523 | | |
| 2018 | \$ 3,362,129 | 3.8% | |

Historical Viewpoint

Investment Income has started to return increased yields over the last couple of years after experiencing consecutive decreases in the years prior. Investment Income totaled \$3.0 million in 2013, \$2.8 million in 2014, \$2.8 million in 2015, \$3.7 million in 2016 and \$3.4 million in 2017. The amount of assets available for investing purposes had decreased in previous years due to declines in operating surpluses experienced during this time period. However, these amounts have increased and the Commission has remained cautious and defensive in the present market by keeping short term investments in three-month and six-month callable agencies. This strategy has been effective and thus investment income has seen a positive trend in recent years.

Funding

Investment Income in 2018 is budgeted for \$3.4 million, which is \$0.1 million or 3.8% more than budgeted in 2017. The Commission has experienced more favorable returns on investments relating to the stock market, bonds acquired, and other investment options the Commission has explored. Monies invested have returned slightly higher returns, due to higher interest rate yields and a cautious strategy during in the past couple of years.



Miscellaneous Revenue – Fire Pipe Fees

Fire Pipe connections are billed separately by the Commission. Fire Pipe connections are used to service internal sprinkler systems and stand pipes which are utilized for fire protection in buildings. Generally accepted rate making practices recommend the imposition of special service fees for private fire protection.

| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 4,185,692 | 1.9% | |
| 2014 | \$ 4,330,652 | 3.5% | |
| 2015 | \$ 4,486,066 | 3.6% | |
| 2016 | \$ 4,601,031 | 2.6% | |
| 2017 | \$ 4,691,071 | 2.0% | Unaudited |
| | | | |
| 2017 | \$ 4,590,020 | | BUDGET |
| 2018 | \$ 4,691,071 | 2.2% | |

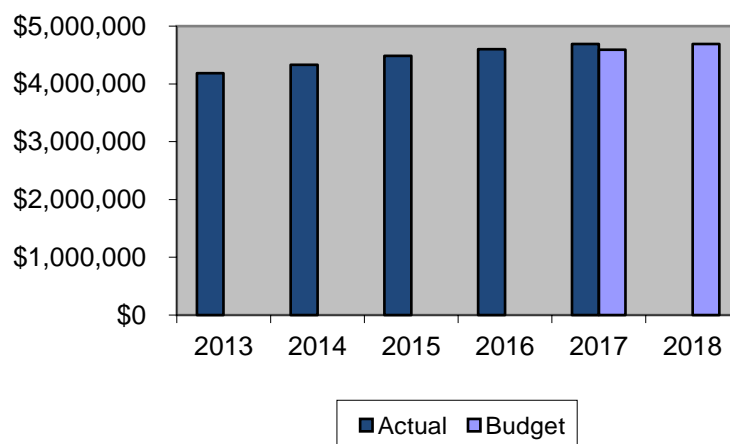
Historical Viewpoint

Fire Pipe Revenue has gradually increased since 2013. Increase in Fire Pipe Revenues can be attributed to new construction in the Boston area and the requirement for fire pipes in the city. The amount realized in 2017 was \$4.7 million, the largest amount in the five-year period.

Funding

The amount budgeted for Fire Pipe Revenue in the 2018 budget is \$4.7 million, which is \$0.1 million or 2.2% than the 2017 budget.

Miscellaneous Revenues: Fire Pipe Fees



Miscellaneous Revenue – Other Income

The Commission provides special services to some customers, the costs of which are not imposed upon the general ratepayer. These services come under the title “Special Service Fees.” Special services include cross connection inspections, general service applications, water and sewer lien certificates, water and sewer pipe inspections, and special meter tests. Another component of Other Income is Deferred Revenues, which are revenues that have been deferred for the primary purpose of being recognized later.

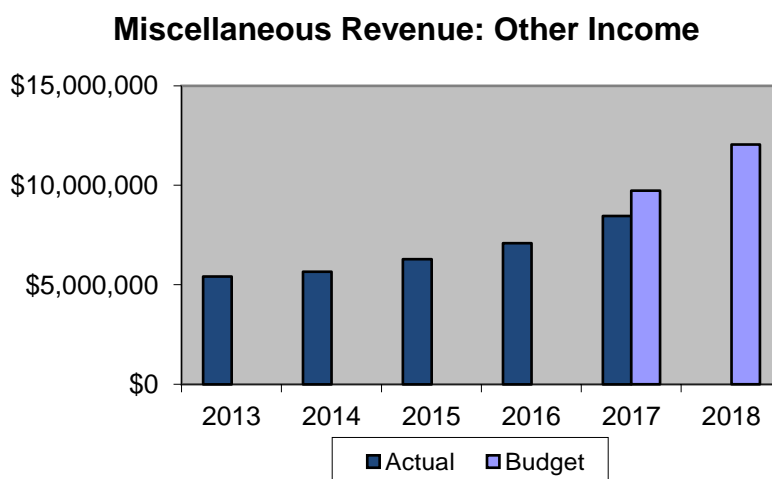
| YEAR | TOTAL | % CHANGE | |
|------|---------------|----------|---------------|
| 2013 | \$ 5,426,141 | -2.4% | |
| 2014 | \$ 5,666,579 | 4.4% | |
| 2015 | \$ 6,294,690 | 11.1% | |
| 2016 | \$ 7,093,016 | 12.7% | |
| 2017 | \$ 8,459,688 | 19.3% | Unaudited |
| 2017 | \$ 9,732,919 | | BUDGET |
| 2018 | \$ 12,052,979 | 23.8% | |

Historical Viewpoint

Other Income increased 19.3% in 2017 totaling \$8.5 million. Amounts for Other Income have seen a steady increase over the five-year span beginning in 2013. Other Income totaled \$5.4 million in 2013, \$5.7 million in 2014, \$6.3 million in 2015, \$7.1 million in 2016 and \$8.5 million in 2017. The increases realized in recent years are mostly a result of increased revenues from General Service Applications and Cross Connection Fees.

Funding

Monies budgeted for Other Income in 2018 equal \$12.1 million, an increase of \$2.3 million or 23.8% more than the 2017 budget.

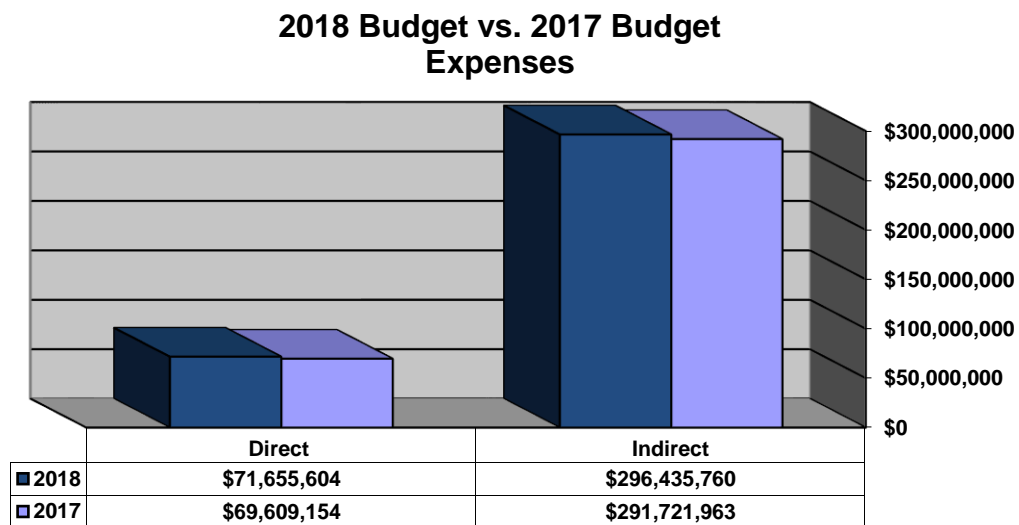


Total Expenses

The 2018 Current Expense Budget includes \$368.1 million in total expenses.

The budget includes:

- ➔ Direct Expenses - \$71.7 million
- ➔ Indirect Expenses - \$296.4 million
 - MWRA Assessment - \$226.1 million
 - Debt Service - \$51.0 million
 - Capital Improvements - \$17.2 million
 - Contractual Funding Obligations - \$1.9 million
 - SDWA Assessment - \$0.2 million



Direct Expense Budget Comparison

Direct Expenses are those expenses directly associated with a division, department, or operating unit's daily activity. The Direct Expense budget for 2018 totals \$71.7 million which reflects an increase of \$2.0 million or 2.9% from the 2017 budget. The Commission is dedicated to reducing the required level of future rate increases by controlling expenses wherever possible through strong financial management and policy controls. The chart below displays the 2017 Direct Expense budget by line item versus the 2017 budget along with the percentage change from year to year.

| | 2018 Budget | 2017 Budget | Variance % |
|---------------------------|------------------------|------------------------|-----------------------|
| Wages and Salaries | \$ 39,598,957 | \$ 38,975,572 | 1.6% |
| Overtime | \$ 740,809 | \$ 740,809 | 0.0% |
| Fringe Benefits | \$ 9,213,523 | \$ 8,945,134 | 3.0% |
| Supplies & Materials | \$ 3,033,253 | \$ 2,975,143 | 2.0% |
| Repair & Maintenance | \$ 9,912,540 | \$ 8,734,640 | 13.5% |
| Utilities | \$ 1,696,480 | \$ 1,612,853 | 5.2% |
| Professional Services | \$ 4,152,000 | \$ 4,535,270 | -8.5% |
| Space & Equipment Rentals | \$ 286,664 | \$ 295,784 | -3.1% |
| Other Services | \$ 2,145,250 | \$ 1,944,540 | 10.3% |
| Insurance | \$ 546,128 | \$ 528,409 | 3.4% |
| Inventory | \$ 23,000 | \$ 23,000 | 0.0% |
| Capital Outlay | \$ 79,000 | \$ 70,000 | 12.9% |
| Training/Seminar/Travel | \$ 78,000 | \$ 78,000 | 0.0% |
| Damage Claims | \$ 150,000 | \$ 150,000 | 0.0% |
| TOTAL | \$ 71,655,604 | \$ 69,609,154 | 2.9% |

Direct Expense Budget

The Commission's Direct Expenses are divided into two distinct categories, Labor Costs and Other Costs. These two categories are subsequently divided into fourteen line items with three line items attributed to Labor Costs and eleven attributed to Other Costs. Listed below are the line items and categories that are contained within them.

LABOR COSTS

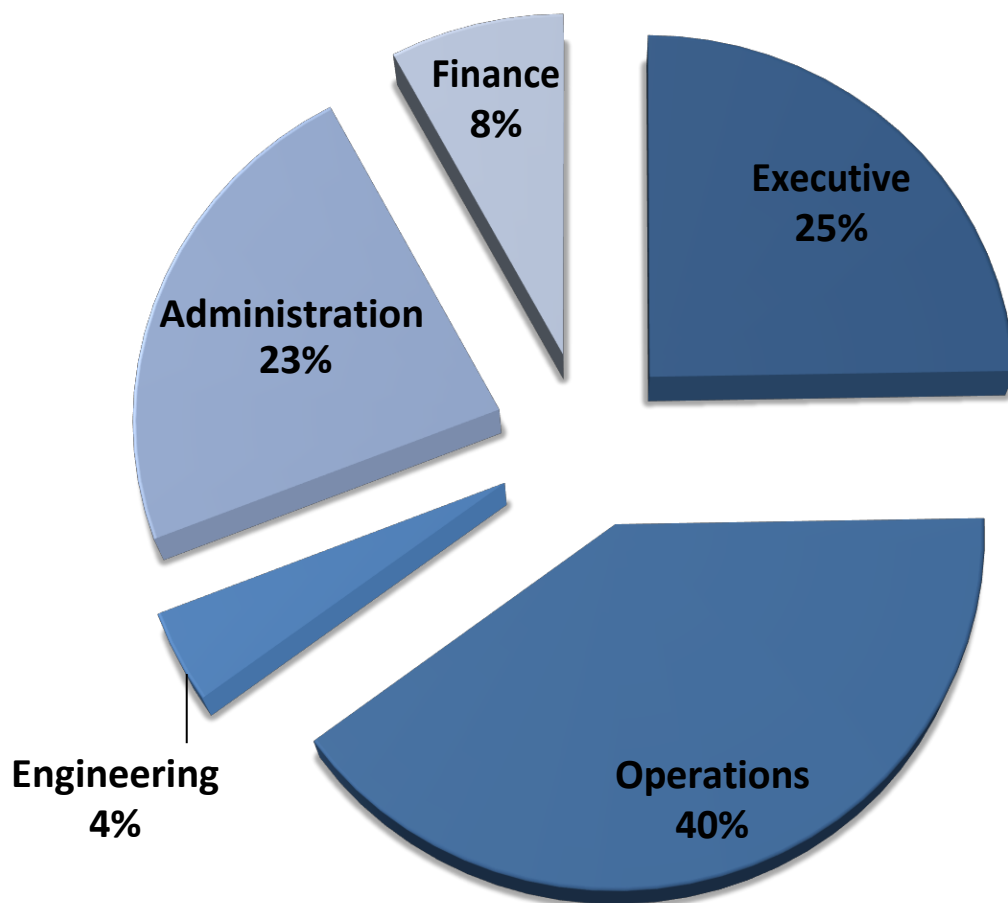
- **Wages and Salaries** – Medicare, Contract Allowances, Other Post Employee Benefits Liability, Mass Hospital Tax, and Pension
- **Overtime**
- **Fringe Benefits** – Health, Life, Dental, Workers' Compensation and Unemployment Insurance, Long Term Disability, Tuition Reimbursement

OTHER COSTS

- **Supplies and Materials** – Office, Program and Health/Safety Supplies, Work Clothes, and Vehicle Fuel
- **Repair and Maintenance** – Contract Repairs, Sewer Lateral, Television Inspections
- **Utilities** – Heating Oil, Gas, Electricity
- **Professional Services** – Audit Services, Trustee Services, Risk Management, Engineering Services, and Legal Services
- **Space & Equipment Rentals** – Space and Copier Leases, and Other Rentals
- **Other Services** – Printing and Duplication, Advertising, Police Details
- **Insurance** – Excess Liabilities, Fiduciary Liability, Property/Casualty Insurance, Vehicle Insurance, Crime Insurance, and Permit/Bonding
- **Inventory** – Water and Sewer related items
- **Capital Outlay** – Office and Field Equipment
- **Training/Seminar/Travel** – Local and Out-Of-State Training/Seminar, Local Meeting/Conference, Out-Of-State Conference
- **Damage Claims**

2018 Direct Expense Budget by Division

| | Executive | Operations | Engineering | Administration | Finance | Total |
|------------------------------|---------------|---------------|--------------|----------------|--------------|---------------|
| Wages and Salaries | \$ 6,841,556 | \$ 16,307,992 | \$ 2,296,625 | \$ 10,029,333 | \$ 4,123,451 | \$ 39,598,957 |
| Overtime | \$ - | \$ 436,017 | \$ 196,800 | \$ 100,557 | \$ 7,435 | \$ 740,809 |
| Labor Related Costs/Benefits | \$ 8,679,393 | \$ 159,075 | \$ 141,706 | \$ 111,704 | \$ 121,645 | \$ 9,213,523 |
| Total Labor Costs | \$ 15,520,949 | \$ 16,903,084 | \$ 2,635,131 | \$ 10,241,594 | \$ 4,252,531 | \$ 49,553,289 |
| Supplies and Materials | \$ 31,100 | \$ 1,760,150 | \$ 83,794 | \$ 523,605 | \$ 634,604 | \$ 3,033,253 |
| Repair and Maintenance | \$ 34,000 | \$ 7,693,800 | \$ 25,000 | \$ 1,988,240 | \$ 171,500 | \$ 9,912,540 |
| Utilities | \$ - | \$ - | \$ - | \$ 1,696,480 | \$ - | \$ 1,696,480 |
| Professional Services | \$ 1,263,000 | \$ 1,552,500 | \$ 229,000 | \$ 599,500 | \$ 508,000 | \$ 4,152,000 |
| Space and Equipment Rentals | \$ - | \$ 7,500 | \$ - | \$ 279,164 | \$ - | \$ 286,664 |
| Other Services | \$ 160,000 | \$ 762,000 | \$ 11,000 | \$ 1,100,600 | \$ 111,650 | \$ 2,145,250 |
| Insurance | \$ 546,128 | \$ - | \$ - | \$ - | \$ - | \$ 546,128 |
| Inventory | \$ - | \$ 23,000 | \$ - | \$ - | \$ - | \$ 23,000 |
| Capital Outlay | \$ - | \$ 50,000 | \$ - | \$ 29,000 | \$ - | \$ 79,000 |
| Training/Travel/Seminar | \$ 13,500 | \$ 13,000 | \$ 24,500 | \$ 22,000 | \$ 5,000 | \$ 78,000 |
| Damage Claims | \$ 150,000 | \$ - | \$ - | \$ - | \$ - | \$ 150,000 |
| Total Other Costs | \$ 2,197,728 | \$ 11,861,950 | \$ 373,294 | \$ 6,238,589 | \$ 1,430,754 | \$ 22,102,315 |
| Total Direct Expenses | \$ 17,718,677 | \$ 28,765,034 | \$ 3,008,425 | \$ 16,480,183 | \$ 5,683,285 | \$ 71,655,604 |

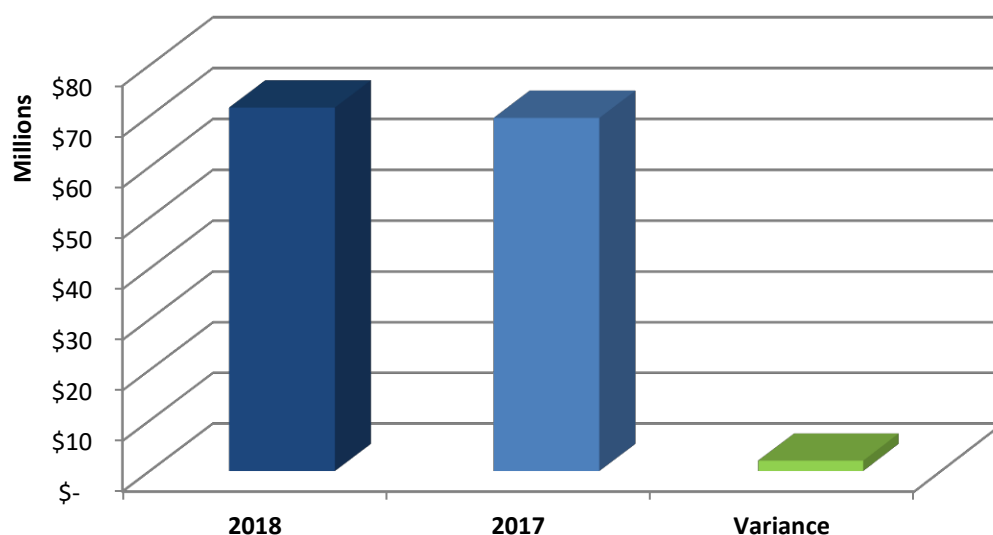


Budget Comparison by Line Item: 2018 vs. 2017

The following illustration shows the line items for Direct Expenses. The amounts from 2018 are compared to 2017, which includes the dollar and percentage variance from year to year.

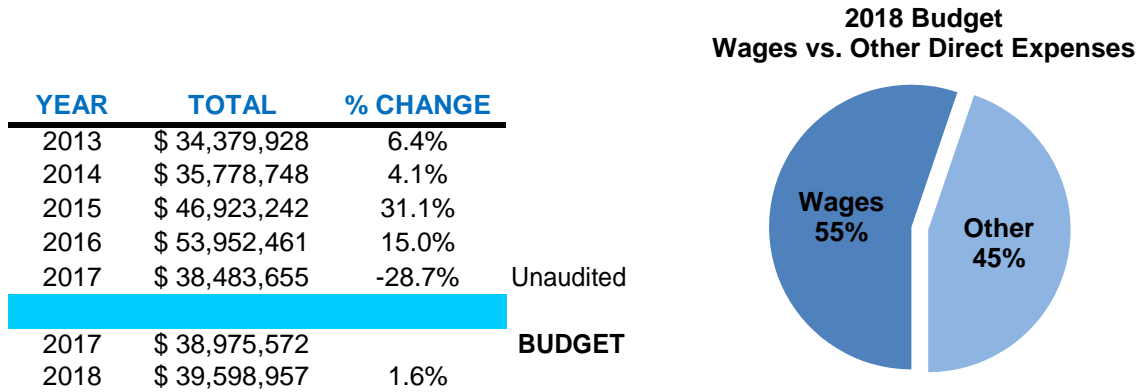
| Line Item | 2018 Budget | 2017 Budget | Variance \$ | Variance % |
|------------------------------|----------------------|----------------------|---------------------|---------------|
| Wages & Salaries | \$ 39,598,957 | \$ 38,975,572 | \$ 623,385 | 1.6% |
| Overtime | \$ 740,809 | \$ 740,809 | \$ - | 0.0% |
| Labor Related Costs/Benefits | \$ 9,213,523 | \$ 8,945,134 | \$ 268,389 | 3.0% |
| Total Labor Costs | \$ 49,553,289 | \$ 48,661,515 | \$ 891,774 | 1.8% |
| Supplies and Materials | \$ 3,033,253 | \$ 2,975,143 | \$ 58,110 | 2.0% |
| Repairs and Maintenance | \$ 9,912,540 | \$ 8,734,640 | \$ 1,177,900 | 13.5% |
| Utilities | \$ 1,696,480 | \$ 1,612,853 | \$ 83,627 | 5.2% |
| Professional Services | \$ 4,152,000 | \$ 4,535,270 | \$ (383,270) | -8.5% |
| Space and Equipment Rentals | \$ 286,664 | \$ 295,784 | \$ (9,120) | -3.1% |
| Other Services | \$ 2,145,250 | \$ 1,944,540 | \$ 200,710 | 10.3% |
| Insurance | \$ 546,128 | \$ 528,409 | \$ 17,719 | 3.4% |
| Inventory | \$ 23,000 | \$ 23,000 | \$ - | 0.0% |
| Capital Outlay | \$ 79,000 | \$ 70,000 | \$ 9,000 | 12.9% |
| Travel/Training/Seminar | \$ 78,000 | \$ 78,000 | \$ - | 0.0% |
| Damage Claims | \$ 150,000 | \$ 150,000 | \$ - | 0.0% |
| Total Other Cost | \$ 22,102,315 | \$ 20,947,639 | \$ 1,154,676 | 5.5% |
| Total Direct Expenses | \$ 71,655,604 | \$ 69,609,154 | \$ 2,046,450 | 2.9% |

**Direct Expenses
2018 Budget vs. 2017 Budget**



Wages and Salaries

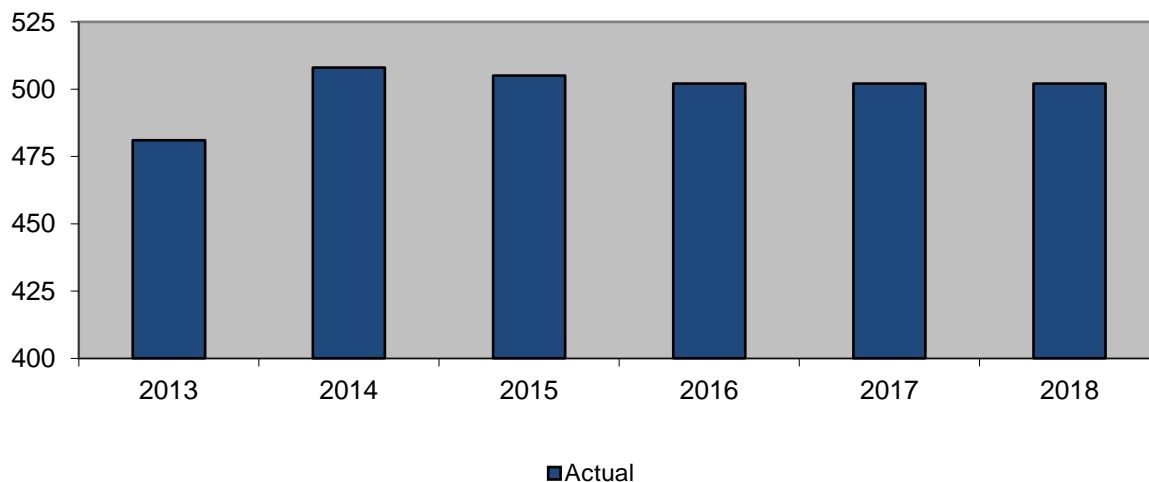
The Wages and Salaries line item provides funding for compensation paid to Commission employees. Along with full time equivalent employees, this line reflects costs of part-time employees, interns, co-op students, and the summer youth program.



Historical Viewpoint

Wages and Salaries have remained relatively stable within the past five-years. Increases seen over the last two years are based on contract settlements and performance reviews for various employees and unions within the Commission. The Commission's diverse workforce is comprised of executive employees and four collective bargaining units. The Commission will maintain the head count for 2018 at 502 positions, unchanged from the 2017 head count.

Budgeted Number of Employees at BWSC

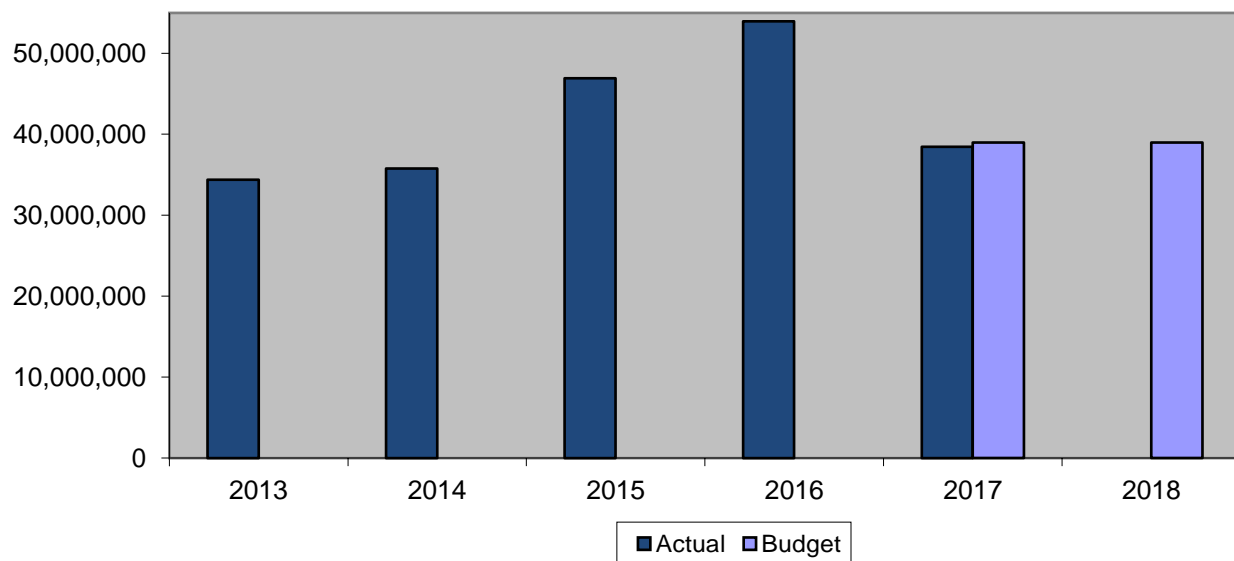


Wages and Salaries

Funding

The 2018 budget for Wages and Salaries is \$39.6 million, which is an increase of \$0.6 million or 1.6% from the 2017 budget. The increase is the result of contract settlements and performance reviews for various employees and unions within the Commission.

Historical Amounts for Wages and Salaries



Overtime

The Commission establishes a budget for Overtime in order to respond to services related to emergencies requiring attention outside the normal hours of operation.

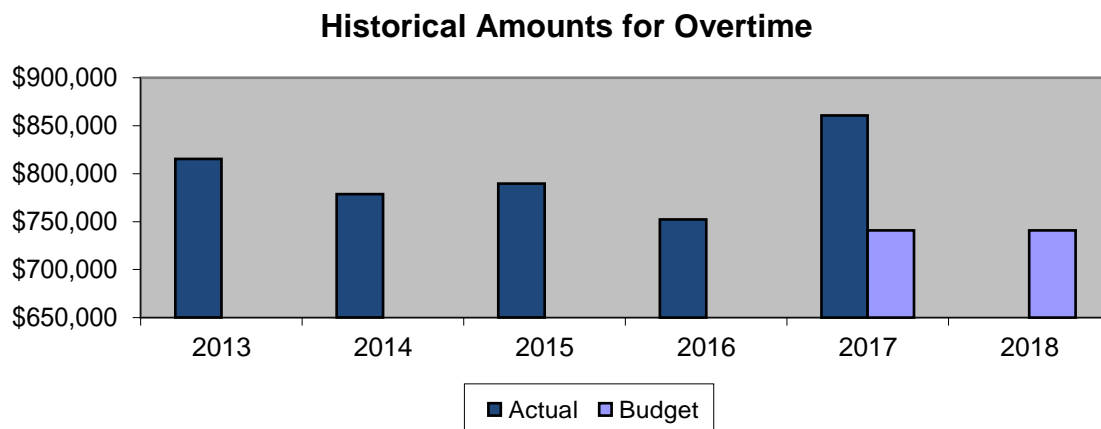
| YEAR | TOTAL | % CHANGE | |
|------|------------|----------|---------------|
| 2013 | \$ 815,128 | 14.8% | |
| 2014 | \$ 778,642 | -4.5% | |
| 2015 | \$ 789,500 | 1.4% | |
| 2016 | \$ 752,156 | -4.7% | |
| 2017 | \$ 860,783 | 14.4% | Unaudited |
| 2017 | \$ 740,809 | | BUDGET |
| 2018 | \$ 740,809 | 0.0% | |

Historical Viewpoint

Overtime spending has stayed within the range of \$750,000 - \$870,000 over the past five years. Fluctuations in overtime spending are primarily due to varying numbers of unanticipated situations requiring overtime from year to year. Expenditures for Overtime have equaled \$815,128 in 2013, \$778,642 in 2014, \$789,500 in 2015, \$752,156 in 2016 and \$860,783 in 2017.

Funding

The amount allocated for 2018 Overtime is budgeted at \$740,809, which is equivalent to the 2017 budget.



Labor Related Costs/Benefits

Labor Related Costs/Benefits provides funding for Health, Life, Dental, and Unemployment Insurance, Workers' Compensation, Tuition Reimbursement, and Sick, Compensatory, and Vacation Time Buy Back.

| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 7,077,635 | -2.5% | |
| 2014 | \$ 7,261,123 | 2.6% | |
| 2015 | \$ 7,710,203 | 6.2% | |
| 2016 | \$ 8,405,801 | 9.0% | |
| 2017 | \$ 8,461,571 | 0.7% | Unaudited |
| | | | |
| 2017 | \$ 8,945,134 | | BUDGET |
| 2018 | \$ 9,213,523 | 3.0% | |

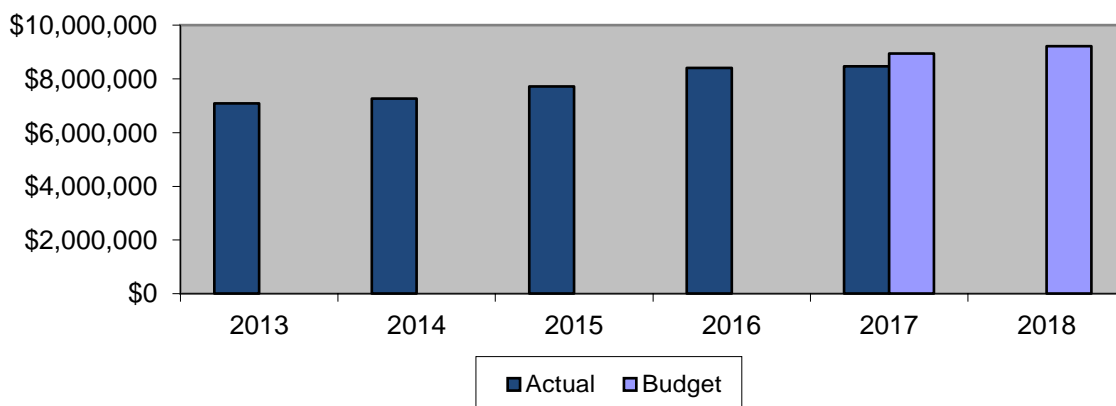
Historical Viewpoint

Increases in annual expenses have been caused by increasing premiums for health, dental, long-term disability, and unemployment insurance throughout the state of Massachusetts. The health care industry and premiums to employees continue to increase annually.

Funding

The 2018 budget equals \$9.2 million, which is an increase of \$0.3 million or 3.0% from 2017 Budget.

Labor Related Costs/Benefits



Supplies and Materials

Supplies and Materials include funding for office supplies, work clothes, health/safety supplies, program supplies, postage and delivery services, vehicle fuel, and all other materials not classified as inventory items.

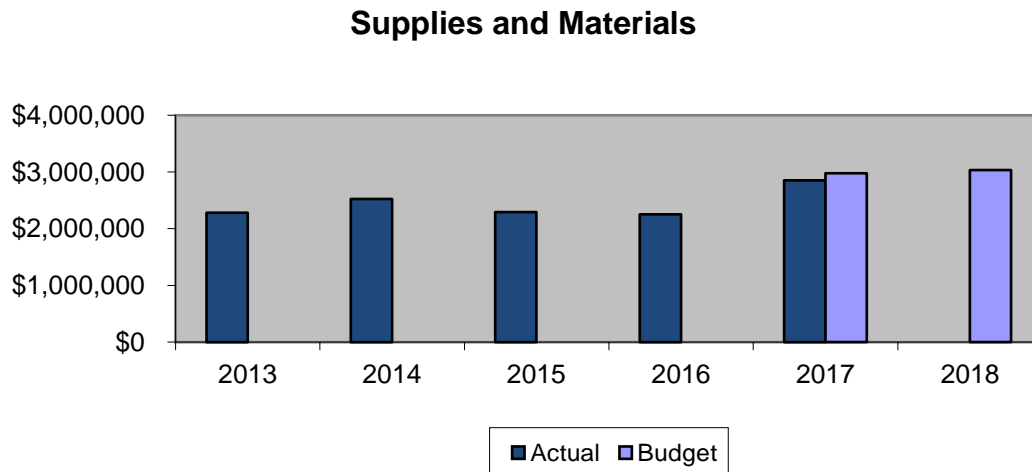
| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 2,286,065 | -5.3% | |
| 2014 | \$ 2,526,486 | 10.5% | |
| 2015 | \$ 2,295,723 | -9.1% | |
| 2016 | \$ 2,252,917 | -1.9% | |
| 2017 | \$ 2,853,443 | 26.7% | Unaudited |
| 2017 | \$ 2,975,143 | | BUDGET |
| 2018 | \$ 3,033,253 | 2.0% | |

Historical Viewpoint

The Commission has focused on centralization for the purchasing of supplies and materials by management. Spending for supplies and materials totaled \$2.3 million in 2013, \$2.5 million in 2014, \$2.3 million in 2015, \$2.3 million in 2016 and \$2.9 million in 2017.

Funding

Supplies and Materials are budgeted for \$3.0 million in 2018, which reflects a \$58,110 or 2.0% increase from the 2017 budget.



Repair and Maintenance

The Repair and Maintenance line item includes: Materials, Service and Maintenance, Contractual Repairs to the Water System and the Sewer System, Television Inspections, Sewer Laterals, Solid Fill Disposals, and Other Repair and Maintenance.

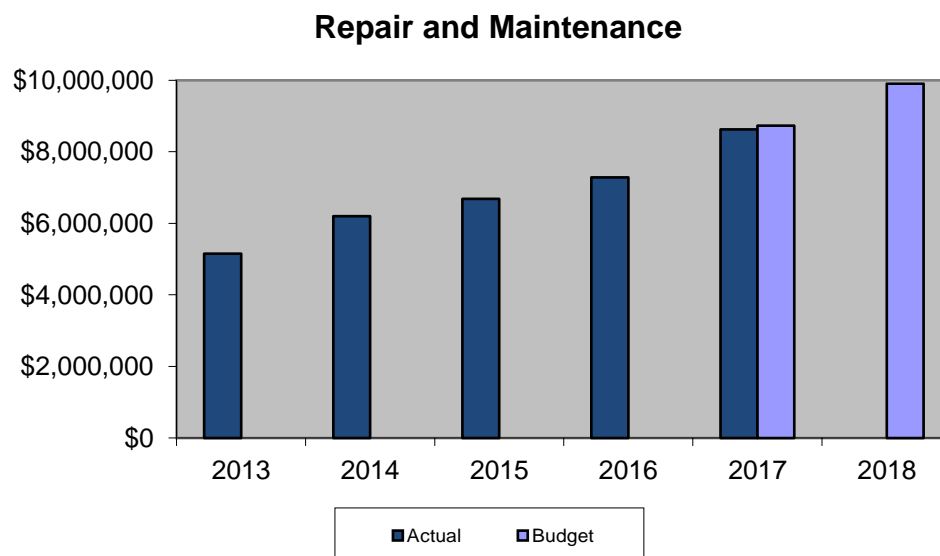
| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 5,157,692 | -5.2% | |
| 2014 | \$ 6,203,654 | 20.3% | |
| 2015 | \$ 6,686,471 | 7.8% | |
| 2016 | \$ 7,289,132 | 9.0% | |
| 2017 | \$ 8,628,440 | 18.4% | Unaudited |
| 2017 | \$ 8,734,640 | | BUDGET |
| 2018 | \$ 9,912,540 | 13.5% | |

Historical Viewpoint

Costs associated with Repair and Maintenance equaled \$5.2 million in 2013, \$6.2 million in 2014, \$6.7 million in 2015, \$7.3 million in 2016 and \$8.6 million in 2017.

Funding

Repair and Maintenance is budgeted for \$9.9 million in 2018. This amount is \$1.2 million or 13.5% more than the 2017 budget amount.



Utilities

This line item includes funding for natural gas, electricity, water/sewer, and telephone expenses (long distance and cellular).

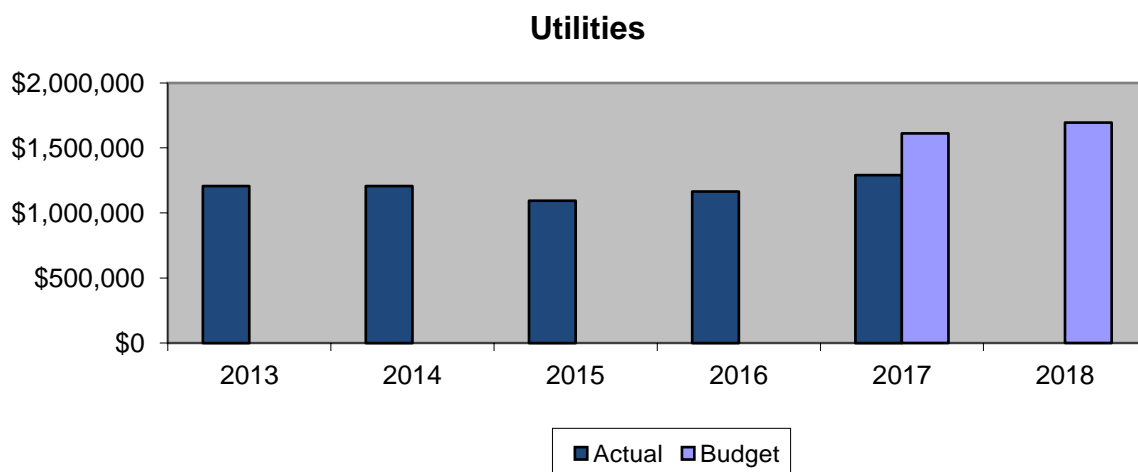
| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 1,207,108 | 23.8% | |
| 2014 | \$ 1,207,616 | 0.0% | |
| 2015 | \$ 1,093,997 | -9.4% | |
| 2016 | \$ 1,164,922 | 6.5% | |
| 2017 | \$ 1,291,024 | 10.8% | Unaudited |
| | | | |
| 2017 | \$ 1,612,853 | | BUDGET |
| 2018 | \$ 1,696,480 | 5.2% | |

Historical Viewpoint

The cost of Utilities has been rising over the past several years due to the higher cost of energy. Expenses increased by 10.8% in 2017.

Funding

Utilities in 2018 are budgeted for \$1.7 million. The amount is a \$83,627 or 5.2% increase from the 2017 budget.



Professional Services

The Professional Services line item includes funding for Audit Services, Trustee Services, Financial Consultants, Risk Management, Bond Remarketing, Rating Agencies, Letter of Credit, Miscellaneous Financial, Legal, Liens and Taking, Engineering, Personnel, and Other Professional Services.

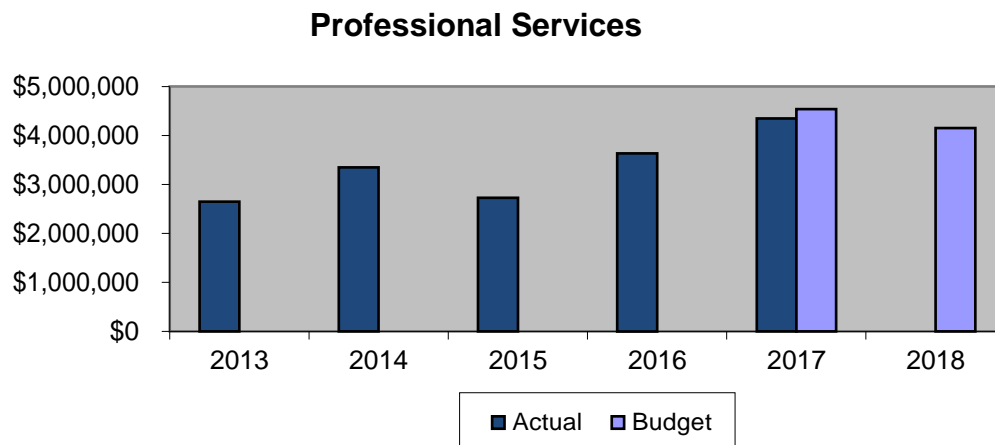
| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 2,649,969 | -4.3% | |
| 2014 | \$ 3,348,408 | 26.4% | |
| 2015 | \$ 2,724,914 | -18.6% | |
| 2016 | \$ 3,634,430 | 33.4% | |
| 2017 | \$ 4,347,614 | 19.6% | Unaudited |
| 2017 | \$ 4,535,270 | | BUDGET |
| 2018 | \$ 4,152,000 | -8.5% | |

Historical Viewpoint

In the year 2000, the Commission awarded a contract to service the pumping stations throughout the City of Boston. These services have been very effective in reducing flooding in various areas of Boston. These services have continued into the present and account for most of the Commission's annual expenses for Professional Services.

Funding

Professional Services are budgeted for \$4.2 million in 2018, which is \$0.4 million or 8.5% less than the 2017 budget.



Space and Equipment Rentals

The Space and Equipment Rentals line item includes funding for Space/Lease Rentals, Copier Leases, and Other Rentals. The funds allocated for this line item are also used for miscellaneous and emergency equipment rental costs.

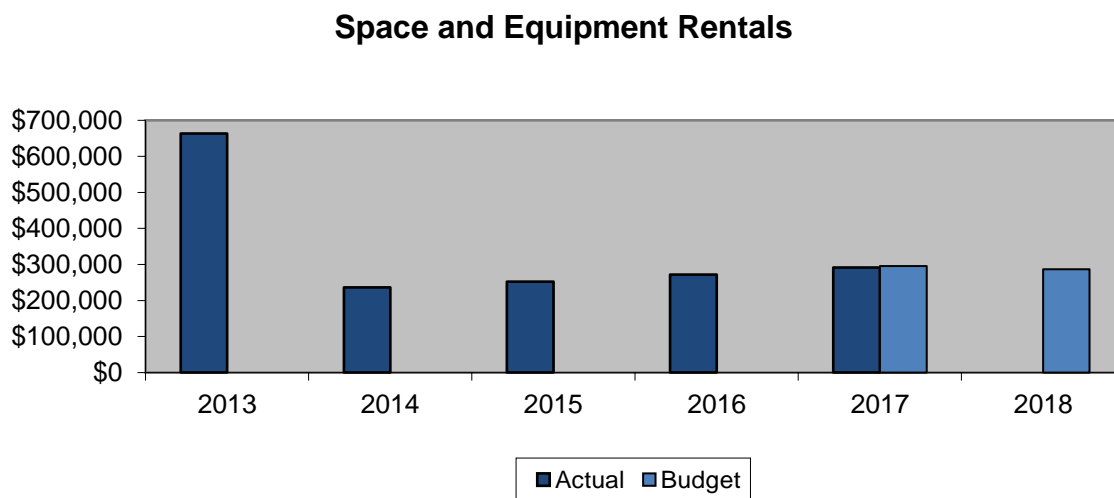
| YEAR | TOTAL | % CHANGE | |
|------|------------|----------|---------------|
| 2013 | \$ 663,354 | 1646.4% | |
| 2014 | \$ 235,693 | -64.5% | |
| 2015 | \$ 251,778 | 6.8% | |
| 2016 | \$ 271,702 | 7.9% | |
| 2017 | \$ 291,500 | 7.3% | Unaudited |
| 2017 | \$ 295,784 | | BUDGET |
| 2018 | \$ 286,664 | -3.1% | |

Historical Viewpoint

The Commission has seen fluctuations in Space and Equipment Rental spending over the last five years due to changing rental needs, but the Commission's rental needs have become more consistent over the last three years and spending has followed that trend. Expenses for 2017 totaled \$291,500.

Funding

Space and Equipment Rentals are budgeted for \$286,664 in 2018. This amount for the 2018 budget is \$9,120 or 3.1% less than the 2017 budget.



Other Services

The Other Services line item includes all non-professional services, such as Printing and Duplication, Memberships/Dues, Subscriptions, Advertising (Public Information, Recruitment, Procurement), Police Details, Facilities Security, Billing, and Miscellaneous Other Services. Private police details are services that are required by law for work performed on the streets of Boston.

| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 1,294,110 | 4.9% | |
| 2014 | \$ 1,506,245 | 16.4% | |
| 2015 | \$ 1,560,224 | 3.6% | |
| 2016 | \$ 1,639,759 | 5.1% | |
| 2017 | \$ 1,895,477 | 15.6% | Unaudited |
| | | | |
| 2017 | \$ 1,944,540 | | BUDGET |
| 2018 | \$ 2,145,250 | 10.3% | |

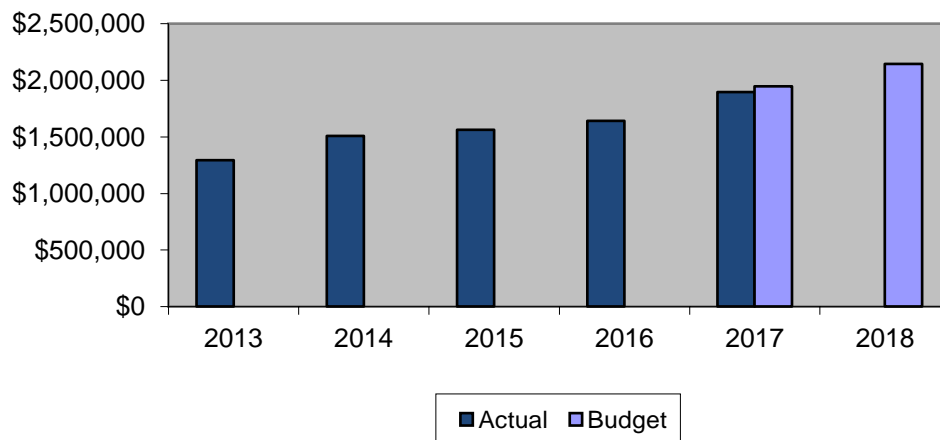
Historical Viewpoint

Expenses for Other Services have gradually increased over the last five years. Expenses equaled \$1.3 million in 2013, \$1.5 million in 2014, \$1.6 million in 2015, \$1.6 million in 2016 and \$1.9 million in 2017. Printing and Duplication, Police Details, Advertising, Facilities Security, and Miscellaneous Other Services are the main components of the annual expenses made by the Commission for Other Services.

Funding

The Commission has allocated \$2.1 million in funds for Other Services in the 2018 budget, which is \$0.2 million or 10.3% more than the 2017 amount.

Other Services



Insurance

The Insurance line item includes funding for Excess Liabilities, Fiduciary Liability, Property/Casualty, Vehicle Insurance, Crime Insurance, and Permit/Bonding.

| YEAR | TOTAL | % CHANGE | | Types of Insurance Coverage | % of Budget |
|------|------------|----------|---------------|-----------------------------|-------------|
| 2013 | \$ 764,915 | 1.1% | | Excess Liabilities | 39.0% |
| 2014 | \$ 629,990 | -17.6% | | Fiduciary Liability | 4.0% |
| 2015 | \$ 533,935 | -15.2% | | Property/Casualty | 12.8% |
| 2016 | \$ 509,104 | -4.7% | | Vehicle | 42.1% |
| 2017 | \$ 514,254 | 1.0% | Unaudited | Crime | 2.1% |
| | | | BUDGET | <u>Permit/Bonding</u> | 0.0% |
| 2017 | \$ 528,409 | | | | 100.0% |
| 2018 | \$ 546,128 | 3.4% | | | |

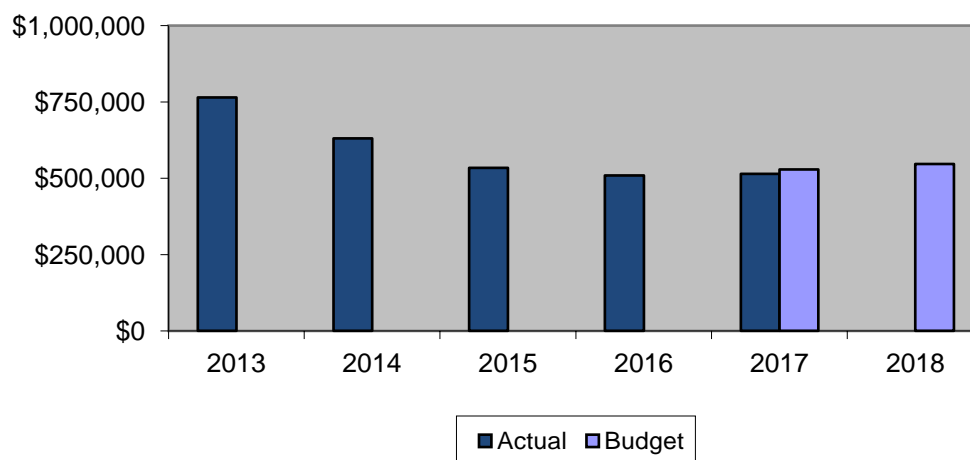
Historical Viewpoint

For Insurance over the last five years, the Commission has expensed \$764,915 in 2013, \$629,990 in 2014, \$533,935 in 2015, \$509,104 in 2016 and \$514,254 in 2017. Future costs are intended to decrease as premiums continue to fluctuate in the market.

Funding

The Insurance line item is budgeted at \$546,128 in 2018. The amount budgeted is \$17,719 or 3.4% more than the previous year. The amount budgeted incorporates rates for five months of actual expenses and seven months of estimated renewals, which begin in June for the next fiscal year thus creating overlapping fiscal years.

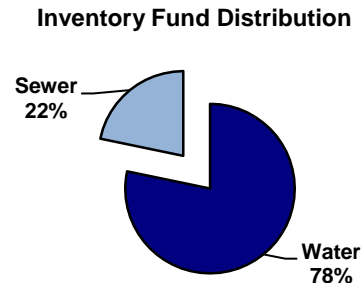
Insurance



Inventory

The Commission's Inventory budget includes funding for water and sewer related items, such as, copper, tubing, gate valves, fittings, and couplings. Also included in this line item are replacement parts for hydrants.

| YEAR | TOTAL | % CHANGE | |
|------|-----------|----------|---------------|
| 2013 | \$ 15,207 | -31.6% | |
| 2014 | \$ 16,759 | 10.2% | |
| 2015 | \$ 10,778 | -35.7% | |
| 2016 | \$ 21,871 | 102.9% | |
| 2017 | \$ 23,000 | 5.2% | Unaudited |
| | | | |
| 2017 | \$ 23,000 | | BUDGET |
| 2018 | \$ 23,000 | 0.0% | |

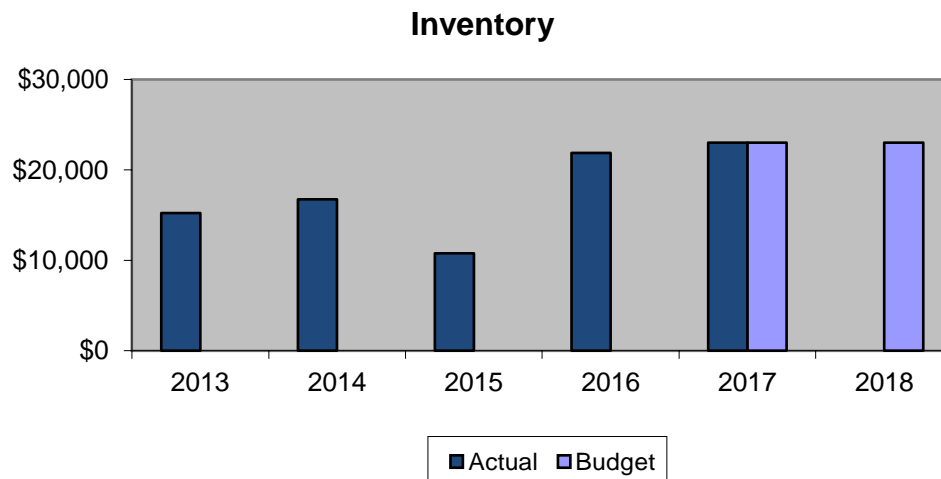


Historical Viewpoint

The Commission reclassified materials that were previously considered inventory into program supplies. Annual expenses for inventory totaled \$15,207 in 2013, \$16,759 in 2014, \$10,778 in 2015, \$21,871 in 2016 and \$23,000 in 2017. The increase in spending for 2016 & 2017 can be attributed to restocking all supplies.

Funding

Funding for inventory in the 2018 budget is \$23,000, which is level funded with the 2017 budget.



Capital Outlay

The Capital Outlay line item includes funding for Office Equipment and Field Equipment.

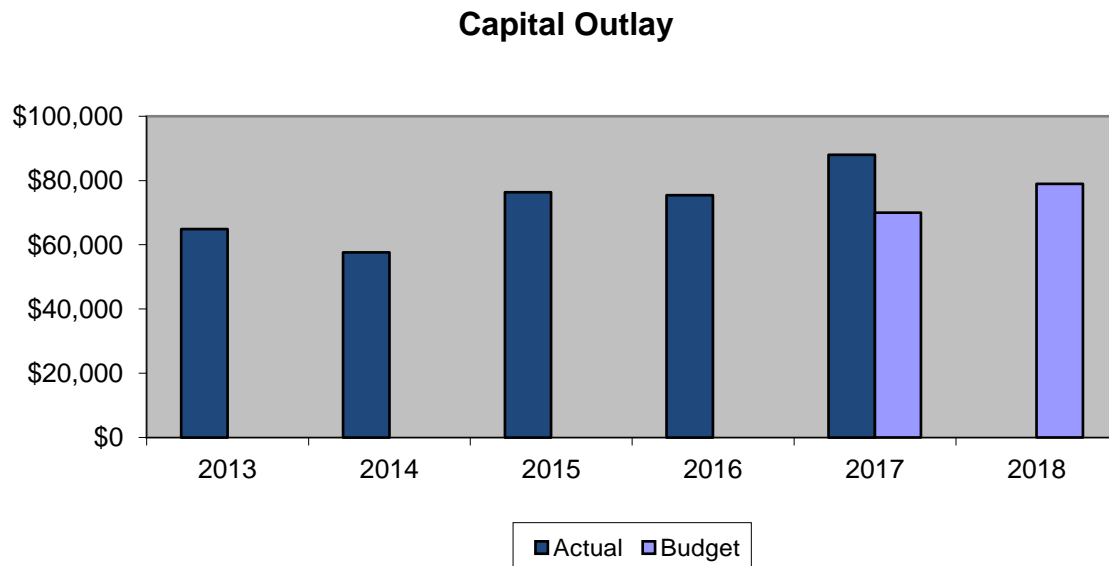
| YEAR | | TOTAL | % CHANGE | |
|------|----|--------|----------|---------------|
| 2013 | \$ | 64,941 | -8.0% | |
| 2014 | \$ | 57,684 | -11.2% | |
| 2015 | \$ | 76,327 | 32.3% | |
| 2016 | \$ | 75,494 | -1.1% | |
| 2017 | \$ | 88,000 | 16.6% | Unaudited |
| | | | | |
| 2017 | \$ | 70,000 | | BUDGET |
| 2018 | \$ | 79,000 | 12.9% | |

Historical Viewpoint

In prior years, the Commission purchased replacement furniture and office equipment. Annual expenses for Capital Outlay totaled \$64,941 in 2013, \$57,684 in 2014, \$76,327 in 2015, \$75,494 in 2016 and \$88,000 in 2017.

Funding

Funding for Capital Outlay in the 2018 budget is \$79,000, which is \$9,000 or 12.9% more than the 2017 budget.



Travel/Training/Seminar

Travel/Training/Seminar is funded in order to provide Commission employees the opportunity to enhance professional development and stay current with the trends in their fields of expertise by attending job-related seminars or training sessions.

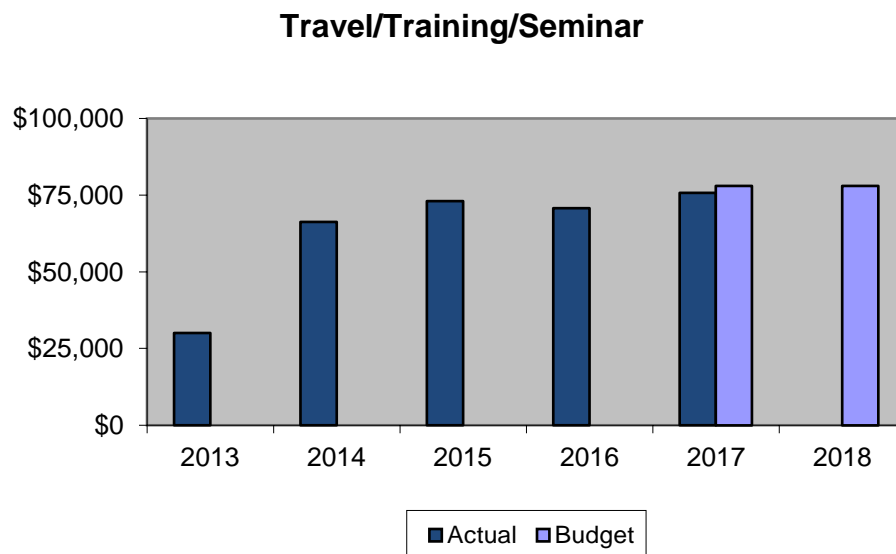
| YEAR | TOTAL | % CHANGE | |
|------|-----------|----------|---------------|
| 2013 | \$ 30,082 | 61.5% | |
| 2014 | \$ 66,283 | 120.3% | |
| 2015 | \$ 73,004 | 10.1% | |
| 2016 | \$ 70,721 | -3.1% | |
| 2017 | \$ 75,705 | 7.0% | Unaudited |
| | | | |
| 2017 | \$ 78,000 | | BUDGET |
| 2018 | \$ 78,000 | 0.0% | |

Historical Viewpoint

Travel/Training/Seminar expenditures totaled \$30,082 in 2013, \$66,283 in 2014, \$73,004 in 2015, \$70,721 in 2016 and \$75,705 in 2017.

Funding

Travel/Training/Seminar is funded at \$78,000 for 2018, which is level funded with the 2017 budget. Monies for Travel/Training/Seminar are distributed amongst the following line items: Local Training/Seminar (\$32,000), Out-of-State Training/Seminar (\$5,000), Local Meeting/Conference (\$16,000), and Out-of-State Conference (\$25,000).



Damage Claims

The Damage Claims line item is budgeted to pay claims sustained against the Commission for personal injury, property damage, or employee liability damages. The Commission's current policy calls for a self-insured retention limit of \$1.0 million per occurrence and \$2.5 million in annual aggregate retention. In addition, damages relating to employee liability are subject to a \$100,000 self-insured retention limit. Claims exceeding \$10,000 are paid from the Insurance Reserve Account.

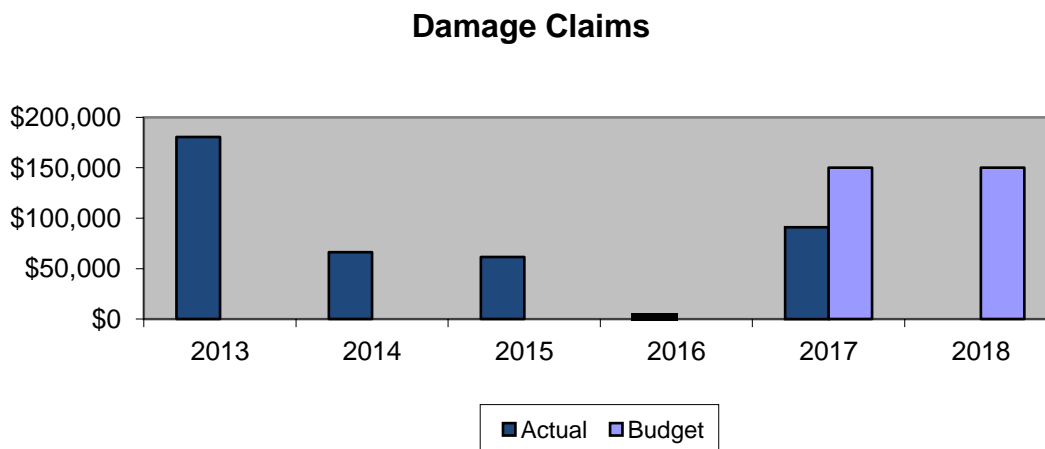
| YEAR | TOTAL | % CHANGE | |
|------|------------|----------|---------------|
| 2013 | \$ 180,699 | 59.0% | |
| 2014 | \$ 66,283 | -63.3% | |
| 2015 | \$ 61,729 | -6.9% | |
| 2016 | \$ 4,850 | -92.1% | |
| 2017 | \$ 91,000 | 1776.3% | Unaudited |
| 2017 | \$ 150,000 | | BUDGET |
| 2018 | \$ 150,000 | 0.0% | |

Historical Viewpoint

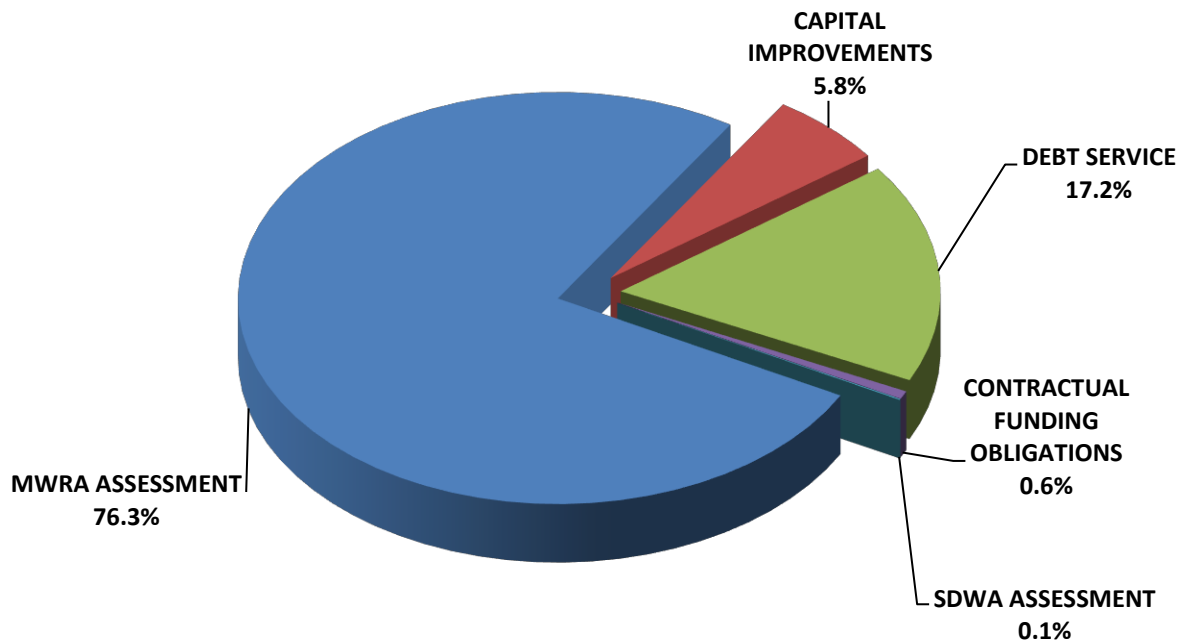
Damage Claims in a given year depend on how many claims are brought against the Commission. Over the past few years, actual expenses have been lower than the correlative budget amounts, which can be attributed to less damages claims being filed against the Commission. Expenses for Damage Claims totaled \$180,699 in 2013, \$66,283 in 2014, \$61,729 in 2015, \$4,850 in 2016 and \$91,000 in 2017.

Funding

Funding for Damage Claims in the 2018 budget is \$150,000, which is level funded with the 2017 budget.



INDIRECT EXPENSES FOR 2018 BUDGET



| | | |
|-------------------------------------|----|----------------|
| MWRA Assessment | \$ | 226,148,398 |
| Capital Improvements | \$ | 17,236,000 |
| Debt Service | \$ | 50,993,290 |
| Contractual Funding | \$ | 1,851,226 |
| SDWA Assessment | \$ | 206,846 |
| Total Indirect Expenses for FY 2018 | | \$ 296,435,760 |

Indirect Expenses: 2018 vs. 2017

The table below displays the breakdown of Indirect Expenses. Variances from the 2018 to the 2017 budget are discussed in the following sections.

| | 2018 Budget | | 2017 Budget | | Variance % |
|----------------------|-------------|-------------|-------------|-------------|------------|
| MWRA Assessment | \$ | 226,148,398 | \$ | 219,125,991 | 3.2% |
| Capital Improvements | \$ | 17,236,000 | \$ | 15,877,000 | 8.6% |
| Debt Service | \$ | 50,993,290 | \$ | 51,095,966 | -0.2% |
| Contractual Funding | \$ | 1,851,226 | \$ | 5,420,347 | -65.8% |
| SDWA Assessment | \$ | 206,846 | \$ | 202,659 | 2.1% |
| TOTAL | \$ | 296,435,760 | \$ | 291,721,963 | 1.6% |

Indirect Expenses – MWRA Assessment

The Commission obtains its water supply and sewer treatment services from the MWRA. The MWRA provides wholesale water and sewer services to 2.5 million people and more than 5,500 large industrial users in 61 metropolitan Boston communities.

Background

On December 19, 1984, Chapter 372 of the Acts of 1984, known as the MWRA Act, was passed by the legislature, creating the MWRA. The MWRA was formed as a body politic and corporate and public instrumentality of the Commonwealth of Massachusetts (“the Commonwealth”). Effective July 1, 1985 the ownership, possession, and control of all personal property comprising the Metropolitan District Commission (“MDC”) water and sewer systems were transferred to the MWRA. It was recognized at that time that the MDC was unable to effectively manage the collection, treatment, and disposal of sewage in the Boston metropolitan area. The MWRA Act made the MWRA responsible for the repair, replacement, rehabilitation, modernization, and extension of the water delivery system and of the sewage collection, disposal, and treatment systems on a self-sustaining basis. The Act also allows for the issuance of bonds and notes to finance any of its corporate activities.

Rates and Charges

The MWRA was empowered to establish charges for its services and commodities without supervision by other agencies or governmental bodies. One of the basic goals achieved by the MWRA Act was the substitution of assessments, or user fees, to the member communities for the prior tax-based system of charges.

The Commission continues to be the single largest customer of the MWRA. For the MWRA fiscal year 2018, the Commission will be assessed \$85.9 million or 41.7% of MWRA total water system charges and \$136.0 million or 39.3% of the MWRA sewer system charges. On a combined basis, the Commission will pay \$221.9 million or 40.2% of the total MWRA combined assessments.

Assessments for water services are calculated by the MWRA based on the metered water use in the calendar year immediately preceding the MWRA fiscal year. The Commission’s water charges for MWRA Fiscal year 2018 total \$85,905,357 based on the Commission’s 2016 calendar year metered water use.

Sewer Assessments allocate operating and maintenance costs based on total metered annual flow and total annual average strength, septage contributions, and high strength flow loads. Septage contributions are allocated based on volume, total suspended solids (“TSS”), and biochemical oxygen demand (“BOD”) loadings. High strength flow loads are generated by those permitted entities whose flows exceed 25,000 gallons per day and whose TSS and/or BOD concentrations exceed 400 milligrams per liter.

Indirect Expenses – MWRA Assessment

The 2018 CEB includes funding for the MWRA Assessments totaling \$226.1 million. Since the MWRA fiscal year begins July 1 each year, the Commission's budgeted amount is based on MWRA rates for two fiscal years.

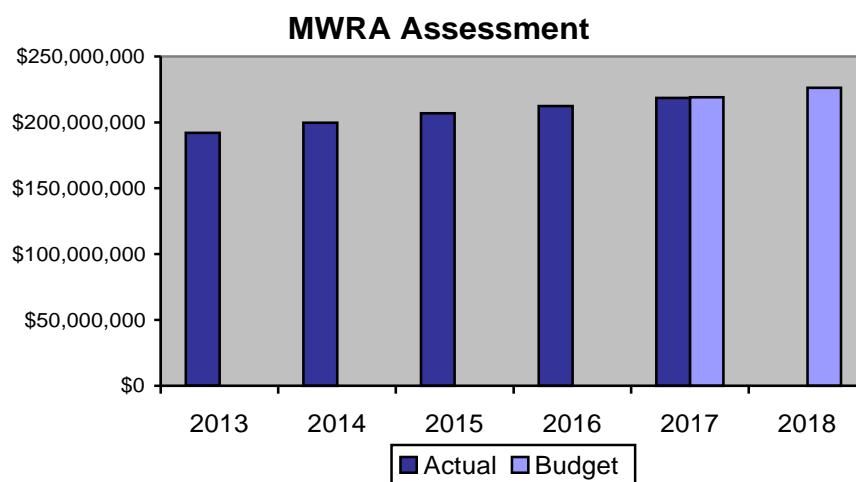
| YEAR | TOTAL | % CHANGE | |
|------|----------------|----------|---------------|
| 2013 | \$ 191,786,231 | 3.7% | |
| 2014 | \$ 199,673,027 | 4.1% | |
| 2015 | \$ 206,839,502 | 3.6% | |
| 2016 | \$ 212,475,077 | 2.7% | |
| 2017 | \$ 218,461,866 | 2.8% | Unaudited |
| 2017 | \$ 219,125,991 | | BUDGET |
| 2018 | \$ 226,148,398 | 3.2% | |

Historical Viewpoint

Expenses for MWRA Assessments have gradually increased in the past five years. Rate increases imposed by the MWRA have contributed to the rising expenditures. Amounts for MWRA Assessments totaled \$191.8 million 2013, \$199.7 million in 2014, and \$206.8 million in 2015, \$212.5 million in 2016 and \$219.1 million in 2017.

Funding

The 2018 Budget for the MWRA Assessment is \$226.1 million, an increase of \$7.0 million or 3.2% from the 2017 Budget. The MWRA and Commission have different fiscal years, thus, the budget for 2018 is based on an increase of 3.2% in MWRA FY18, and a projected 3.8% increase in MWRA FY19.



Indirect Expenses – Capital Improvements

The Commission has an aggressive annual Capital Improvement Program in place to ensure the proper long-term integrity of its water distribution and wastewater collection systems. Capital Improvement expenses represent the costs associated with rate revenue funded projects undertaken in the CIP. In 2012, the Commission began to implement the recommendations made in the Water Distribution System Study. This study recommended that the Commission rehabilitate 11 miles of water mains per year through 2030. The Water Infrastructure Program, which is a grant loan provided by the MWRA, assists the Commission to pay for related projects.

| YEAR | TOTAL | % CHANGE | |
|------|---------------|----------|---------------|
| 2013 | \$ 11,110,952 | -30.8% | |
| 2014 | \$ 8,057,958 | -27.5% | |
| 2015 | \$ 8,939,628 | 10.9% | |
| 2016 | \$ 12,490,025 | 39.7% | |
| 2017 | \$ 14,942,070 | 19.6% | Unaudited |
| 2017 | \$ 15,877,000 | | BUDGET |
| 2018 | \$ 17,236,000 | 8.6% | |

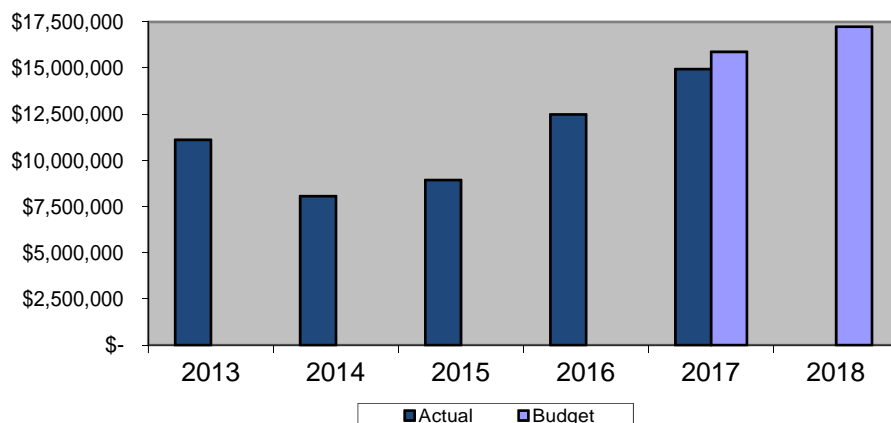
Historical Viewpoint

Costs associated with Capital Improvements have fluctuated during the last five years, but increases have occurred in the previous three years. Expenses have totaled \$11.1 million in 2013, \$8.1 million in 2014, \$8.9 million in 2015, \$12.5 million in 2016 and \$14.9 million in 2017.

Funding

The amount budgeted in 2018 equals \$17.2 million, which is \$1.4 million or 8.6% more than 2017. The amount budgeted annually is based on project detail of new and ongoing water and sewer main rehabilitation projects outlined in the 2017-2019 Capital Improvement Program.

Capital Improvements



Indirect Expenses – Debt Service

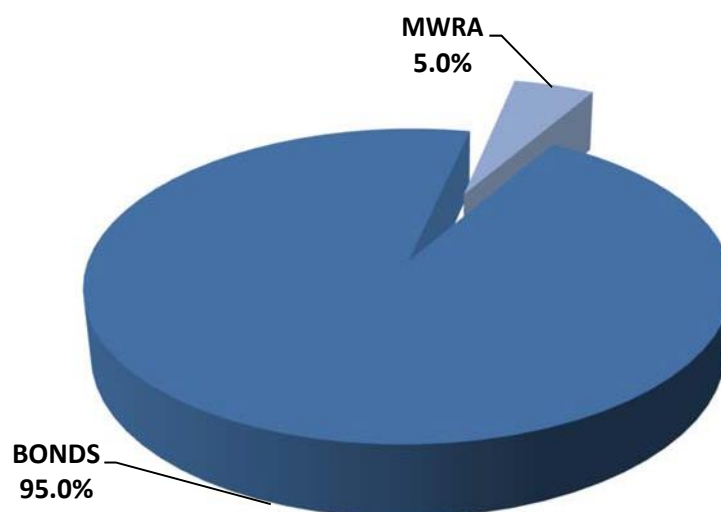
The Commission issues General Revenue Bonds to finance a portion of its Capital Improvement Program. The Commission has \$506.8 million of General Revenue Bonds outstanding with different maturity dates on which there will be required principal and interest payments in 2017. In addition to its debt service obligations associated with General Revenue Bonds, the Commission must pay debt service relating to the MWRA and Massachusetts Abatement Trust Loan and Grant Programs.

| YEAR | TOTAL | % CHANGE | |
|------|---------------|----------|---------------|
| 2013 | \$ 45,815,575 | 4.6% | |
| 2014 | \$ 46,875,435 | 2.3% | |
| 2015 | \$ 48,105,732 | 2.6% | |
| 2016 | \$ 48,099,158 | 0.0% | |
| 2017 | \$ 50,344,971 | 4.7% | Unaudited |
| 2017 | \$ 51,095,966 | | BUDGET |
| 2018 | \$ 50,993,290 | -0.2% | |

Historical Viewpoint

In 2015, the Commission issued \$72.8 million in general revenue bonds and a partial refunding of the 2009 and 2010 Series A Bonds, to realize a net present value savings of \$5.4 million. In 2016, the Commission issued \$145.1 million in general revenue bonds and a partial refunding of the 2009 and 2010 Series A Bonds, to realize a net present value savings of \$9.1 million. In 2018, the Commission will issue \$78.4 million in general revenue bonds.

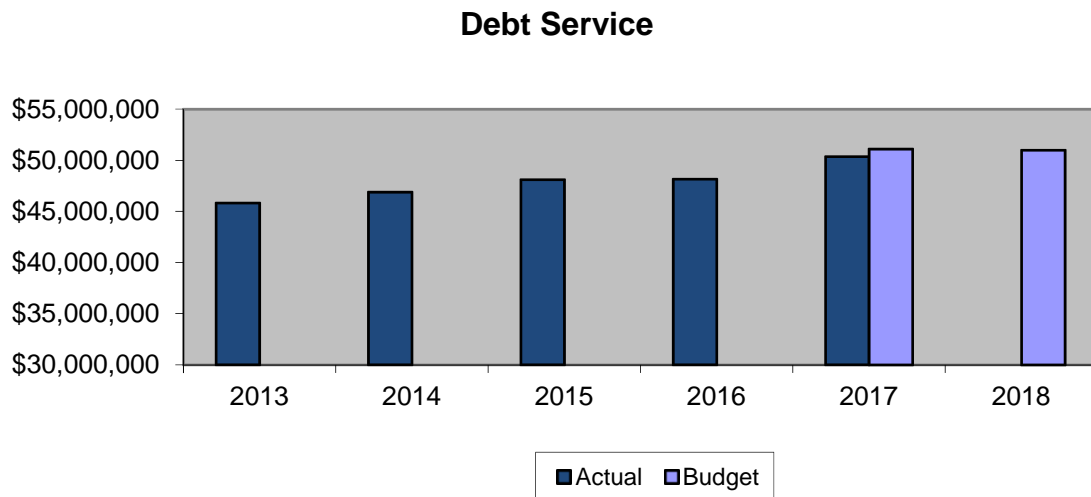
Outstanding Debt



Indirect Expenses – Debt Service

Funding

Funding for Debt Service is set at \$51.0 million for 2018, which is \$102,676 or 0.2% less than 2017. The budget anticipates variable rate debt at 4.0%. The amount budgeted incorporates principal and interest payments on \$593.1 million, which consists of \$563.5 million Senior Debt and \$29.6 million MWRA loans.



Indirect Expenses – Debt Service

Current outstanding debt includes the following General Revenue Bonds:

| | |
|---------------------------------|--------------------------------|
| 1993 Series A = \$13.4 million | 2014 Series A = \$99.9 million |
| 1994 Series A = \$16.8 million | 2015 Series A = \$72.8 million |
| 2009 Series A = \$9.5 million | 2016 Series A = \$60.2 million |
| 2009 Series B = \$20.5 million | 2016 Series B = \$84.5 million |
| 2010 Series A = \$5.6 million | 2018 Series A = \$78.4 million |
| 2012 Series A = \$102.2 million | |

| 2018 Debt Service | | | | |
|------------------------------|----------------------|-----------|-------------------|----------------------|
| | INTEREST | | PRINCIPAL | TOTAL |
| 1993 Series A (Senior) | \$ 701,400 | \$ | 8,205,000 | \$ 8,906,400 |
| 1994 Series A (Senior) | \$ 665,333 | \$ | 2,000,000 | \$ 2,665,333 |
| 2009 Series A (Senior) | \$ 429,438 | \$ | 4,380,000 | \$ 4,809,438 |
| 2009 Series B (Senior) | \$ 985,350 | \$ | 4,635,000 | \$ 5,620,350 |
| 2010 Series A (Senior) | \$ 256,600 | \$ | - | \$ 256,600 |
| 2012 Series A (Senior) | \$ 4,384,424 | \$ | 2,795,000 | \$ 7,179,424 |
| 2014 Series A (Senior) | \$ 3,694,250 | \$ | 100,000 | \$ 3,794,250 |
| 2015 Series A (Senior) | \$ 3,461,550 | \$ | - | \$ 3,461,550 |
| 2016 Series A (Senior) | \$ 2,757,550 | \$ | - | \$ 2,757,550 |
| 2016 Series B (Senior) | \$ 3,270,300 | \$ | 500,000 | \$ 3,770,300 |
| 2018 Series A (Senior) | \$ 2,078,357 | | | \$ 2,078,357 |
| Total of Senior Bonds | \$ 22,684,552 | \$ | 22,615,000 | \$ 45,299,552 |
| SRF Debt Service | \$ - | \$ | - | \$ - |
| MWRA I/I | \$ - | \$ | 898,426 | \$ 898,426 |
| MWRA PAP | \$ - | \$ | 1,690,840 | \$ 1,690,840 |
| MWRA SAP | \$ - | \$ | 3,104,471 | \$ 3,104,471 |
| | \$ - | \$ | 5,693,737 | \$ 5,693,737 |
| Total Debt Service | \$ 22,684,552 | \$ | 28,308,737 | \$ 50,993,289 |

Indirect Expenses – Debt Service

MWRA PAP is the Water Pipeline Assistance Program, an interest free loan implemented in September 1999.

- MWRA I/I includes two phases

| | INTEREST | PRINCIPAL | TOTAL |
|---------|----------|------------|------------|
| PHASE 8 | \$ - | \$ 543,766 | \$ 543,766 |
| PHASE 9 | \$ - | \$ 354,660 | \$ 354,660 |
| | \$ - | \$ 898,426 | \$ 898,426 |

- MWRA includes SAP and PAP

| | INTEREST | PRINCIPAL | TOTAL |
|-----|----------|--------------|--------------|
| SAP | \$ - | \$ 3,104,471 | \$ 3,104,471 |
| PAP | \$ - | \$ 1,690,840 | \$ 1,690,840 |
| | \$ - | \$ 4,795,311 | \$ 4,795,311 |

Indirect Expenses – Contractual Funding Obligations

The Commission, as required by its Bond Resolution, maintains an Operating Reserve Fund, a Renewal and Replacement Reserve Fund, an Insurance Reserve Fund, and Stabilization Fund. The Contractual Funding Obligation line item represents mandated funding of all of these funds. The Commission is annually required to maintain a balance in the Operating Reserve Fund an amount equal to one-sixth of the Commission's operating and maintenance expenses and the accrued MWRA Assessments for that year.

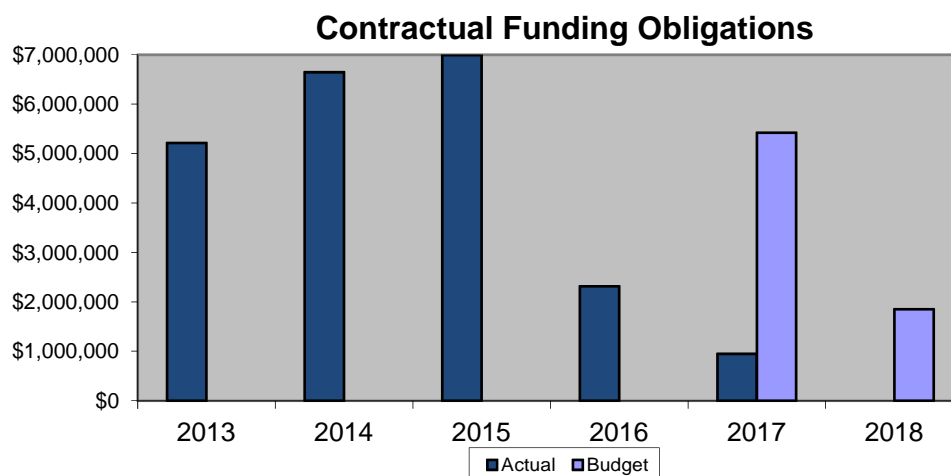
| YEAR | TOTAL | % CHANGE | |
|------|--------------|----------|---------------|
| 2013 | \$ 5,211,606 | 1432.8% | |
| 2014 | \$ 6,643,000 | 27.5% | |
| 2015 | \$ 6,990,000 | 5.2% | |
| 2016 | \$ 2,313,000 | -66.9% | |
| 2017 | \$ 945,000 | -59.1% | Unaudited |
| 2017 | \$ 5,420,347 | | BUDGET |
| 2018 | \$ 1,851,226 | -65.8% | |

Historical Viewpoint

Contractual Funding Obligations have totaled \$5.2 million in 2013, \$6.6 million in 2014, \$7.0 million in 2015, \$2.3 million in 2016 and \$0.9 million in 2017. Changes in spending can be attributed to different monthly deposit amount requirements by year per the Bond Resolution.

Funding

The amount funded for Contractual Funding Obligations in the 2018 budget is \$1.9 million, which is a decrease of \$3.6 million from the 2017 budget. Changes in spending can be attributed to different monthly deposit amount requirements by year per the Bond Resolution.



Indirect Expenses – Safe Drinking Water Act Assessment

The Safe Drinking Water Act (“SDWA”) Assessment line item was established as a result of a federal mandate. Massachusetts has opted to oversee the implementation of the SDWA throughout the Commonwealth (“Primacy”). A funding mechanism for Primacy was approved by the Legislature in 1993 that entails an assessment to all water suppliers.

| YEAR | TOTAL | % CHANGE | |
|------|------------|----------|---------------|
| 2013 | \$ 200,761 | -2.0% | |
| 2014 | \$ 200,249 | -0.3% | |
| 2015 | \$ 198,327 | -1.0% | |
| 2016 | \$ 195,452 | -1.4% | |
| 2017 | \$ 202,659 | 3.7% | Unaudited |
| 2017 | \$ 202,659 | | BUDGET |
| 2018 | \$ 206,846 | 2.1% | |

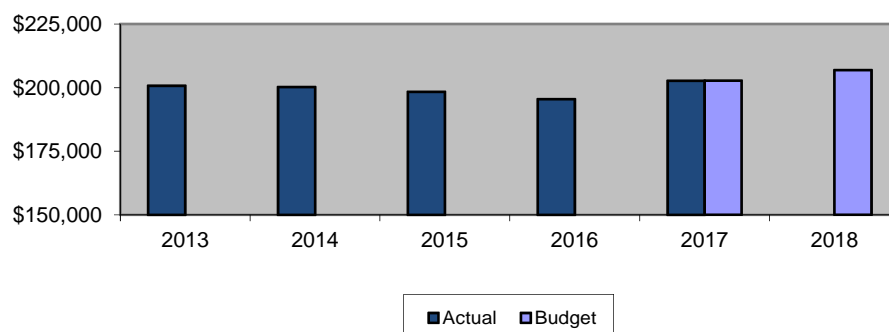
Historical Viewpoint

The SDWA Assessment is based upon the volume of water purchased during the previous calendar year. Declining water purchases have caused the SDWA Assessment to diminish over the last five years realizing amounts of \$200,761 in 2013, \$200,249 in 2014, \$198,327 in 2015, \$195,452 in 2016 and \$202,659 in 2017.

Funding

The 2018 budget for the Safe Drinking Water Act Assessment is \$206,846, which is an increase of 2.1% from the 2017 budget. Massachusetts opted to oversee the implementation of the SDWA throughout the Commonwealth; the Legislature approved a funding mechanism that entails an assessment to all water suppliers. This assessment is calculated at \$0.0085 per thousand gallons of water purchased to offset expenses incurred by the Department of Environmental Protection, which includes monitoring, inspection, and enforcement of activities.

SDWA Assessment



Fund Balances

The statements of net assets provide the information on the assets and liabilities of the Commission, with net assets (deficits) reported as the difference between assets and liabilities. Condensed financial information for the three most recent fiscal years is presented below.

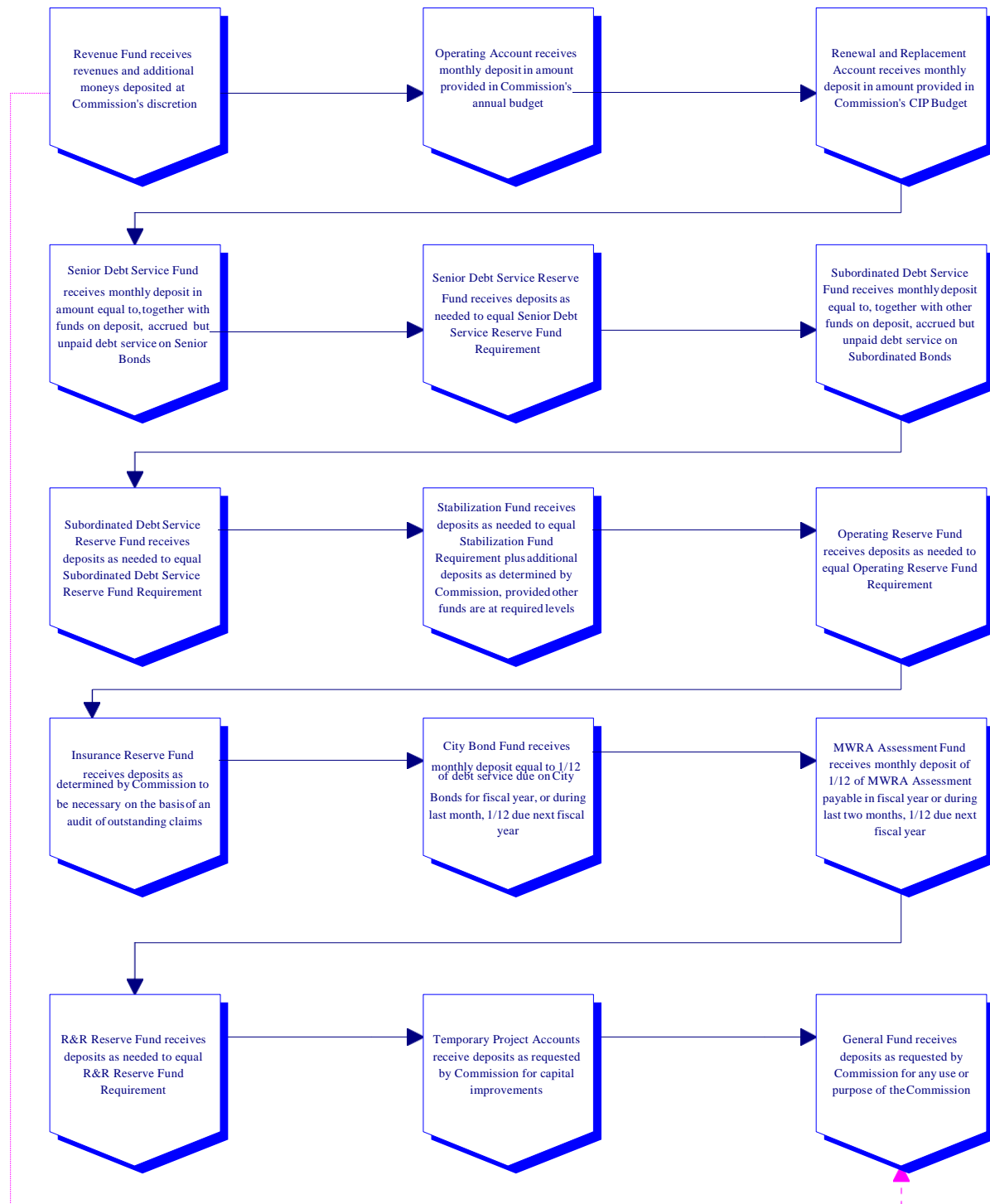
| | 2014 | 2015 | 2016 |
|----------------------------|----------------------|----------------------|----------------------|
| Current Assets | 58,200,951 | 57,638,267 | 58,655,277 |
| Capital Net Assets | 1,256,782,012 | 1,302,177,235 | 1,337,351,263 |
| Other Assets | <u>237,848,686</u> | <u>229,384,295</u> | <u>260,419,706</u> |
| Total Assets | 1,552,831,649 | 1,589,199,797 | 1,656,426,246 |
| Current Liabilities | 60,148,576 | 93,965,789 | 64,381,510 |
| Noncurrent Liabilities | <u>529,401,854</u> | <u>520,902,941</u> | <u>575,091,806</u> |
| Total Liabilities | 589,550,430 | 614,868,730 | 639,473,316 |
| Net Assets | | | |
| Invested in Capital Assets | 785,722,222 | 764,282,627 | 755,338,577 |
| Restricted Net Assets | 96,275,938 | 100,160,909 | 103,781,403 |
| Unrestricted Net Deficits | <u>(509,209,599)</u> | <u>(473,792,441)</u> | <u>(465,829,076)</u> |
| Total Net Assets | 372,788,561 | 390,651,095 | 393,290,904 |

The Commission's Resolution required the establishment of the following funds and accounts shown below in the table presented. The table below illustrates historic and projected year-end balances for these funds. Further details on each individual fund follow.

| Fund | Actual 2013 | Actual 2014 | Actual 2015 | Actual 2016 | Unaudited 2017 | Projected 2018 |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Revenue | \$ 2,343,419 | \$ 2,152,517 | \$ 10,596,116 | \$ 5,243,028 | \$ 1,312,119 | \$ 743,758 |
| Operating & Maintenance | \$ 6,283,782 | \$ 4,125,992 | \$ 6,691,893 | \$ 7,540,407 | \$ 8,309,450 | \$ 8,309,450 |
| Sr. Debt Service | \$ 6,206,141 | \$ 6,204,802 | \$ 6,674,279 | \$ 7,147,627 | \$ 7,352,098 | \$ 7,481,207 |
| Sr. Debt Service Reserve | \$ 37,898,563 | \$ 41,486,024 | \$ 41,667,576 | \$ 44,213,737 | \$ 44,287,889 | \$ 47,287,889 |
| Operating Reserve | \$ 41,854,970 | \$ 43,909,711 | \$ 46,550,354 | \$ 47,005,939 | \$ 48,384,732 | \$ 49,895,732 |
| Insurance Reserve | \$ 3,535,121 | \$ 1,757,906 | \$ 1,559,564 | \$ 1,211,674 | \$ 1,176,698 | \$ 1,176,698 |
| MWRA | \$ 16,206,845 | \$ 16,811,964 | \$ 18,519,213 | \$ 18,840,880 | \$ 19,331,272 | \$ 19,431,530 |
| R & R Reserve | \$ 3,362,444 | \$ 3,863,999 | \$ 3,312,223 | \$ 3,805,716 | \$ 4,001,323 | \$ 4,340,323 |
| General | \$ 1,656,384 | \$ 1,711,470 | \$ 2,309,163 | \$ 2,370,616 | \$ 1,877,471 | \$ 1,877,471 |
| Stabilization | \$ 54,975,935 | \$ 59,130,129 | \$ 64,956,984 | \$ 66,766,960 | \$ 63,825,541 | \$ 59,675,350 |
| Total | \$ 174,323,604 | \$ 181,154,514 | \$ 202,837,364 | \$ 204,146,583 | \$ 199,858,594 | \$ 200,219,408 |

➔ NOTE: None of the Commission Funds are subject to appropriation

Flow of Funds



Revenue Fund

The Commission's Bond Resolution establishes funds dedicated to the payment of certain obligations of the Commission. In accordance with the Commission's Bond Resolution, all reserves (except certain sale, insurance and condemnation proceeds and certain investment earnings) are deposited in the Revenue Fund, which is held by the Commission's trustee. The Bond Resolution provides that the Trustee make monthly transfers from the Revenue Fund to the other funds and accounts as directed and required.

The Commission projects that in 2018, \$367.5 million will be deposited and \$368.1 million will be withdrawn from the Revenue Fund. The net of these transactions will produce a year-end balance of \$0.7 million. The transactions are summarized in the table below.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|----------------|------------------|----------------|
| 2013 | \$ 983,166 | \$ 313,317,253 | \$ (311,957,000) | \$ 2,343,419 |
| 2014 | \$ 2,343,419 | \$ 321,348,099 | \$ (321,539,001) | \$ 2,152,517 |
| 2015 | \$ 2,152,517 | \$ 345,971,599 | \$ (337,528,000) | \$ 10,596,116 |
| 2016 | \$ 10,596,116 | \$ 358,025,911 | \$ (363,379,000) | \$ 5,243,028 |
| 2017 | \$ 5,243,028 | \$ 358,235,091 | \$ (362,166,000) | \$ 1,312,119 |
| 2018 | \$ 1,312,119 | \$ 367,523,003 | \$ (368,091,364) | \$ 743,758 |

2017 Figures are Unaudited
2018 Figures are Projected

→ Deposits include:

- Water and Sewer Receipts
- Interest income earned from Revenue Fund
- Liens
- Write-off recovery
- Fees collected for special services
- Interest income transferred from other funds

→ Withdrawals include transfers to other funds

Operating and Maintenance Fund

Deposits are made into the Operating and Maintenance Fund at the end of each month for the following month as provided for in the annual budget. The monies deposited into this fund are used to pay for the Commission's day-to-day expenditures such as wages and salaries and payments to vendors for goods and services received. Department heads are required on a monthly basis to inform the Treasury Services Department of any unforeseen expenditures so that the Operating Account deposit can be modified based on the revised expenditure plan.

As illustrated below, the Commission projects that in 2018, \$170.2 million will be deposited and \$170.2 million will be withdrawn, resulting in an ending balance of \$8.3 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|----------------|------------------|----------------|
| 2013 | \$ 5,585,414 | \$ 158,938,036 | \$ (158,239,668) | \$ 6,283,782 |
| 2014 | \$ 6,283,782 | \$ 165,427,531 | \$ (167,585,321) | \$ 4,125,992 |
| 2015 | \$ 4,125,992 | \$ 171,111,659 | \$ (168,545,758) | \$ 6,691,893 |
| 2016 | \$ 6,691,893 | \$ 188,441,781 | \$ (187,593,267) | \$ 7,540,407 |
| 2017 | \$ 7,540,407 | \$ 203,287,061 | \$ (202,518,018) | \$ 8,309,450 |
| 2018 | \$ 8,309,450 | \$ 170,194,341 | \$ (170,194,341) | \$ 8,309,450 |

2017 Figures are Unaudited

2018 Figures are Projected

Senior Debt Service Fund

The Senior Debt Service Fund provides for the payment of debt service on senior bonds. Deposits are made monthly in equal amounts, together with funds already on deposit, which are sufficient to meet scheduled debt service payments for a given year.

The Commission projects a beginning balance of \$7.4 million in 2018. Deposits made in 2018 are projected to be \$45.4 million and amounts withdrawn are projected to total \$45.3 million, resulting in a projected ending balance of \$7.5 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|---------------|-----------------|----------------|
| 2013 | \$ 5,785,112 | \$ 35,842,140 | \$ (35,421,111) | \$ 6,206,141 |
| 2014 | \$ 6,206,141 | \$ 36,442,349 | \$ (36,443,688) | \$ 6,204,802 |
| 2015 | \$ 6,204,802 | \$ 39,437,017 | \$ (38,967,540) | \$ 6,674,279 |
| 2016 | \$ 6,674,279 | \$ 39,716,473 | \$ (39,243,125) | \$ 7,147,627 |
| 2017 | \$ 7,147,627 | \$ 42,850,635 | \$ (42,646,165) | \$ 7,352,098 |
| 2018 | \$ 7,352,098 | \$ 45,428,662 | \$ (45,299,553) | \$ 7,481,207 |

2017 Figures are Unaudited
2018 Figures are Projected

➔ Deposits represent:

- Transfers from the Revenue Fund
- Amounts escrowed to pay debt service
- Interest income received on the Senior Debt Service Fund
- Interest earned is not transferred to Revenue Fund

➔ Withdrawals represent actual senior debt service payments

Senior Debt Service Reserve Funds

The Senior Debt Service Reserve Funds are maintained at a level sufficient to meet the respective requirements as outlined in the Bond Resolution. These funds are to be used in the event there are insufficient funds in the respective debt service funds. The requirement for each account is equal to the total maximum aggregate amount of principal and interest becoming due in any fiscal year for fixed rate bonds plus the maximum aggregate amount of principal and interest becoming due in any fiscal for variable rate bonds.

The 2018 beginning balance is projected at \$44.3 million. The projected deposit for 2018 is \$3.8 million, and the projected withdrawal is \$0.8 million, resulting in an ending balance of \$47.3 million. Regarding the 2018 deposit amount, a supplementary \$3 million was added to the projected interest earned due to the upcoming 2018 Series A Bond Issuance of \$78.4 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|--------------|----------------|----------------|
| 2013 | \$ 37,837,705 | \$ 1,260,858 | \$ (1,200,000) | \$ 37,898,563 |
| 2014 | \$ 37,898,563 | \$ 4,662,461 | \$ (1,075,000) | \$ 41,486,024 |
| 2015 | \$ 41,486,024 | \$ 1,206,551 | \$ (1,025,800) | \$ 41,667,575 |
| 2016 | \$ 41,667,575 | \$ 3,981,162 | \$ (1,435,000) | \$ 44,213,737 |
| 2017 | \$ 44,213,737 | \$ 1,264,153 | \$ (1,190,000) | \$ 44,287,889 |
| 2018 | \$ 44,287,889 | \$ 3,775,038 | \$ (775,038) | \$ 47,287,889 |

2017 Figures are Unaudited

2018 Figures are Projected

- ➔ Deposits to the Senior Debt Service Reserve represents:
 - Interest Income received on the fund
 - Additional monthly accruals deposited
- ➔ Any excess reserve gets transferred to the Revenue Fund
- ➔ Reserve Requirement is equal to \$46,681,463
- ➔ In the Reserve Fund is \$44,287,889 cash and \$7,168,001 in a surety policy
- ➔ Assets valued at amortized cost

Operating Reserve Fund

The Operating Reserve Fund receives deposits as needed to meet the requirements outlined in the Bond Resolution. The purpose of the Operating Reserve Fund is to provide funds if at any time the amount on deposit in the Operating Account is insufficient to meet operating expenses that are payable, or if there are insufficient funds in the MWRA Assessment Fund to pay the MWRA charges due. The Operating Reserve Fund requirement is equal to one-sixth, or two months of the Commission's projected annual operating expenses and MWRA charges.

The Commission's beginning balance in 2018 is projected to be \$48.4 million. The Commission projects deposits to equal \$2.4 million and withdrawals to equal \$0.8 million resulting in a year end balance projection of \$49.9 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|--------------|--------------|----------------|
| 2013 | \$ 41,488,344 | \$ 816,626 | \$ (450,000) | \$ 41,854,970 |
| 2014 | \$ 41,854,970 | \$ 2,054,741 | \$ - | \$ 43,909,711 |
| 2015 | \$ 43,909,711 | \$ 2,640,643 | \$ - | \$ 46,550,354 |
| 2016 | \$ 46,550,354 | \$ 1,155,585 | \$ (700,000) | \$ 47,005,939 |
| 2017 | \$ 47,005,939 | \$ 1,778,793 | \$ (400,000) | \$ 48,384,732 |
| 2018 | \$ 48,384,732 | \$ 2,357,733 | \$ (846,733) | \$ 49,895,732 |

2017 Figures are Unaudited

2018 Figures are Projected

- ➔ Withdrawals represent transfers of earned interest to the Revenue Fund
 - Withdrawals equals any excess reserves

- ➔ 2018 Requirement equals one-sixth of the MWRA Assessment plus one-sixth of the Direct Expenses

Insurance Reserve Fund

The Insurance Reserve Fund receives deposits as required to maintain the balance at a level sufficient to cover the costs of pending claims against the Commission, as certified annually by the Commission's insurance consultant.

Currently, the Commission utilizes the Insurance Reserve Fund to pay all damage claims in excess of \$10,000. Deposits in 2018 are projected for \$5,883 and the withdrawal amount is projected for \$5,883, resulting in a projected ending balance of \$1.2 million for 2018.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|----------|----------------|----------------|
| 2013 | \$ 5,931,028 | \$ 4,093 | \$ (2,400,000) | \$ 3,535,121 |
| 2014 | \$ 3,535,121 | \$ 2,785 | \$ (1,780,000) | \$ 1,757,906 |
| 2015 | \$ 1,757,906 | \$ 1,658 | \$ (200,000) | \$ 1,559,564 |
| 2016 | \$ 1,559,564 | \$ 2,110 | \$ (350,000) | \$ 1,211,674 |
| 2017 | \$ 1,211,674 | \$ 5,024 | \$ (40,000) | \$ 1,176,698 |
| 2018 | \$ 1,176,698 | \$ 5,883 | \$ (5,883) | \$ 1,176,698 |

2017 Figures are Unaudited

2018 Figures are Projected

➔ Deposits reflect interest income received on Insurance Reserve Fund

➔ Withdrawals represent interest income transferred to the Revenue Fund

MWRA Assessment Fund

The MWRA Assessment Fund receives monthly deposits of one-twelfth of the MWRA Assessment payable in a given fiscal year. Scheduled payments are made monthly in ten equal monthly payments (excluding January and July) to satisfy the MWRA's wholesale water and sewer charges.

The ending balance in 2017 equals \$19.3 million. The ending balance in 2017 is the beginning balance projected in 2018. Deposits in 2018 are projected for \$226.2 million and the withdrawal amount is projected for \$226.1 million, resulting in an ending balance of \$19.4 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|----------------|------------------|----------------|
| 2013 | \$ 16,413,754 | \$ 191,579,322 | \$ (191,786,231) | \$ 16,206,845 |
| 2014 | \$ 16,206,845 | \$ 200,278,145 | \$ (199,673,026) | \$ 16,811,964 |
| 2015 | \$ 16,811,964 | \$ 208,546,751 | \$ (206,839,502) | \$ 18,519,213 |
| 2016 | \$ 18,519,213 | \$ 212,796,744 | \$ (212,475,077) | \$ 18,840,880 |
| 2017 | \$ 18,840,880 | \$ 218,952,258 | \$ (218,461,866) | \$ 19,331,272 |
| 2018 | \$ 19,331,272 | \$ 226,248,656 | \$ (226,148,398) | \$ 19,431,530 |

2017 Figures are Unaudited

2018 Figures are Projected

➔ Deposits represent

- Transfers from the Revenue Fund
- Interest income

➔ Withdrawals reflect

- Payments to the MWRA
- Transfers of Interest Income to the Revenue Fund

Renewal and Replacement Reserve Fund

The Renewal and Replacement (“R & R”) Reserve Fund is intended to provide additional funds for R & R projects if there are insufficient funds in the Renewal and Replacement Account to pay for these projects. In addition, this fund may also be used to pay debt service if certain other funds are insufficient to meet this purpose. The requirement for this fund is 25% of the budgeted R & R expenditures for the year.

The Commission projects \$4.0 million for its beginning balance in 2018. Deposits for 2018 are projected at \$0.4 million and withdrawals at \$70,023 resulting in an ending balance of \$4.3 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|------------|--------------|----------------|
| 2013 | \$ 3,508,534 | \$ 28,910 | \$ (175,000) | \$ 3,362,444 |
| 2014 | \$ 3,362,444 | \$ 501,555 | \$ - | \$ 3,863,999 |
| 2015 | \$ 3,863,999 | \$ 148,224 | \$ (700,000) | \$ 3,312,223 |
| 2016 | \$ 3,312,223 | \$ 493,493 | \$ - | \$ 3,805,716 |
| 2017 | \$ 3,805,716 | \$ 195,608 | \$ - | \$ 4,001,323 |
| 2018 | \$ 4,001,323 | \$ 409,023 | \$ (70,023) | \$ 4,340,323 |

2017 Figures are Unaudited
2018 Figures are Projected

- ➔ Deposits represent interest earned
- ➔ Withdrawals reflect interest transfers to the Revenue Fund
- ➔ Fully funded at the beginning of year

General Fund

Deposits to the General Fund must occur on the last business day of the year and may be held and applied by the Commission for any use or purpose. The Commission is currently using the General Fund as a repository for the funds, which are required to satisfy the Commission's obligation to the Massachusetts Pollution Abatement Trust.

As illustrated below, the December 2017 year-end balance equals \$1.9 million, which represents the projected 2018 beginning balance. The amount projected to be deposited in 2018 equals \$32,856 and the amount withdrawn is projected to equal \$32,856, resulting in a projected ending balance of \$1.9 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|--------------|----------------|----------------|
| 2013 | \$ 1,674,501 | \$ 1,536,228 | \$ (1,554,345) | \$ 1,656,384 |
| 2014 | \$ 1,656,384 | \$ 1,117,259 | \$ (1,062,173) | \$ 1,711,470 |
| 2015 | \$ 1,711,470 | \$ 1,674,325 | \$ (1,076,632) | \$ 2,309,163 |
| 2016 | \$ 2,309,163 | \$ 605,485 | \$ (544,032) | \$ 2,370,616 |
| 2017 | \$ 2,370,616 | \$ 56,600 | \$ (549,745) | \$ 1,877,471 |
| 2018 | \$ 1,877,471 | \$ 32,856 | \$ (32,856) | \$ 1,877,471 |

2017 Figures are Unaudited
2018 Figures are Projected

- ➔ Deposits reflect
 - Transfers from Revenue Fund
 - Interest Income

- ➔ Deposits into General Fund incorporate any expenses for SRF loans in the following year

- ➔ Withdrawals represent
 - Principal and Interest payments on loans to Massachusetts Pollution Abatement Trust

Stabilization Fund

The Rate Stabilization Fund, as established in the Bond Resolution, is to be used to minimize the rate impact of extraordinary cost increases, such as large increases in the MWRA Assessments to the Commission; or significant increases in interest rates on the Commission's variable rate debt. The Stabilization Fund Requirement is defined in the Resolution as an amount equal to 4% of the aggregate principal amount of Outstanding Variable Rate Bonds (referred to as the "Stabilization Fund Resolution Requirement"). The Resolution also provides discretion to the Commission to make additional deposits to the Stabilization Fund and to withdraw amounts as needed to fund Commission expenses.

Currently, the Commission policy, which was amended in December 2000, further states that the amount on deposit in the Stabilization Fund shall equal the greater of the Rate Stabilization Fund Resolution Requirement or 10% of the previous fiscal year's net-billed charges. If at the start of the fiscal year the balance of the Rate Stabilization Fund is projected to exceed such requirements then the Commission on the last business day of the current fiscal year may transfer to the Revenue Fund an amount up to the greater of 20% of such excess or \$20 million, but in either case, an amount not to exceed \$20 million in any one fiscal year.

The Commission has been very aggressive in managing the funding and utilization of the Rate Stabilization Fund to have the greatest impact of future rate mitigation. The recent amendment to the policy ensures that funds withdrawn at a sensible pace that mitigates sharp ratepayer increases and permits the availability of the surplus balance for future fiscal years.

The Commission projects the 2018 year-end balance to equal \$59.7 million.

| | Begin Balance | Deposits | Withdrawals | Ending Balance |
|------|---------------|--------------|----------------|----------------|
| 2013 | \$ 50,763,028 | \$ 5,212,907 | \$ (1,000,000) | \$ 54,975,935 |
| 2014 | \$ 54,975,935 | \$ 5,804,194 | \$ (850,000) | \$ 59,930,129 |
| 2015 | \$ 59,930,129 | \$ 5,776,855 | \$ (750,000) | \$ 64,956,984 |
| 2016 | \$ 64,956,984 | \$ 2,779,976 | \$ (970,000) | \$ 66,766,960 |
| 2017 | \$ 66,766,960 | \$ 1,003,581 | \$ (3,945,000) | \$ 63,825,541 |
| 2018 | \$ 63,825,541 | \$ 1,152,672 | \$ (5,302,863) | \$ 59,675,350 |

2017 Figures are Unaudited

2018 Figures are Projected

- ➔ Deposits represent transfers from the Revenue Fund plus Interest Income
- ➔ Withdrawals reflect transfers to other Commission funds
- ➔ Commission has solicited the Board of Commissioners to modify the policy on Rate Stabilization so that future anticipated increases might be gradually implemented

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The Commission

Commission Organization

The Boston Water and Sewer Commission is overseen by a three member Board of Commissioners appointed by the Mayor of Boston, subject to approval by the City Council. The primary responsibility of the Board is to ensure the sound economical and efficient operation and maintenance of the systems to ensure the highest quality services to the City of Boston. The Board of Commissioners is also responsible for setting clear financial and operational policy directives.

The Commission consists of five divisions: Executive, Operations, Engineering, Administration and Finance.

The Executive Division provides executive management, including policy formation and strategic planning, to the entire Commission. The Executive Division also represents the Commission in all legislative lobbying efforts pertaining to securing continued federal and state funded rate relief. This Division is also responsible for implementing and monitoring the Commission's affirmative action plans and ensuring the participation of women and minority owned businesses in obtaining goods, services contracts and safety management to the entire Commission. Additionally, the Executive Division represents the Commission in all litigation. The Human Resources Department is now part of the Executive Division and provides its employees with proactive personnel services.

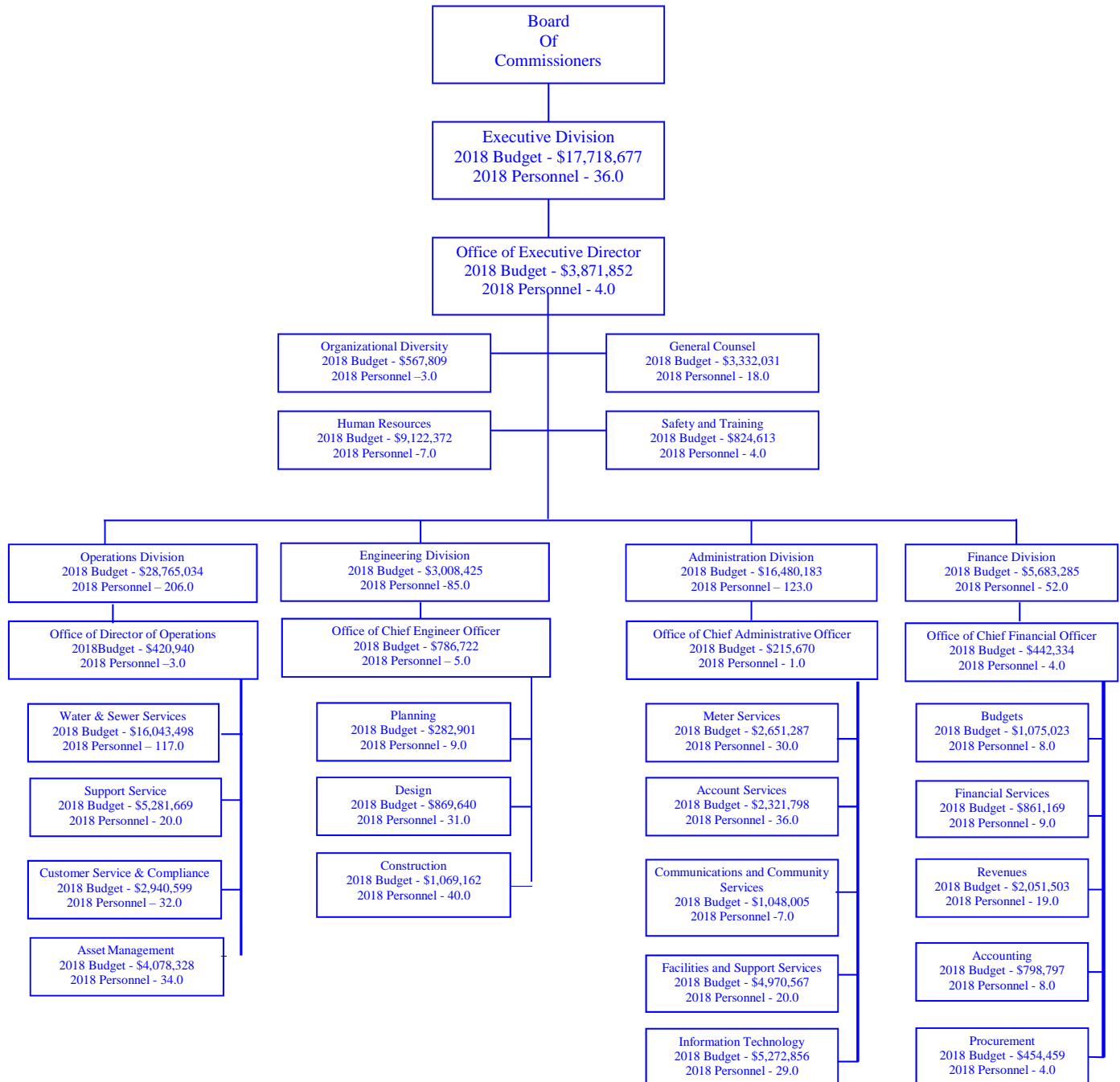
The Operations Division ensures the ongoing maintenance and emergency repairs to the Commission's water and sewer mains, service connections, hydrants and drains. The Division is also responsible for inventory control, management and maintenance of the Commission's automotive fleet for the entire Commission.

The Engineering Division is responsible for high quality, reliable water, sewer and drainage services. These services are achieved by effectively planning, designing, managing and providing contract compliance for the construction of the Commission's Capital Improvement Projects.

The Administration Division provides the Commission and the Commission's customers with administrative support services. The Administration Division provides its employees with proactive personnel services. This Division is responsible for representing the Commission at various public and community meetings, maintaining collections, customer services and the installation and repair of meters and the provision of facilities and support services. The Information Technology ("IT") Department is now part of the Administration Division and is responsible for the preservation of the Commission's technical infrastructure.

The Finance Division provides effective management of the Commission's revenues and all its resources. The Finance Division accomplishes this through its financial budgeting, rate setting, accounting and cash management, billing and adjustments. This Division is also responsible for debt financing, investment management, providing procurement, investigate, document and resolve meter problems and erratic consumption.

Commission-Wide Organizational Chart

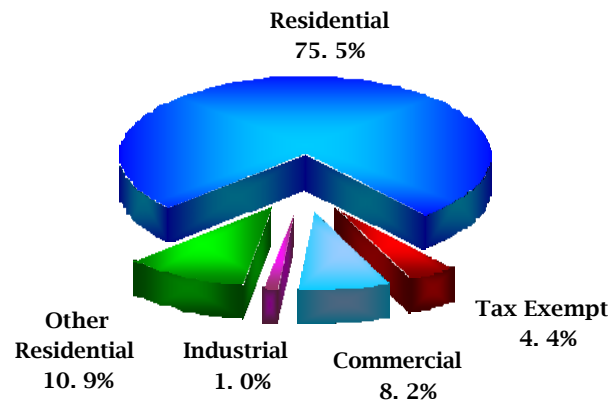


The Commission

Customer Base

The Commission provides water and sewer services to residential, commercial, industrial, public, private and non-profit institutional properties throughout the city. The distribution of the Commission's 88,247 accounts in 2017 was as follows: 75.5% were one to three family dwellings; other residential dwellings accounted for 10.9%. Commercial customers represented 8.2%; Tax-exempt customers accounted for an additional 4.4%; the remaining 1.0% of the customer base is made of the industrial customers. It should be noted that the Boston Housing Authority, which is tax exempt and is the Commission's largest customer, falls into the classification "other residential."

2017 Distribution of Customers by Account



| Account Type by Land Code | Number of Accounts | % of Total Accounts |
|---------------------------|--------------------|---------------------|
| Residential | 66,652 | 75.5% |
| Other Residential | 9,651 | 10.9% |
| Commercial | 7,201 | 8.2% |
| Tax Exempt | 3,831 | 4.4% |
| Industrial | 912 | 1.0% |
| Total by Land Code | 88,247 | 100.0% |

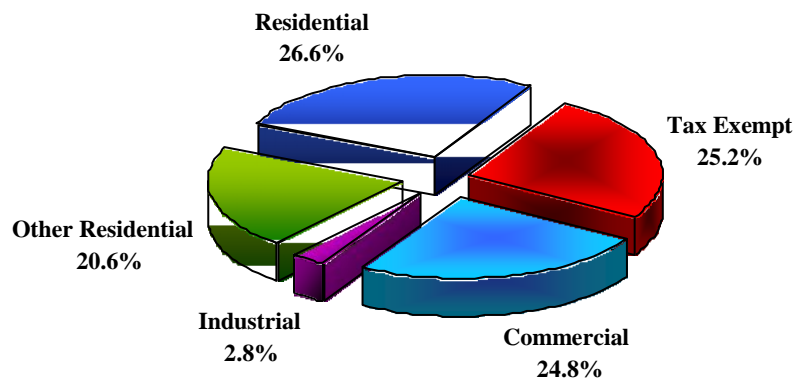
In the above table and graph, one to three family dwellings have accounted for 75.5% of the total accounts. The actual consumption for residential accounts is much lower, using only 26.6%. Other residential customers accounted for an additional 20.6%. Tax Exempt organizations, which include hospitals, universities, religious institutions and government agencies, accounted for 25.2%. The commercial and industrial customers consumed 27.6% with 24.8% and 2.8% used, respectively.

The Commission

While the graph on the previous page highlights the distribution of the Commission's customer base by account type, the graph below illustrates the distribution of customers by consumption. The non-residential segment of the customer base (commercial, industrial and tax-exempt), although representing only 13.6% of customer accounts generated 52.8% of retail water sales. These accounts are financially strong entities for which water and sewer charges typically represent a relatively small portion of their operating budget. The high percentage of annual consumption consumed by a relatively small number of accounts has had a positive financial impact on the Commission. These accounts, which include hospitals, universities, commercial and industrial businesses, provide the necessary stability and diversity to the customer base, while providing a steady stream of revenue on a monthly basis. The composition of the Commission's customer base is highly regarded by credit rating agencies as a major financial strength. Together with the Commission's proven record of financial management, we have achieved excellent credit ratings. The Commission has received the following ratings from credit agencies:

- "AA+" -- Standard and Poor's
- "Aa1" -- Moody's Investor Services

2017 Distribution of Customers by Consumption



| Account Type by Consumption | Sales in Cubic Feet (000) | % of Total Consumption |
|-----------------------------|---------------------------|------------------------|
| Residential | 694,267 | 26.6% |
| Other Residential | 537,312 | 20.6% |
| Commercial | 648,985 | 24.8% |
| Tax Exempt | 659,017 | 25.2% |
| Industrial | 73,426 | 2.8% |
| Total by Consumption | 2,613,007 | 100.0% |

2017 Commission Results

The Commission established 88 tactical and strategic goals and core program functions for 2017, which are highlighted in the “Program Goals and Budgets” section. The Commission has received numerous industry awards for excellence and achievements in the financial, engineering and environmental fields unrelated to any specific 2017 program goal but deserving of recognition. These achievements include:

2017 Massachusetts Department of Environmental Protection’s Regional Recognition Award

In 2017, the Commission received The Regional Recognition Award for outstanding performance and achievements in 2016. The Massachusetts Department of Environmental Protection recognized the Commission as a model public water agency that puts forth exemplary efforts in every area of water treatment and distribution including the Lead Service Replacement Program.

2017 Massachusetts National Association of Clean Water Agencies Excellence in Management Gold Recognition Award

In 2017, the Commission received the National Association of Clean Water Agencies Excellence in Management Gold Recognition Award. The National Association of Clean Water Agencies (NACWA) has been the nation’s recognized leader in legislative, regulatory and legal advocacy on the full spectrum of clean water issues, as well as a top technical resource for water management, sustainability and ecosystem protection interests. NACWA recognized the Commission for our strong record of effective utility management by awarding the Gold Award for Utility Excellence. The Gold Awards criteria are based on the Ten Attributes of Effectively Managed Water Sector Utilities and the Keys to Management Success, which were developed by a blue ribbon committee of water industry executives at the request of U.S. EPA.

2017 Massachusetts Water Environmental Federation Gold Award

In 2017 the Commission received the Water Environment Federation Gold Award for Innovation and Project Management. The National Municipal Stormwater and Green Infrastructure Awards program, led by the Water Environment Federation (WEF) through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), was established in 2015 to recognize high-performing regulated Municipal Separate Stormwater Sewer Programs (MS4s). WEF recognized the Commission for demonstrating a significant achievement in design, operation, maintenance and process change resulting in demonstrated long-term water quality improvement.

2017 Massachusetts Department of Environmental Protection’s Regional Recognition Award

In 2017, Boston Water and Sewer Commission took home the 2017 award for “New England’s Best” drinking water in a contest held at the New England Water Works Association’s annual conference in Brewster, Massachusetts. This year, Boston’s drinking water competed against ten other samples from throughout New England. The award now makes Boston eligible to compete against other cities from across the United States, Canada, and Mexico at the American Water Works Association’s annual conference scheduled for 2018.

2017 Governor’s Citation

BWSC was presented with the Commonwealth of Massachusetts Governor’s Citation in recognition of dedicated service to maintaining a safe and abundant supply of clean water and commitment to protecting the environment. This award gives formal recognition by the Commonwealth to those who provide meaningful contributions, which distinguish them from their peers. These special awards focus attention on consistent, positive achievements by both individuals and teams of employees, and recognize those who demonstrate: innovation and dedication to their work, concern for the public trust and a commitment to excellence.

2017 Distinguished Budget Presentation Award

For 25 consecutive years, BWSC has received the Government Finance Officers Associations (“GFOA”) Distinguished Budget Presentation Award. This is the highest form of recognition in governmental budgeting. This award recognized that the Commission’s Current Expense Budget met the GFOA program criteria as a policy document, an operation guide, a financial plan and a communications device.

2016 Comprehensive Annual Financial Report Award (CAFR)

The Commission’s 2015 Comprehensive Annual Financial Report (“CAFR”) received the GFOA’s Certificate of Achievement for Excellence in Financial Reporting. The CAFR was judged based on its conformity to Generally Accepted Accounting Principles (“GAAP”) and its compliance with other finance related legal and contractual provisions. The Certificate of Achievement is the highest form of recognition in governmental accounting and financial reporting and its attainment represents a significant accomplishment for any municipality or governmental agency.

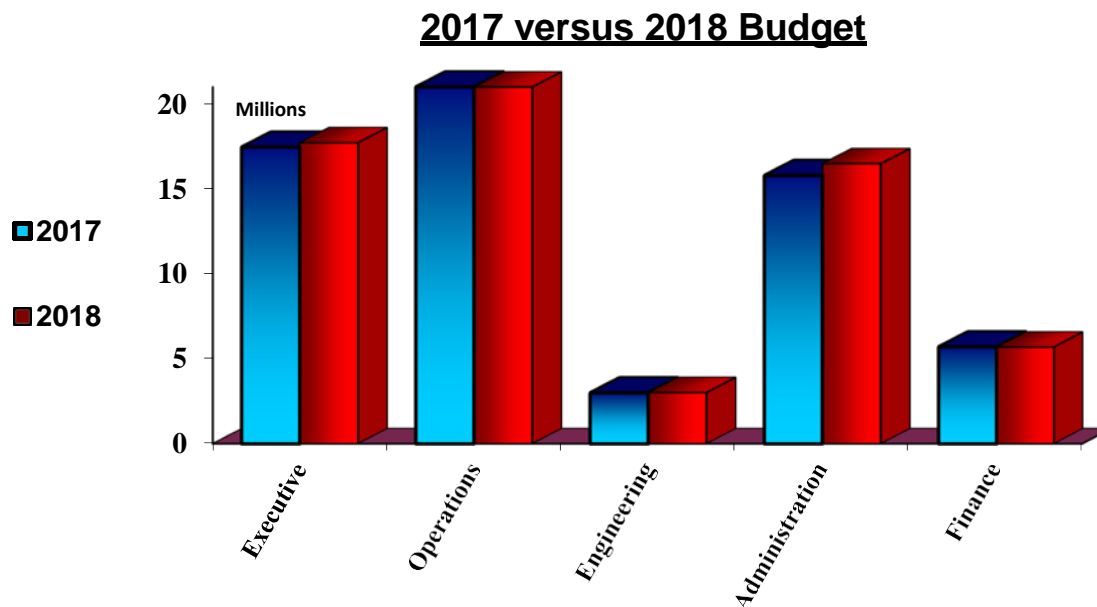
Commission Budget Summary

| Division | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|---------------------|---------------------|---------------------|--------------------|-----------------------|
| Executive | \$21,281,660 | \$17,456,923 | \$17,718,677 | \$261,754 | 1.5% |
| Operations | \$27,747,762 | \$27,677,221 | \$28,765,034 | \$1,087,813 | 3.9% |
| Engineering | \$9,205,942 | \$2,992,423 | \$3,008,425 | \$16,002 | 0.5% |
| Administration | \$15,444,789 | \$15,785,945 | \$16,480,183 | \$694,238 | 4.4% |
| Finance | \$6,119,780 | \$5,696,642 | \$5,683,285 | (\$13,357) | -0.2% |
| Total Direct Expenses | \$79,799,933 | \$69,609,154 | \$71,655,604 | \$2,046,450 | 2.9% |

Explanation of Major Variances

The Commission consists of five divisions: Executive, Operations, Engineering, Administration and Finance.

The Commission's current expense budget for 2018 is \$71,655,604 an increase of \$2,046,450 or 2.9% increase from the 2017 budget.



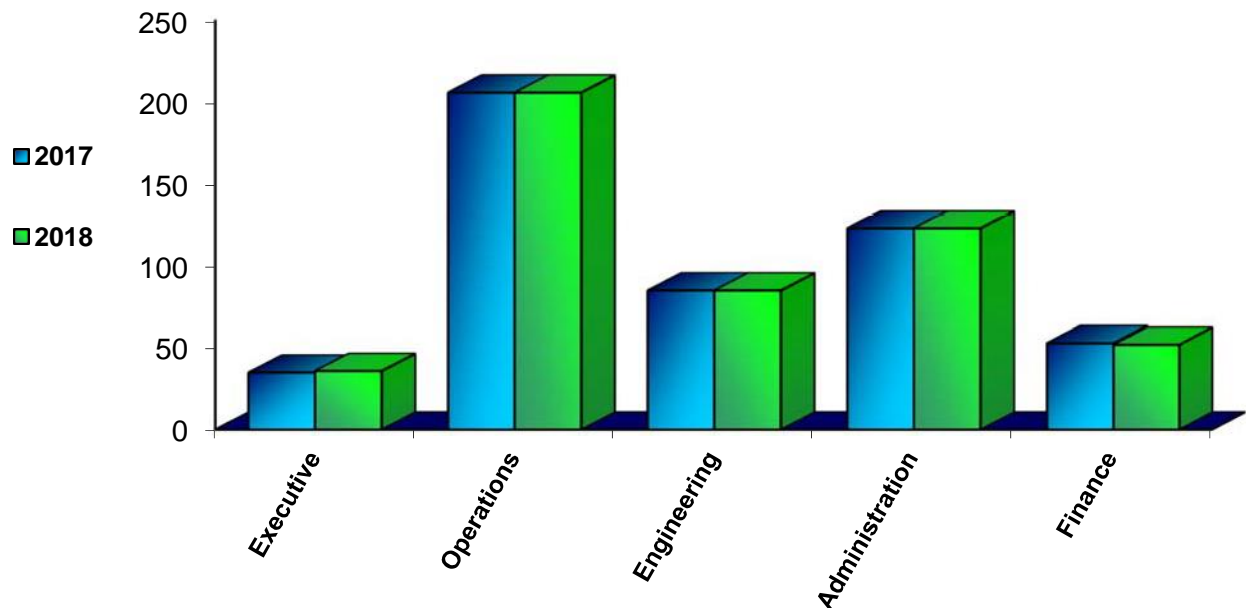
Commission Personnel Summary

| Division | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|---------------------------------|----------------|------------------|----------------|-----------------------|
| Executive | 32.0 | 35.0 | 36.0 | 1.0 |
| Operations | 209.0 | 206.0 | 206.0 | 0.0 |
| Engineering | 83.0 | 85.0 | 85.0 | 0.0 |
| Administration | 128.0 | 123.0 | 123.0 | 0.0 |
| Finance | 53.0 | 53.0 | 52.0 | (1.0) |
| Total Budgeted Positions | 505.0 | 502.0 | 502.0 | 0.0 |

Explanation of Personnel Changes

The Commission's 2018 position count is 502.0 FTE, there was no change from the 2017 approved position count. Other minor personnel changes are explained in the following pages with the breakdowns of each department.

2017 versus 2018 Personnel

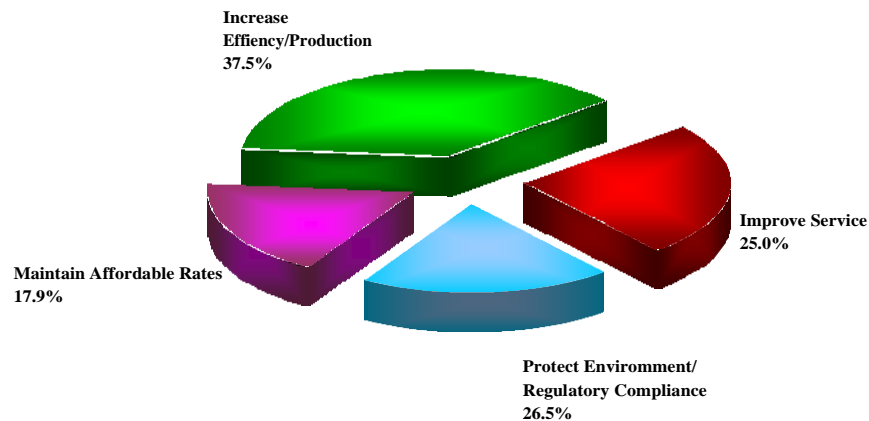


The 2018 Commission Goals

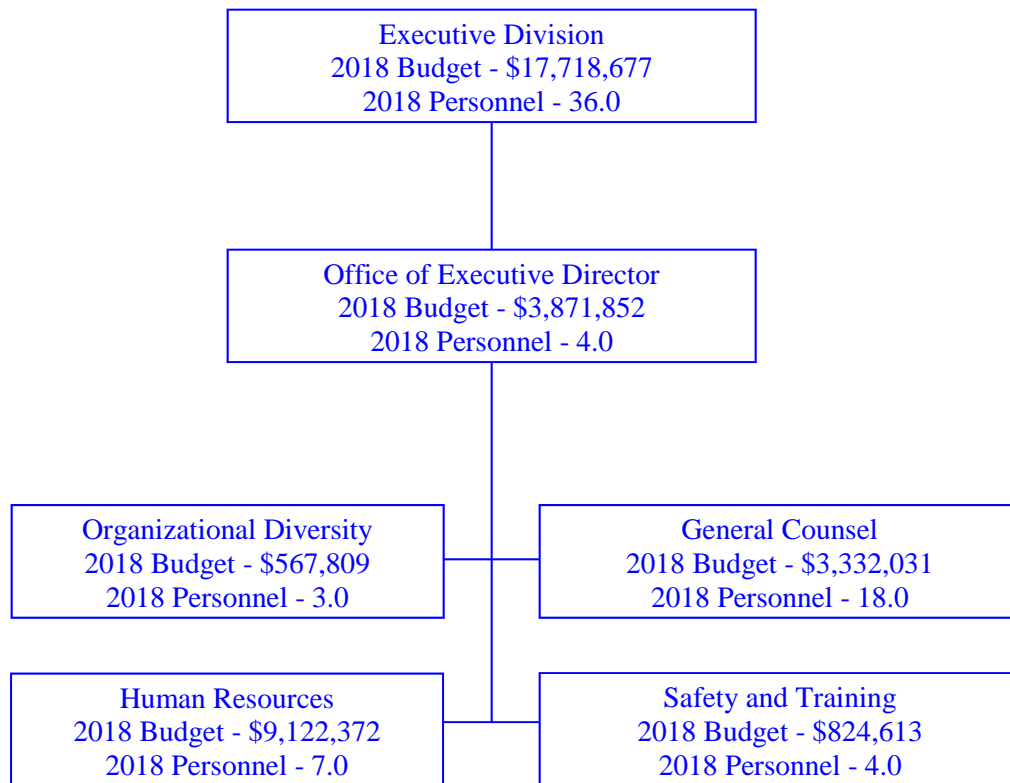
Boston had the first public water supply in the colonies and one of the first water distribution systems providing water to every home. When originally built, Boston's water distribution and wastewater collections systems were state of the art. In light of evolving technologies and today's stringent environmental and public health standards, the original systems no longer suffice. The Commission is continually dedicating resources to efforts such as improving operations and services to its ratepayers and controlling pollution to keep Boston's harbor, beaches and rivers clean. The Commission fights aggressively to maintain equitable and affordable rates.

The Commission has established 91 strategic and tactical goals to accomplish in 2018. Upon successful completion, each goal will continue the Commission's mission to provide the highest quality services at the lowest possible rates while ensuring the protection of the environment. The chart below depicts the breakdown of the 2018 goals by mission.

2018 Commission Goals by Mission



EXECUTIVE DIVISION



Executive Division

Executive Division Organization

The Executive Division consists of the Office of Executive Director and four other departments:

- **Organizational Diversity**
- **General Counsel**
- **Human Resources**
- **Safety and Training**

Division Mission

The Executive Division is responsible for providing policy formation and strategic planning to the entire Commission. The Executive Division provides overall executive management in the critical areas of organizational development, long-term strategic planning, law and labor relations. The Human Resource Department now in the Executive Division provides its employees with proactive personnel services.

Division Budget Summary

| Department | Actual | Budget | Budget | Variance | Variance |
|------------------------------|---------------------|---------------------|---------------------|------------------|-------------|
| Office of Executive Director | \$7,982,338 | \$3,898,651 | \$3,871,852 | (\$26,799) | -0.7% |
| Organizational Diversity | \$1,347,749 | \$1,387,074 | \$567,809 | (\$819,265) | -59.1% |
| General Counsel | \$2,756,467 | \$2,586,776 | \$3,332,031 | \$745,255 | 28.8% |
| Labor Relations | \$1,311,440 | \$981,263 | \$0 | (\$981,263) | -100.0% |
| Human Resources | \$7,883,666 | \$8,603,159 | \$9,122,372 | \$519,213 | 6.0% |
| Safety and Training | \$0 | \$0 | \$824,613 | \$824,613 | 0.0% |
| Total Direct Expenses | \$21,281,660 | \$17,456,923 | \$17,718,677 | \$261,754 | 1.5% |

Explanation of Major Variances

The 2018 budget for the Executive Division is \$17,718,677, an increase of \$261,754 or 1.5% from 2017. The variance is due to the General Counsel and Human Resources line items.

Division Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------------------------|------------------------|--------------------------|------------------------|-------------------------------|
| Office of Executive Director | 4.0 | 4.0 | 4.0 | 0.0 |
| Organizational Diversity | 7.0 | 7.0 | 3.0 | (4.0) |
| General Counsel | 13.0 | 14.0 | 18.0 | 4.0 |
| Labor Relations | 3.0 | 3.0 | 0.0 | (3.0) |
| Human Resources | 7.0 | 7.0 | 7.0 | 0.0 |
| Safety and Training | 0.0 | 0.0 | 4.0 | 4.0 |
| Total Personnel | 34.0 | 35.0 | 36.0 | 1.0 |

Explanation of Personnel Changes**Office of Executive Director**

There was no change to the position count.

Organizational Diversity

Three positions transferred to Safety and Training.
One position was transferred to General Counsel.

General Counsel

Three positions transferred from Labor Relations.
One position was transferred from Organizational Diversity.

Labor Relations

Three positions transferred to General Counsel.

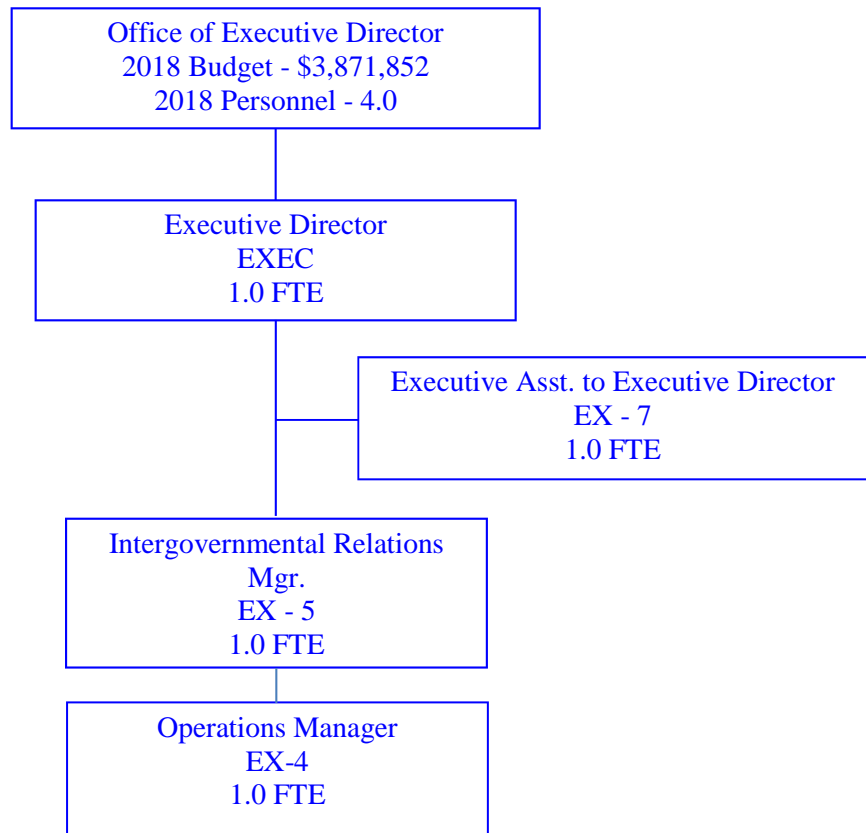
Human Resources

There was no change to the position count.

Safety and Training

Three positions transferred from Organizational Diversity.
One position was created.

Office of the Executive Director



Executive Division

Office of Executive Director

Program Activities

- Provide policy formation and strategic planning
- Represent the Commission in legislative lobbying efforts to secure rate relief funding

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$7,744,090 | \$3,484,044 | \$3,421,026 | (\$63,018) | -1.8% |
| Labor Related Costs/Benefits | \$24,298 | \$30,107 | \$36,326 | \$6,219 | 20.7% |
| Supplies and Materials | \$2,357 | \$4,500 | \$4,500 | \$0 | 0.0% |
| Professional Services | \$105,280 | \$265,000 | \$265,000 | \$0 | 0.0% |
| Other Services | \$105,679 | \$110,000 | \$140,000 | \$30,000 | 27.3% |
| Training/Seminar/Travel | \$634 | \$5,000 | \$5,000 | \$0 | 0.0% |
| Total Direct Expenses | \$7,982,338 | \$3,898,651 | \$3,871,852 | (\$26,799) | -0.7% |

Explanation of Major Variances

The 2018 budget for the Office of the Executive Director is \$3,871,852 a decrease of \$26,799 or 0.7% from the budgeted amount for 2016. The variance is due to Wages and Salaries line item.

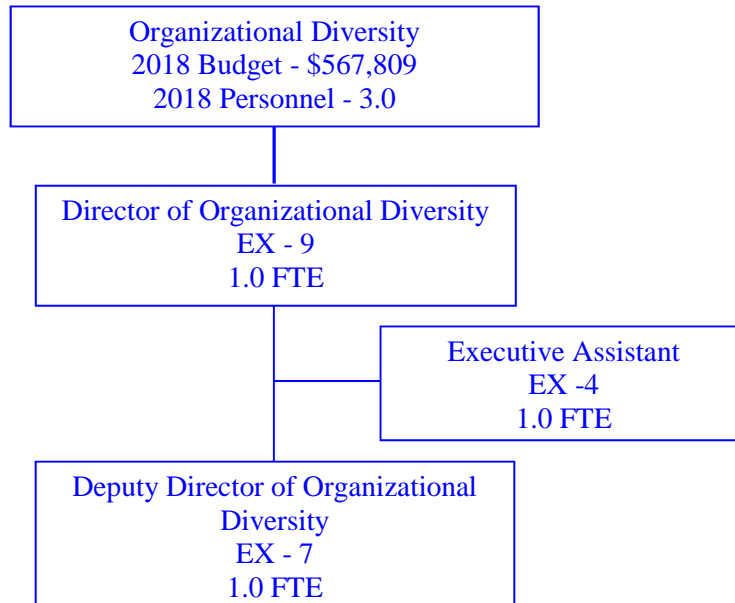
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|----------------------------------|----------------|------------------|----------------|-----------------------|
| Office of the Executive Director | 3.0 | 4.0 | 4.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

Organizational Diversity



Organizational Diversity

Program Activities

- Assist the Commission in establishing, conducting and maintaining a recruitment program to assure Equal Employment Opportunity for all persons. Assist in the development and implementation of programs to maximize equal employment and promotional opportunity for minorities, woman and Vietnam-era veterans
- The Commission will use its best effort to ensure that Minority and Women Business Enterprise (“MBE/WBE”) participate in construction contracts to the extent that such firms are qualified and represented in the marketplace
- Ensure that the Commission implements all federal, state and local policies and provisions relative to contract compliance regarding construction contracts, professional service, procurement and work force compliance
- Direct the Commissions overall training needs, administers the terms of the Apprentice Program, administers the Tuition Reimbursement Program, administers the License Reimbursement Program and administers other contractual training initiatives

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$875,751 | \$727,662 | \$348,816 | (\$378,846) | -52.1% |
| Labor Related Costs/Benefits | \$11,596 | \$82,212 | \$48,993 | (\$33,219) | -40.4% |
| Supplies and Materials | \$8,348 | \$10,200 | \$2,500 | (\$7,700) | -75.5% |
| Repair and Maintenance | \$20,123 | \$34,500 | \$0 | (\$34,500) | -100.0% |
| Professional Services | \$431,606 | \$530,000 | \$165,000 | (\$365,000) | -68.9% |
| Training/Seminar/Travel | \$325 | \$2,500 | \$2,500 | \$0 | 0.0% |
| Total Direct Expenses | \$1,347,749 | \$1,387,074 | \$567,809 | (\$819,265) | -59.1% |

Explanation of Major Variances

The 2018 budget for Organizational Diversity is \$567,809, a decrease of \$819,265, or 59.1% from the budgeted amount for 2017. The variance is due to Wages and Salaries, Labor Related Cost/Benefits, Supplies and Materials, Repair and Maintenance and Professional Services line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|--------------------------|----------------|------------------|----------------|-----------------------|
| Organizational Diversity | 6.0 | 7.0 | 3.0 | (4.0) |

Explanation of Personnel Change

Three positions transferred to Safety and Training.
One position was transferred to General Counsel.

2017 Program Goal Results

The Organizational Diversity goals established for employment and retention remains at 28% for minorities and at 25% for women. For the year 2017, the department achieved employment goals of 37% for minorities and 25% for women, respectively. For Professional Service Contracts in 2017, the Women's Business Enterprise ("WBE") achieved 18% of contract expenditures working towards and exceeding the goal of 6% and the Minority Business Enterprise ("MBE") achieved 28% of contract expenditures working towards and exceeding the goal of 15%. For Construction Contracts in 2017, the Women's Business Enterprise ("WBE") achieved 8% of contract expenditures working towards and exceeding the goal of 6% and the Minority Business Enterprise ("MBE") achieved 11% of contract expenditures working towards and exceeding the goal of 9%. The Succession Planning Committee, comprised of representatives from each department and chaired by the Director of Organizational Diversity, is in the process of putting together an RFP (Request for Proposal) for consulting firms with expertise in succession planning to provide service. The design of specific leadership training for the Commission's managers and supervisors that will prepare them to assume increasing responsibilities as well as enhance their effectiveness to the organization is underway.

2018 Program Goals and Objectives

Goal: Review, implement and administer the Commission's Affirmative Action Program so that equal employment opportunity is provided to all in hiring, training and promotion of minorities, women, disabled persons and Vietnam era veterans. Maintain throughout the City of Boston and its environs contact with appropriate persons and groups to recruit members of protected groups.

Objective: The objective of this goal is to create a work environment that is free from all discrimination and harassment concerning race, sex, religion, national origin and qualified veteran status.

Mission: Comply with Local, State and Federal Regulations

Goal: Implement the recommendation of the consultancy work that was performed by Next Street that covers the enhancement of MBE/WBE utilization as well as workforce development.

Objective: To increase the participation of MBE/WBE in Commission's construction and professional service contracts.

Mission: Comply with Local, State and Federal Regulations

Goal: Develop and implement strategies that will assist in making contacts with appropriate persons and groups throughout the city of Boston and its environs with the aim of increasing recruitment of protected group members.

Objective: To increase recruitment of protected group members in the employment of the Commission

Mission: Comply with Local, State and Federal Regulations

Executive Division

Goal: Start holding periodic meetings and dialogue with departmental heads and supervisors to advise them of their responsibilities and their accountability in the areas of Affirmative Action.

Objective: To appraise departmental heads and supervisors of their responsibilities and their accountability in the areas of Affirmative Action

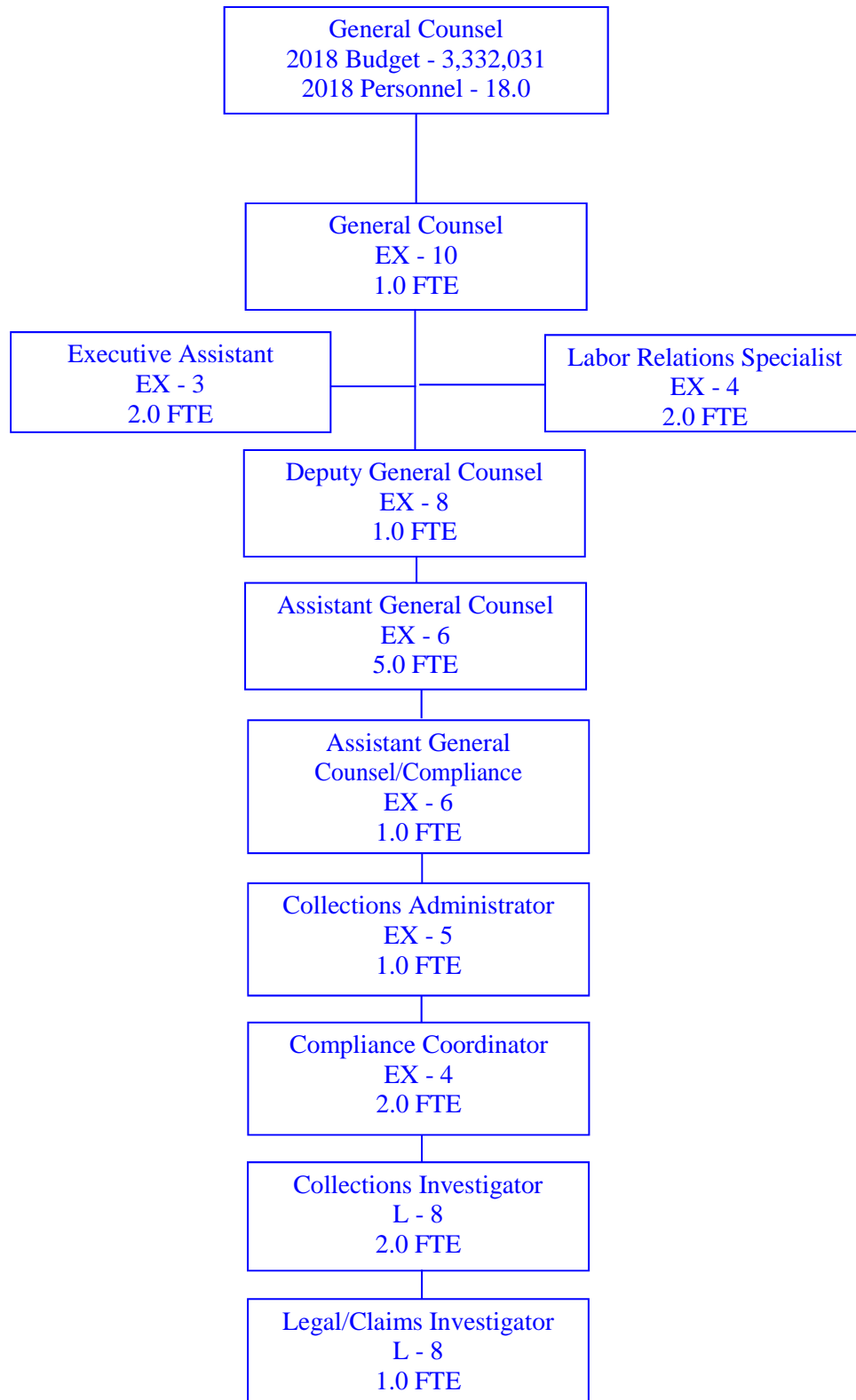
Mission: Improved Customer/Employee/Investor Relations

Goal: Design and Develop Commission wide diversity Training that seeks to create an enabling work environment that is inviting and welcoming where each person is given an opportunity to contribute to the maximum of their potential to meet organizational mission.

Objective: To create an enabling work environment where all employees are given an opportunity to contribute to the maximum of their abilities

Mission: Provide Staff Training

General Counsel



General Counsel

Program Activities

- Represent the Commission in all litigation matters before the courts of the Commonwealth and of the United States and before all administrative bodies
- Defend the Commission against all claims for personal injury and property damage
- Drafting and reviewing contracts, contract amendments and change orders
- Preparing and reviewing easements and licenses
- Drafting, reviewing and enforcing regulations governing the conduct and operation of the Commission adopted by the Board of Commissioners
- Drafting, analyzing, proposing, supporting or opposing legislation affecting the Commission
- Ensuring compliance with environmental regulations applicable to the Commission
- Provide legal analysis of issues before the Commission on a daily basis

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$1,628,734 | \$1,397,341 | \$1,594,393 | \$197,052 | 14.1% |
| Labor Related Costs/Benefits | \$28,024 | \$16,026 | \$558,110 | \$542,084 | 3382.5% |
| Supplies and Materials | \$0 | \$0 | \$2,400 | \$2,400 | |
| Professional Services | \$538,768 | \$480,000 | \$465,000 | (\$15,000) | -3.1% |
| Other Services | \$41,862 | \$10,000 | \$10,000 | \$0 | 0.0% |
| Insurance | \$509,104 | \$528,409 | \$546,128 | \$17,719 | 3.4% |
| Training/Seminar/Travel | \$5,125 | \$5,000 | \$6,000 | \$1,000 | 20.0% |
| Damage Claims | \$4,850 | \$150,000 | \$150,000 | \$0 | 0.0% |
| Total Direct Expenses | \$2,756,467 | \$2,586,776 | \$3,332,031 | \$745,255 | 28.8% |

Explanation of Major Variances

The 2018 budget for General Counsel is \$3,332,031, an increase of \$745,255 or 28.8% from the budgeted amount for 2017. The variance is due to an increase in Wages and Salaries, Labor Related Costs/Benefits, Supplies and Materials, Insurance and Training/Seminar/Travel line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-----------------|----------------|------------------|----------------|-----------------------|
| General Counsel | 13.0 | 14.0 | 18.0 | 4.0 |

Explanation of Personnel Changes

Three positions transferred from Labor Relations.
One position was transferred from Organizational Diversity.

2017 Program Goal Results

During 2017, an environmental regulation checklist was developed for the NPDES CSO Permits and NPDES Stormwater Permits. Environmental regulation checklists were developed for items including Auto-maintenance facility, Auto Fleet, Fueling Facility, Emergency Response/Reporting- Mass Contingency Plan/21E, Hazardous Waste Transportation/Management, Air Quality, Water Use/Management and Right-to-Know. In 2015, Staff developed a LegalShare drive. Staff continues to monitor case law and legislation which affect the operations of the Commission and posts them to the LegalShare drive. The following documents are now available: betterment forms, contract forms, deed and property forms, easement and license forms, enforcement forms and litigation and pleading forms. In addition, staff prepares memoranda that address any and all legal issues raised by other Commission departments. These memos are available for review by Legal staff as well as other Commission personnel. Staff worked with its insurance advisor to place the lines of insurance for the 2017-2018 coverage period, realizing a savings of \$42,858 or 6.4% in the insurance premiums over the previous year. In conjunction with Design, IT and Legal, Staff digitally issued, through a pilot program, a Request for Proposals for the replacement of the Commission's website. The Commission provided all the bid documents on-line and required that proposers submit questions on-line as well as the responses to the RFP (due in the first quarter of 2018). This is a no cost system which would allow the Commission to advertise its Bids and RFPs on-line.

2018 Program Goals and Objectives

Goal: With the implementation of the new billing system expected to go live in 2019, update the Commission's Billing, Termination and Appeal Regulations.

Objective: To bring the Commission's regulations up to date and conform to the enhanced billing system

Mission: Increased Production or Efficiency Improvements

Goal: Review the insurance requirements for all Commission contracts; develop better communication between other Commission Departments and the Legal Department to ensure that contractors' insurance requirements are met; streamline the insurance certificate process; and ensure that employees completely and correctly fill out automobile accident reports for insurance purposes.

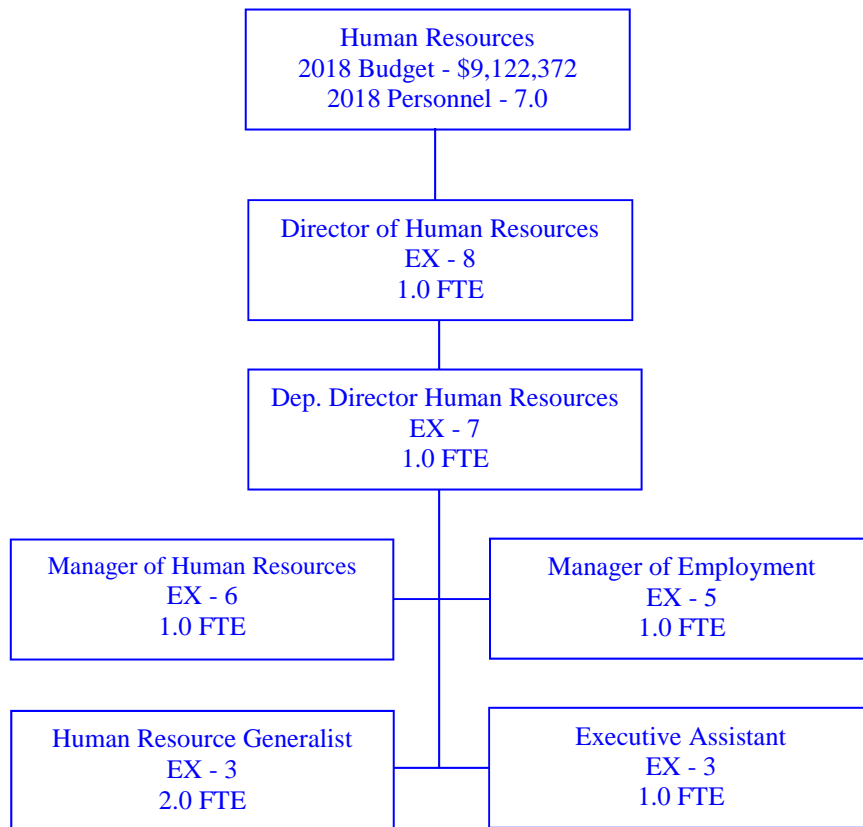
Objective: To ensure that Contractors working for the Commission have the appropriate insurance to cover the Commission in the event of a claim; and to ensure employees promptly and accurately report automobile accidents with respect to Commission vehicles.

Mission: Improve/Develop Policy/Procedure

Department Maintenance Goals

| Activity | 2015 Actual | 2016 Actual | 2017 Actual | 2018 Goal |
|--------------------|----------------|----------------|----------------|---|
| Small Claims Cases | 2,191 | 2,174 | 2,175 | At Least 175/Month |
| Schedule Hearings | 10 | 10 | 9 | Settled Before the Hearing Process |

Human Resources



Executive Division

Human Resources

Program Activities

- Establish and monitor personnel policies and procedures
- Manage hiring activities
- Maintain staff knowledge on related issues
- Assist in research to develop collective bargaining strategies
- Manage employee benefits
- Oversee the performance appraisal process

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$950,087 | \$822,837 | \$955,408 | \$132,571 | 16.1% |
| Labor Related Costs/Benefits | \$6,899,080 | \$7,644,372 | \$8,035,964 | \$391,592 | 5.1% |
| Supplies and Materials | \$1,759 | \$3,900 | \$3,000 | (\$900) | -23.1% |
| Professional Services | \$22,684 | \$120,800 | \$118,000 | (\$2,800) | -2.3% |
| Other Services | \$10,055 | \$11,250 | \$10,000 | (\$1,250) | -11.1% |
| Total Direct Expenses | \$7,883,665 | \$8,603,159 | \$9,122,372 | \$519,213 | 6.0% |

Explanation of Major Variances

The 2018 budget for Human Resources is \$9,122,645, an increase of \$519,213 or 6.0% from the budgeted amount for 2017. The variance is due to increases to the Wages and Salaries and Labor Related Cost/Benefits line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-----------------|----------------|------------------|----------------|-----------------------|
| Human Resources | 7.0 | 7.0 | 7.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

During 2017, Human Resources staff reviewed and reconciled data provided by the State-Boston Retirement Board. Discrepancies in creditable service dates were identified, noted on the file and returned to the Retirement Board. Job posting announcements have continued to be posted to the digital signage boards. In addition, postings regarding the annual fitness reimbursement, annual deferred compensation limits, reminders regarding identification cards, the Employee Assistance Program (EAP), Frequently Asked Questions Page on Employment, the benefits of enrolling in BWSC Deferred Compensation plan, annual open enrollments and upcoming benefit changes. Trainings for new managers and supervisors will be implemented in 2018 on the topics of performance appraisals, conducting interviews and hiring processes, leave policy, attendance policy and discipline.

2018 Program Goals and Objectives

Goal: Review best practices for performance management and make recommendations for revision to the performance appraisal system.

Objective: To ensure that the Commission is utilizing modern and effective practices in development of its human capital and achievement of goals.

Mission: Improve/Develop Policy/Procedure

Goal: Expand the New Hire Orientation for new managers and supervisors to include topics such as effective completion of performance appraisals, enforcing Commission policies and when to recommend discipline.

Objective: To expand upon the New Hire Orientation by incorporating topics specific to managers and supervisors. Current employees that are newly promoted to managerial and supervisory positions will also receive training on these topics.

Mission: Improved Customer/Employee/Investor Relations

Goal: Implement a data management system for Human Resources files.

Objective: The objective of this goal is to implement a process to enable the Human Resources Department to create an electronic central repository for paper files.

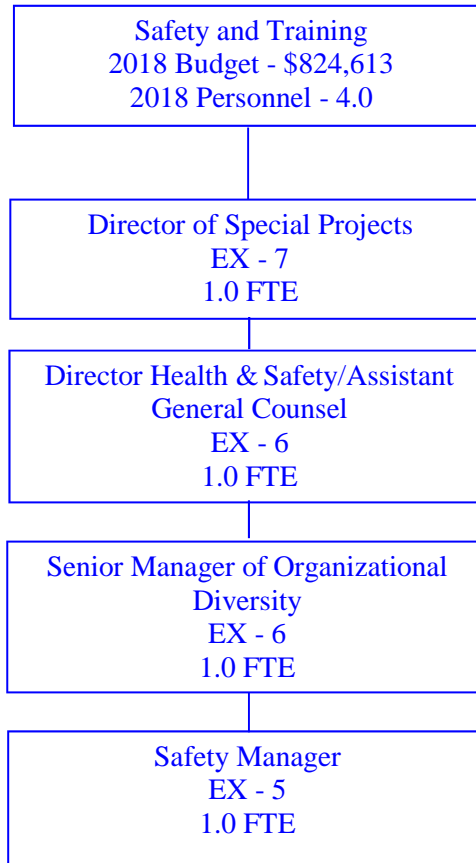
Mission: Increased Production or Efficiency Improvements

Goal: Conduct a review of the Commission's dental, life and disability insurance plans and solicit quotes to obtain a broker to assist in the public bidding process.

Objective: Conduct a comprehensive review of selected insurance line items; select broker; review all proposals and select the most cost efficient, qualified vendor(s). Receive Commission approval, execute contracts and conduct employee meetings to facilitate enrollment into the newly selected plan(s).

Mission: Improve Customer /Employee/Investor Relations

Safety and Training



Executive Division

Safety and Training

Program Activities

- Emergency Response Plan Training
- Participate in the New Employee Orientations
- Prepare Monthly Utilization Report
- Increase the amount of employees OSHA Certified
- Create a hands-on in-house training program
- Review and update all safety and training forms and documentation

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|----------------|----------------|------------------|--------------------|-----------------------|
| Wages and Salaries | | | \$521,913 | \$521,913 | - |
| Supplies and Materials | | | \$18,700 | \$18,700 | - |
| Repair and Maintenance | | | \$34,000 | \$34,000 | - |
| Professional Services | | | \$250,000 | \$250,000 | - |
| Total Direct Expenses | \$0 | \$0 | \$824,613 | \$824,613 | - |

Explanation of Major Variances

The 2018 budget for Safety and Training is \$824,613. The variance is due to department being newly created.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|---------------------|----------------|------------------|----------------|-----------------------|
| Safety and Training | 0.0 | 0.0 | 4.0 | 4.0 |

Explanation of Personnel Changes

Three positions transferred from Organizational Diversity.
One position was created.

2018 Program Goals and Objectives

Goal: Design and Implement a hands-on, in-house training program that will ensure all Commission employees have the skills necessary to complete everyday tasks, safely and efficiently.

Objective: The objective is to create a hands-on training staff have not received prior. Most of the everyday work is on the job training and specific staff members are not obtaining this knowledge. Hands-on training will create a more diverse and productive workforce specifically in areas that have historically been underperforming.

Mission: Provide Staff Training

Goal: Increase the number of the Commission's workforce who have obtained their OSHA 10 Certification. As safety is a top priority at the Commission, it is imperative that employees have the basic knowledge needed to perform their work safely.

Objectives: Having the entire Operations department OSHA 10 Certified would not only provide the knowledge needed to perform an employee's everyday task, it would assist in limiting the Commission's liability. OSHA 10 training has provided the few employees already certified the knowledge required to perform their duties safely every day. The objective would be to ensure all employees are given that knowledge.

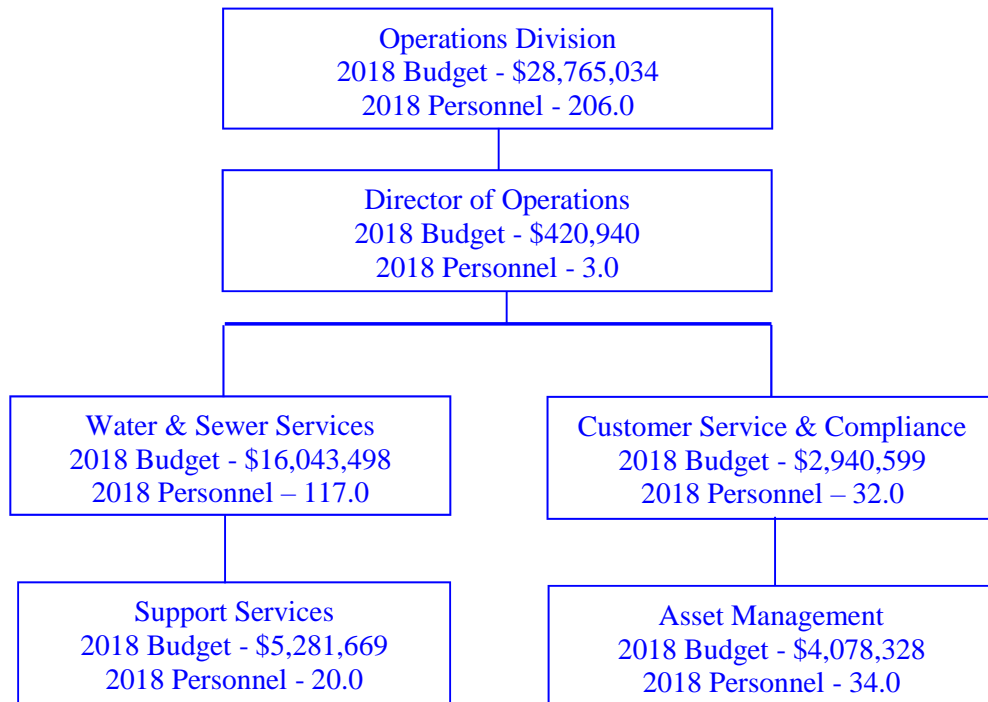
Mission: Limit Commission Liability/Increase Safety

Goal Review and update all health, safety and training forms to ensure we are capturing all the necessary data.

Objectives: New health, safety and training forms should allow the department to capture and ultimately analyze new data. Once the information is gathered and analyzed, the department should have enough useful information to make adjustments and implement changes as needed to improve safety and training.

Mission: Increased Production or Efficiency Improvements

OPERATIONS DIVISION



Operations Division

Operations Division Organization

The Operations Division includes the Office of the Director of Operations Services and four other departments:

- **Water & Sewer Services**
- **Support Services**
- **Customer Service & Compliance**
- **Asset Management**

Division Mission

The Operations Division is primarily responsible for ensuring the ongoing maintenance and operability of the Commission's buildings and water, sewerage and drainage infrastructures

Division Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|---------------------------------|---------------------|---------------------|---------------------|--------------------|-----------------------|
| Director of Operations Services | \$448,432 | \$400,578 | \$420,940 | \$20,362 | 5.1% |
| Water & Sewer Services | \$15,614,017 | \$15,724,266 | \$16,043,498 | \$319,232 | 2.0% |
| Support Services | \$4,590,990 | \$5,103,660 | \$5,281,669 | \$178,009 | 3.5% |
| Customer Service & Compliance | \$3,217,916 | \$2,776,532 | \$2,940,599 | \$164,067 | 5.9% |
| Asset Management | \$3,876,407 | \$3,672,185 | \$4,078,328 | \$406,143 | 11.1% |
| Total Direct Expenses | \$27,747,762 | \$27,677,221 | \$28,765,034 | \$1,087,813 | 3.9% |

Explanation of Major Variances

The 2018 budget for the Operations Division is \$28,765,034, an increase of \$1,087,813 or 3.9% from the budgeted amount for 2017. The variance is attributed to the Director of Operation Services, Water & Sewer Services, Support Services, Customer Service & Compliance and Asset Management line items.

Operations Division

Division Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|---------------------------------|----------------|------------------|----------------|-----------------------|
| Director of Operations Services | 4.0 | 3.0 | 3.0 | 0.0 |
| Water & Sewer Services | 114.0 | 117.0 | 117.0 | 0.0 |
| Support Services | 19.0 | 20.0 | 20.0 | 0.0 |
| Customer Service & Compliance | 33.0 | 32.0 | 32.0 | 0.0 |
| Asset Management | 34.0 | 34.0 | 34.0 | 0.0 |
| Total Personnel | 204.0 | 206.0 | 206.0 | 0.0 |

Explanation of Personnel Changes

Director of Operations

There was no change to the position count.

Water & Sewer Services

There was no change to the position count.

Support Services

There was no change to the position count.

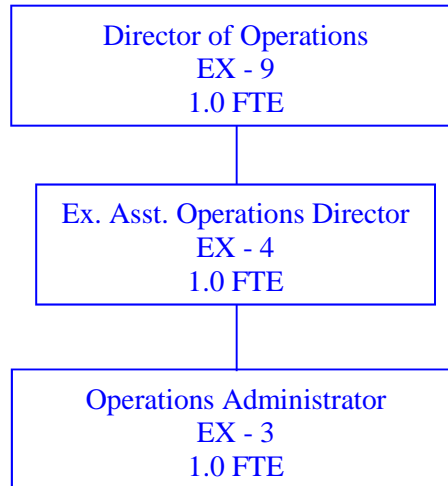
Customer Service & Compliance

There was no change to the position count.

Asset Management

There was no change to the position count.

Office of Operations Services



Operations Division

Office of Operations Director

Program Activities

- Oversee all activities engaged in by Water and Sewer Services, Day and Night Operations, Support Services, Customer Service and Compliance and Asset Management/CMOM Departments

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$440,154 | \$371,191 | \$382,327 | \$11,136 | 3.0% |
| Labor Related Costs/Benefits | \$5,110 | \$6,387 | \$15,613 | \$9,226 | 144.4% |
| Professional Services | \$0 | \$10,000 | \$10,000 | \$0 | 0.0% |
| Training/Seminar/Travel | \$3,168 | \$13,000 | \$13,000 | \$0 | 0.0% |
| Total Direct Expenses | \$448,432 | \$400,578 | \$420,940 | \$20,362 | 5.1% |

Explanation of Major Variances

The 2018 budget for the Office of Operations Director is \$420,940, an increase of \$20,362 or 5.1% from the budgeted amount for 2017. The increase in the variance is due to the Wages and Salaries and Labor Related Costs/Benefits line items.

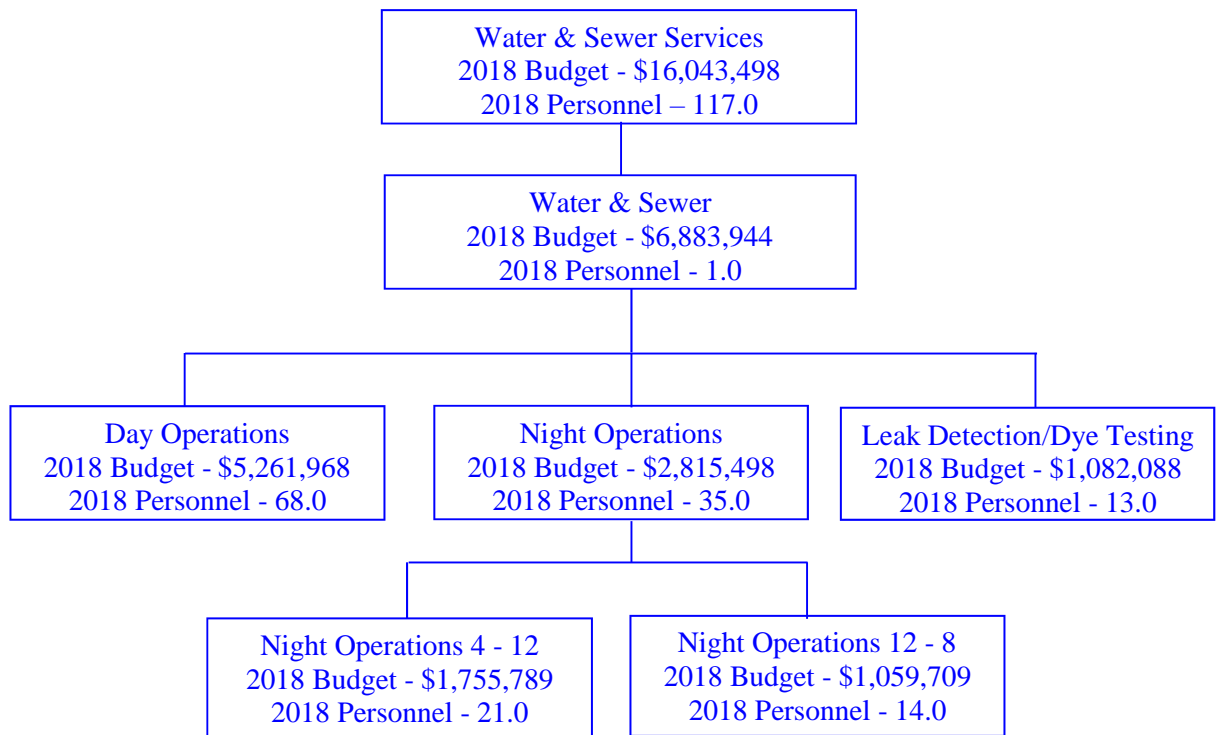
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-------------------------------|----------------|------------------|----------------|-----------------------|
| Office of Operations Director | 4.0 | 3.0 | 3.0 | 0.0 |

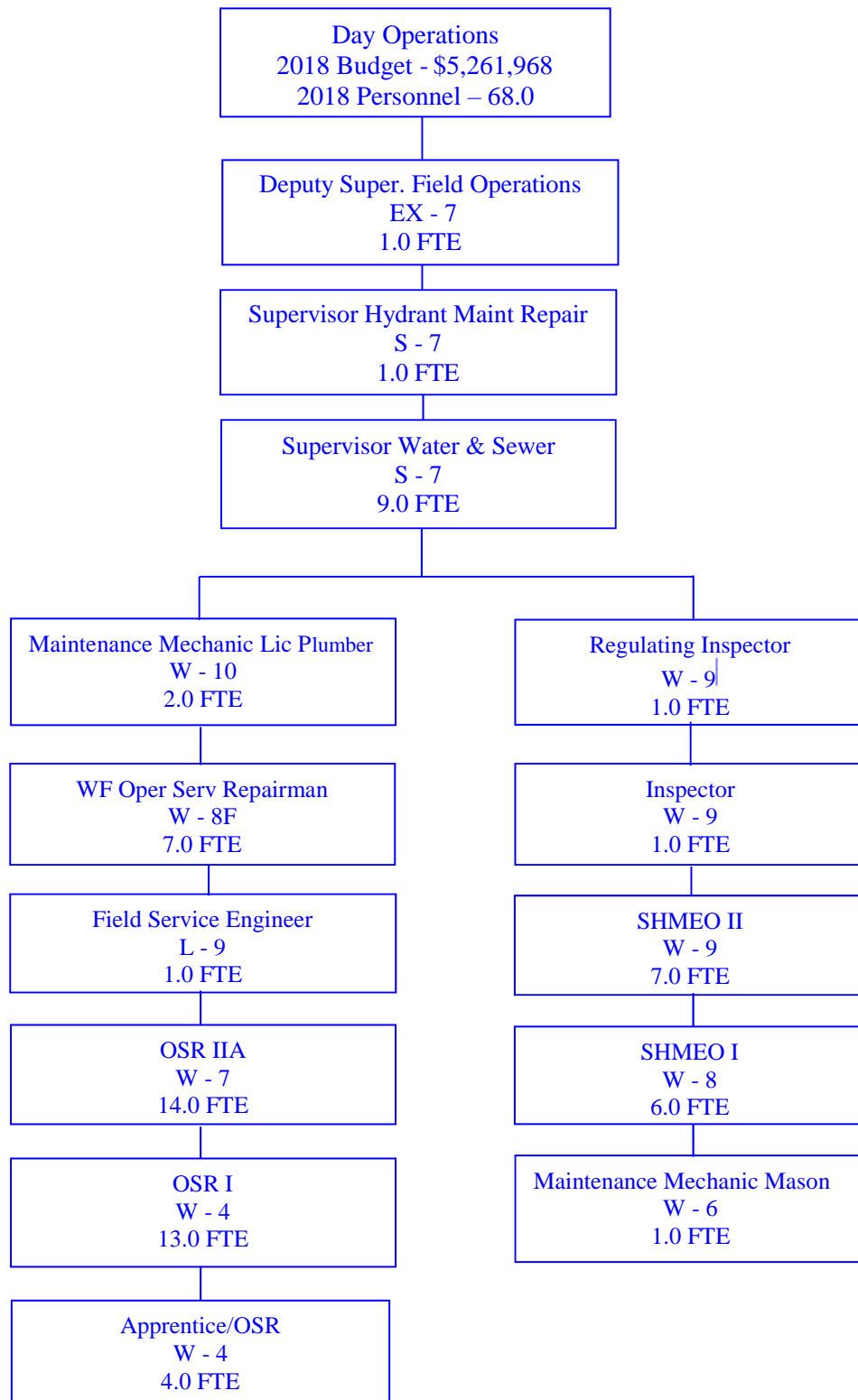
Explanation of Personnel Changes

There was no change to the position count.

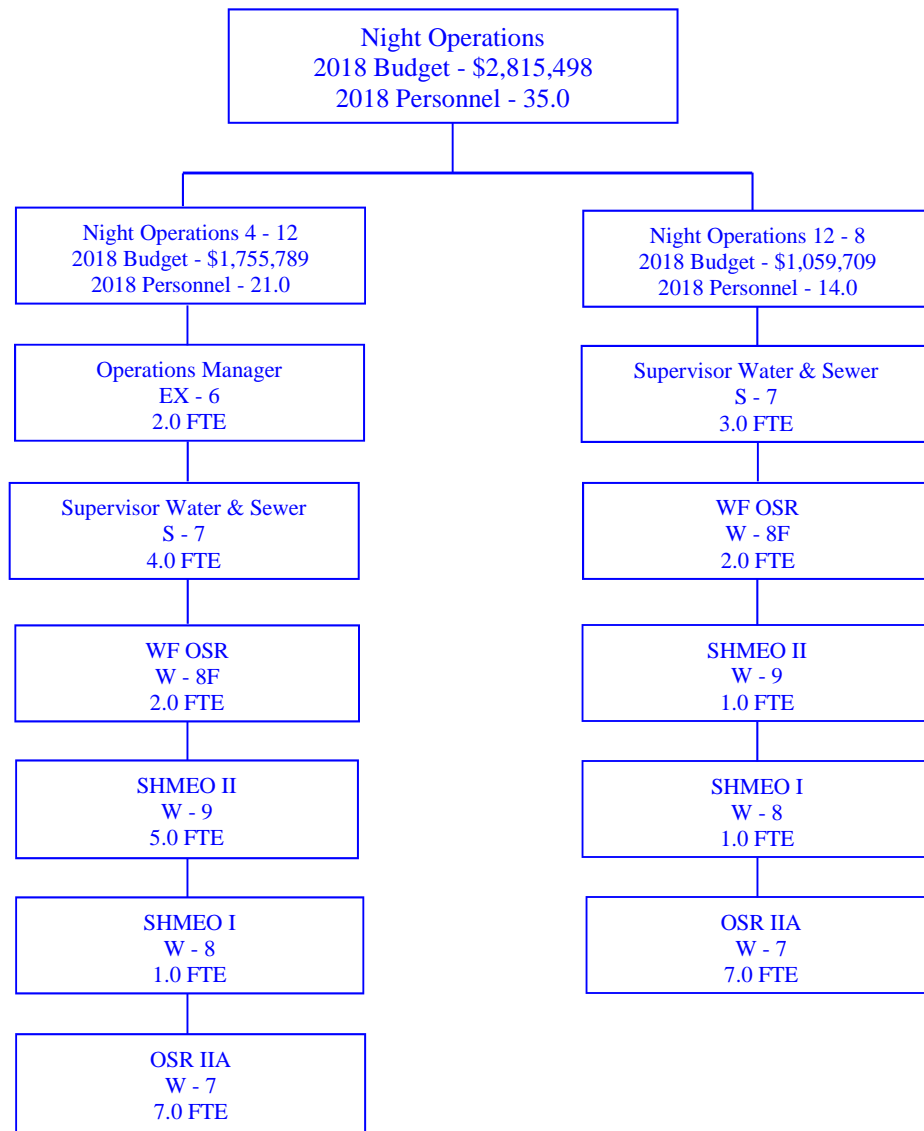
Water & Sewer Services



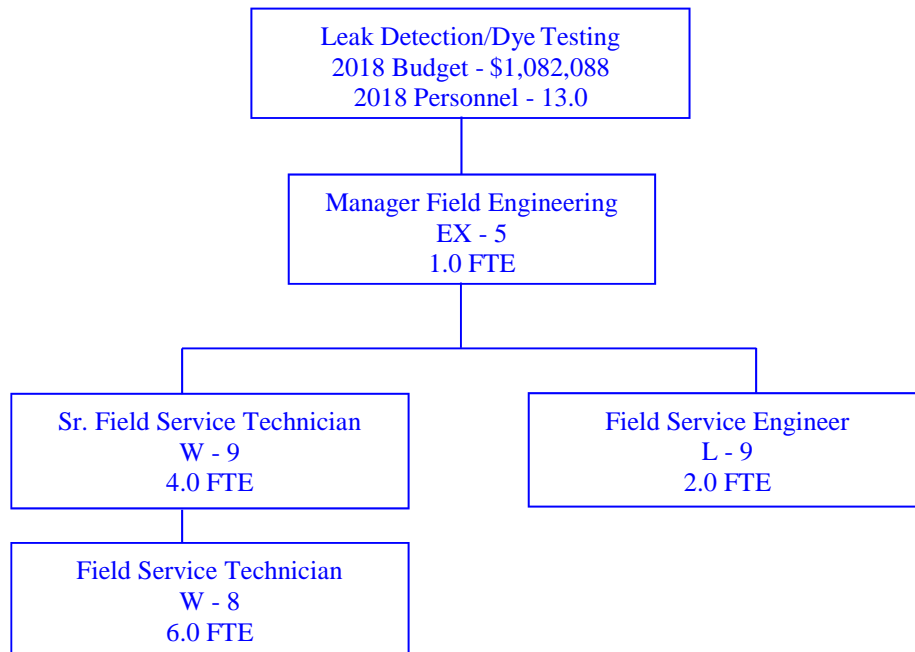
Day Operations



Night Operations



Leak Detection/Dye Testing



Operations Division

Water & Sewer Services

Program Activities

- Water & Sewer Services directs the operation and maintenance of the Commission's water, sewerage and drainage systems. The Department ensures the operability of the water and wastewater systems by efficiently maintaining and performing emergency repairs to water mains, service pipes, hydrants, gates, valves, catch basins, manholes and sewer and storm lines
- Increase water accountability by reducing the amount of water purchased from the MWRA through the continued implementation of the Commission's ongoing leak detection and MWRA Master Meter Monitoring programs
- Perform Fire Flow tests, Loss of Head tests, water pressure analysis and other diagnostic procedures as required
- Identify, through dye testing, improper sanitary connections to storm drains and identify sources of inflow and infiltration entering the sewer system
- Respond to hazardous material spills affecting the sewer system

Division Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|---------------------|---------------------|---------------------|------------------|--------------------|
| Wages and Salaries | \$9,704,350 | \$8,860,650 | \$8,893,301 | \$32,651 | 0.4% |
| Overtime | \$357,094 | \$335,925 | \$348,491 | \$12,566 | 3.7% |
| Labor Related Costs/Benefits | \$138,150 | \$48,411 | \$73,706 | \$25,295 | 52.3% |
| Supplies and Materials | \$701,198 | \$850,000 | \$850,000 | \$0 | 0.0% |
| Repair and Maintenance | \$4,051,177 | \$4,860,000 | \$5,055,000 | \$195,000 | 4.0% |
| Other Services | \$662,047 | \$696,280 | \$750,000 | \$53,720 | 7.7% |
| Inventory | \$21,871 | \$23,000 | \$23,000 | \$0 | 0.0% |
| Capital Outlay | \$44,100 | \$50,000 | \$50,000 | \$0 | 0.0% |
| Total Direct Expenses | \$15,679,987 | \$15,724,266 | \$16,043,498 | \$319,232 | 2.0% |

Explanation of Major Variances

The for 2018 budget for the Water & Sewer Services Department is \$16,043,498, an increase of \$319,232 or 2.0% from the 2017 budget. The variance is due to Wage and Salaries, Overtime, Labor Related Costs/Benefits, Repair and Maintenance and Other Services line items.

Operations Division

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|----------------------------|----------------|------------------|----------------|-----------------------|
| Water & Sewer Services | 1.0 | 1.0 | 1.0 | 0.0 |
| Day Operations | 65.0 | 68.0 | 68.0 | 0.0 |
| Night Operations | 34.0 | 35.0 | 35.0 | 0.0 |
| Leak Detection/Dye Testing | 14.0 | 13.0 | 13.0 | 0.0 |
| Total Personnel | 114.0 | 117.0 | 117.0 | 0.0 |

Explanation of Personnel Changes

Water & Sewer Services

There was no change to the position count.

Day Operations

There was no change to the position count.

Night Operations

There was no change to the position count.

Leak Detection/Dye Testing

There was no change to the position count.

2017 Program Goal Results

The Water and Sewer Services Department identified 1,153 service pipes that were previously labeled unknown, thus reducing the number of unknown service pipes. The Commission's operations crews repaired several water leaks, catch basin laterals, and sewer lines. During 2017, 237 privately owned lead services were removed under the Commission's Lead Removal Program.

2018 Program Goals and Objectives

Goal: The Operations Department will continue the effort to identify and remove publicly and privately owned lead services in the City of Boston. By researching distance cards, as-built, site plans, contract drawings and GSA's a material type can be assigned to most unknown water services.

Objectives: The objective is to eliminate any ambiguity of unknown services to ensure existing lead services are removed from the system.

Mission: Comply with Local, State and Federal Regulations

Goal: The Commission currently has cast iron water fittings in its Storeroom inventory. Much of this inventory is of questionable integrity or usefulness. These fittings were purchased in the 1970s and 1980s, before the utilization of ductile iron fittings.

Objectives: Operations personal would replace cast iron fittings with ductile iron compact fittings as needed to keep a suitable inventory. Other cast iron items not needed for reasonable inventory would be scrapped.

Mission: Enhanced Repair and Maintenance of Water or Wastewater System

Goal: The Commission has two television vehicles for sewer inspections. These vehicles will be used to increase the number of miles of sewers inspected to assist in the goal of televising 10% per year of the Commission's sanitary system.

Objectives: To televise 20 miles of sewer during 2018

Mission: Increased Production or Efficiency Improvements

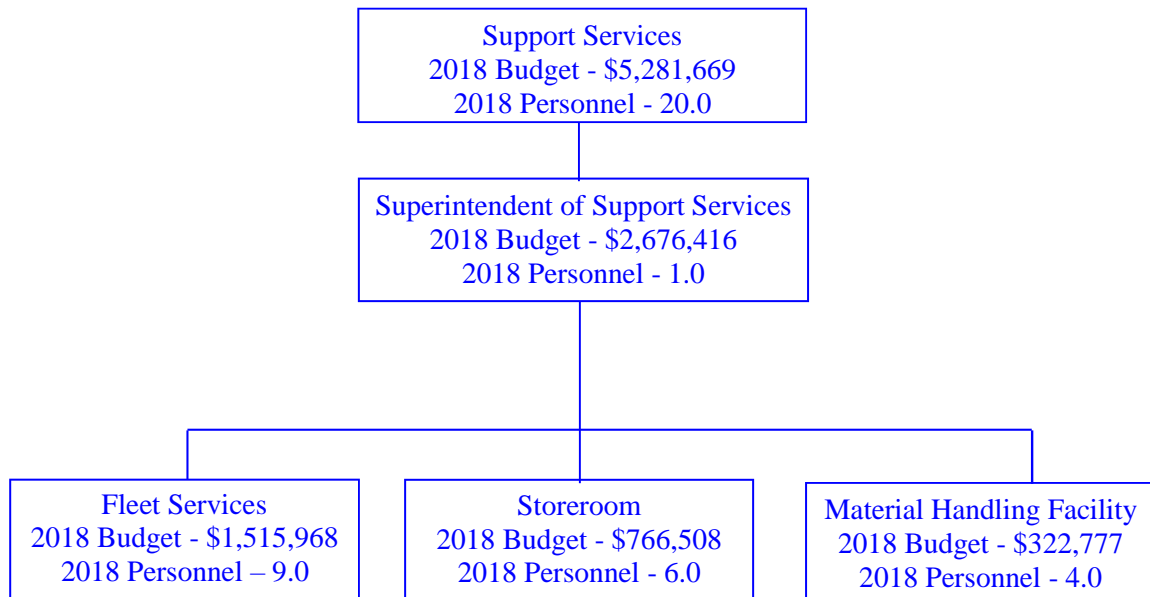
Department Maintenance Goals

| Activity | 2015 Actual | 2016 Actual | 2017 Actual | 2018 Goal |
|---|----------------|----------------|----------------|--------------|
| <u>Investigations:</u> | | | | |
| Sewer Lateral | 165 | 320 | 340 | 216 |
| Hydrant | 2,079 | 2,221 | 2,027 | 2,071 |
| Leak | 957 | 857 | 857 | 953 |
| Service Pipe | 207 | 195 | 137 | 221 |
| Frozen Pipe | 171 | 140 | 40 | 144 |
| Water Entering | 185 | 276 | 222 | 218 |
| Lead | 49 | 596 | 475 | 234 |
| Rusty Water | 245 | 222 | 289 | 183 |
| Leak Up To Owner (LUTO) | 74 | 111 | 106 | 87 |
| Catch Basin | 637 | 815 | 656 | 791 |
| Sewer/Drain | 4,215 | 3,819 | 3,803 | 457 |
| CSO Regulator | 1,067 | 993 | 826 | 949 |
| Tide Gate | 881 | 843 | 625 | 814 |
| Backflow Device | 21,748 | 22,436 | 22,571 | 21,732 |
| Hazardous & Oil Spill | 11 | 4 | 14 | 12 |
| Illegal Connection | 13 | 10 | 7 | 8 |
| SSO's Reported to DEP | 113 | 131 | 127 | 145 |
| Hydrant Illegal Opening | 29 | 29 | 16 | 30 |
| <u>Water & Sewer Main Breaks/Repair:</u> | | | | |
| Water Mains | 34 | 24 | 34 | 35 |
| Sewer Mains | 45 | 54 | 38 | 49 |
| Hydrant Replacement | 51 | 35 | 38 | 48 |
| Hydrant Repair | 312 | 238 | 408 | 289 |
| <u>Permits:</u> | | | | |
| Engineering Permits | 543 | 401 | 463 | 560 |
| Operations Permits | 526 | 580 | 371 | 661 |
| General Services | 1,095 | 1,193 | 1273 | 1,132 |
| <u>Preventative Maintenance:</u> | | | | |
| Vactored Meter Box | 4 | 13 | 10 | 7 |
| Vactored Gate Box | 1 | 70 | 129 | 24 |
| Cement Sidewalks | 560 | 526 | 513 | 523 |
| Valve Repack | 15 | 23 | 10 | 16 |
| LUTO Repair | 75 | 99 | 83 | 82 |
| Plate Handling | 36 | 13 | 43 | 24 |
| Waste Sediment Disposed/Recycled (ton) | 4,821 | 4,788 | 4,069 | 4,774 |
| Gallons Pumped Union Park (million) | 19 | 35 | 155 | 31 |

Operations Division

| Activity | 2015 Actual | 2016 Actual | 2017 Actual | 2018 Goal |
|---|----------------|----------------|----------------|--------------|
| <u>Preventive Maintenance:</u> | | | | |
| Main Pipe Flush (miles) | 200 | 224 | 220 | 227 |
| Hydrants Painted | 1,344 | 2,084 | 1,955 | 1,851 |
| Frame Reset (Water) | 77 | 74 | 42 | 80 |
| Frame Reset (Sewer) | 410 | 347 | 186 | 468 |
| Control Located | 86 | 116 | 98 | 96 |
| Control Reset | 80 | 90 | 75 | 103 |
| Mark Outs of Water and Sewer Infrastructure (Emergencies) | 3,153 | 3,439 | 3,757 | 3,264 |
| Excavation | 863 | 839 | 746 | 1,066 |
| Exercising of System Gates (Survey) | 361 | 278 | 91 | 434 |
| Hydrant Flush | 175 | 175 | 296 | 117 |
| Sewer Lines Jetted/Vactored (ft.) | 424,248 | 447,467 | 474,138 | 304,862 |
| Sewer Lines Rodded (ft.) | 2,147 | 1,379 | 1,808 | 2,174 |
| Bacteria Treatment | 961 | 220 | 492 | 757 |
| Service Pipe Repair | 94 | 100 | 82 | 104 |
| Service Pipe Relay | 99 | 54 | 38 | 71 |

Support Services



Operations Division

Support Services

Program Activities

- Manage the Operations and Maintenance Contract for the Commission's nine pumping stations

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2016-2017 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$1,779,987 | \$1,581,954 | \$1,545,223 | (\$36,731) | -2.3% |
| Overtime | \$31,437 | \$22,011 | \$22,011 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$17,330 | \$7,545 | \$7,285 | (\$260) | -3.4% |
| Supplies and Materials | \$661,309 | \$899,150 | \$899,150 | \$0 | 0.0% |
| Repair and Maintenance | \$852,622 | \$1,126,000 | \$1,301,000 | \$175,000 | 15.5% |
| Professional Services | \$1,233,747 | \$1,447,500 | \$1,487,500 | \$40,000 | 2.8% |
| Space and Equipment Rental | \$3,384 | \$7,500 | \$7,500 | \$0 | 0.0% |
| Other Services | \$13,173 | \$12,000 | \$12,000 | \$0 | 0.0% |
| Total Direct Expenses | \$4,592,989 | \$5,103,660 | \$5,281,669 | \$178,009 | 3.5% |

Explanation of Major Variances

The 2018 budget for the Support Services Department is \$5,281,669, an increase of \$178,009 or 3.5% from 2017. The variance is due to Repair and Maintenance and Professional Services line items.

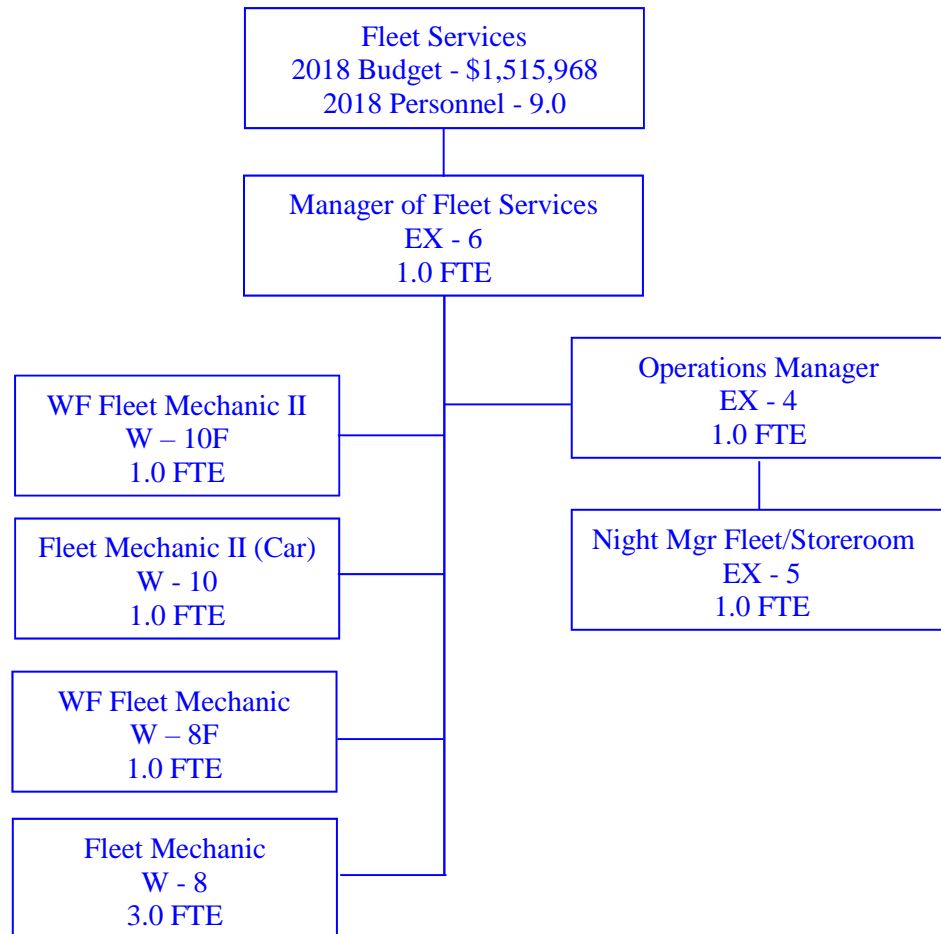
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------------|----------------|------------------|----------------|-----------------------|
| Support Services | 19.0 | 20.0 | 20.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

Fleet Services



Operations Division

Fleet Services

Program Activities

- Fleet manages and coordinates all activities required for the efficient operation and maintenance of the Commission's fleet of over 200 vehicles including heavy equipment

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$818,463 | \$739,761 | \$691,520 | (\$48,241) | -6.5% |
| Overtime | \$22,501 | \$9,548 | \$9,548 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$12,275 | \$2,111 | \$0 | (\$2,111) | -100.0% |
| Supplies and Materials | \$262,937 | \$414,400 | \$414,400 | \$0 | 0.0% |
| Repair and Maintenance | \$301,306 | \$381,000 | \$381,000 | \$0 | 0.0% |
| Space and Equipment Rental | \$3,384 | \$7,500 | \$7,500 | \$0 | 0.0% |
| Other Services | \$13,173 | \$12,000 | \$12,000 | \$0 | 0.0% |
| Total Direct Expenses | \$1,434,039 | \$1,566,320 | \$1,515,968 | (\$50,352) | -3.2% |

Explanation of Major Variances

The 2018 budget for the Fleet Services Department is \$1,515,968, a decrease of \$50,352 or 3.2% from 2017. The variance is due to Wages and Salaries and Labor Related Costs/Benefits line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|----------------|----------------|------------------|----------------|-----------------------|
| Fleet Services | 7.0 | 9.0 | 9.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

During 2017, Trilling Way Pump Station HVAC Improvement Contract, 17-203-002 was designed and advertised for public bid and awarded to Paul J Rogan Company and construction commenced in August 2017.

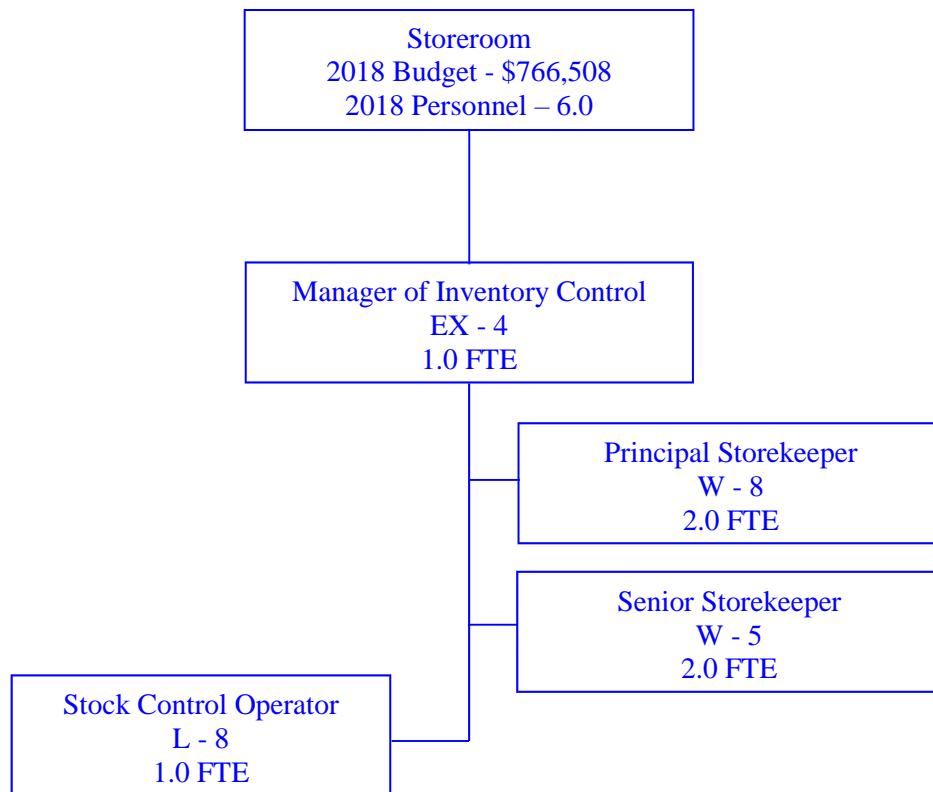
2018 Program Goals and Objectives

Goal: Manage the Design/Build for Pump Station Improvement Contract –Phase II. This work includes pump replacement and upgrades to the controls, electrical and mechanical functions of the Commission owned pump stations.

Objectives: This contract will improve the operability and reliability of the Commission’s Pump Stations.

Mission: Enhanced Repair and Maintenance of Water or Wastewater System

Storeroom



Operations Division

Storeroom

Program Activities

- The Storeroom maintains an inventory of materials, supplies, equipment and tools necessary for the ongoing maintenance and repair activities of the Division

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$487,676 | \$430,887 | \$428,554 | (\$2,333) | -0.5% |
| Overtime | \$1,089 | \$2,994 | \$3,204 | \$210 | 7.0% |
| Supplies and Materials | \$273,835 | \$310,000 | \$334,750 | \$24,750 | 8.0% |
| Total Direct Expenses | \$762,600 | \$743,881 | \$766,508 | \$22,627 | 3.0% |

Explanation of Major Variances

The 2018 budget for the Storeroom Department is \$766,508 an increase of \$22,627 or 3.0% from 2017. The variance is due to the Overtime and Supplies and Materials line items.

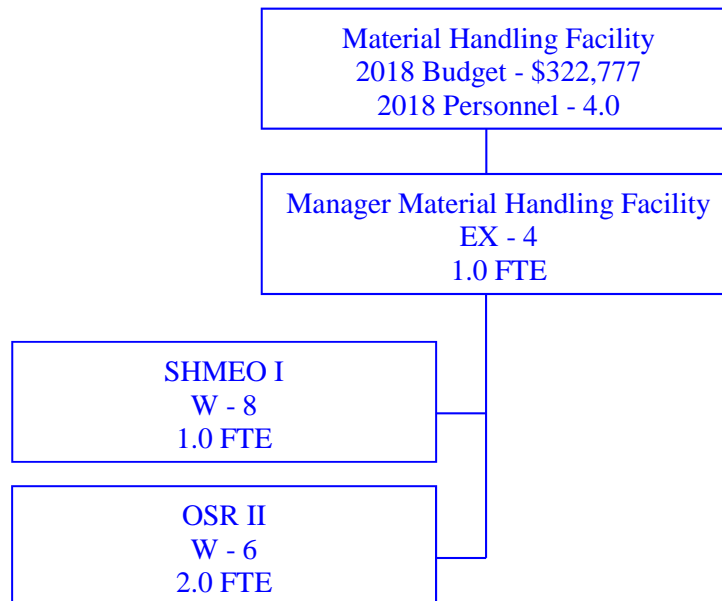
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------|----------------|------------------|----------------|-----------------------|
| Storeroom | 7.0 | 6.0 | 6.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

Material Handling Facility



Operations Division

Material Handling Facility

Program Activities

- Manage the collection and removal of sewer, drain, catch basin and trench waste generated from the BWSC's infrastructure

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$341,280 | \$314,450 | \$310,413 | (\$4,037) | -1.3% |
| Overtime | \$7,847 | \$9,259 | \$9,259 | \$0 | 0.0% |
| Labor Related Cost/Benefits | \$1,255 | \$1,416 | \$3,105 | \$1,689 | 119.3% |
| Total Direct Expenses | \$350,382 | \$325,125 | \$322,777 | (\$4,037) | -1.2% |

Explanation of Major Variances

The 2018 budget for the Material Handling Department is \$322,777, a decrease of \$4,037 or 1.2% from 2017. The variance is due to Wages and Salaries line item.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|----------------------------|----------------|------------------|----------------|-----------------------|
| Material Handling Facility | 4.0 | 4.0 | 4.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

During 2017, The protocol for the dewatering of sewer and catch basin cleanings at the Alford Street Facility was developed and includes the following action: Facility Management began ensuring that vehicles decant prior to offloading. Scheduled preventative maintenance is conducted on the particle separator and internal drainage to prevent SSO's. Support Services installed a Biological Drain Cleaner which is designed to breakdown grease for the purpose of Preventing unnecessary internal SSO's.

2018 Program Goal Results

Goal: Develop a pre-cleaning catch basin inspection program to identify basins that require cleaning prior to the catch basin cleaning contractor entering the area.

Objectives: The objective of this goal is to develop a work queue for the catch basin cleaning contractors prior to mobilizing in an area or neighborhood such that only basins identified by the Commission are cleaned. This will help to maximize the efficiency of the contractor and ensure difficult catch basins are not skipped or ignored.

Mission: Increased Production or Efficiency Improvements

Goal: Pilot the use of mobile functionality of the Commission's newly implemented work order management system, City Works, to perform manhole inspections to comply with the Commission's Capacity, Management, Operations and Maintenance (CMOM) goals.

Objectives: The objective of this goal is to pilot-test the functionality of the Commission's work order management system's mobile capabilities to improve the efficiencies of field inspections.

Mission: Increased Production or Efficiency Improvements

Goal: Since 2014 the Commission has been cleaning approximately 20,000 catch basins per year. This coupled the number of catch basin inspections gives the Commission a good reference to review the efficiency of the catch basin cleaning program.

Objectives: To analyze the catch basin cleaning and inspection program using all available data and develop a predictive schedule for future years.

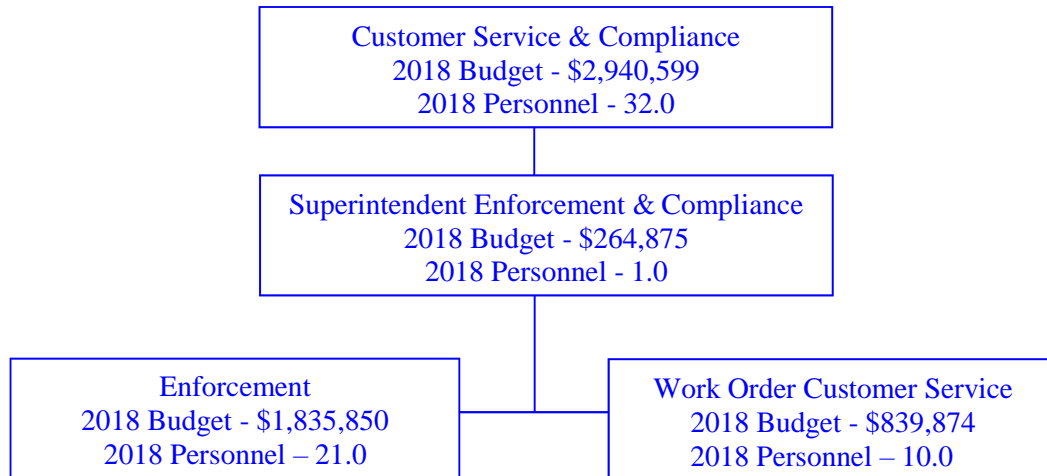
Mission: Increased Production or Efficiency Improvements

Goal: Piloting a environmentally sound program for the prevention of organic waste Buildup (FOG) at the Material Handling Facility.

Objectives: Digests grease, fat, oil, and other organic waste to keep the infrastructure system clean and flowing to prevent blockages and potential SSO's at the Alford Street Facility.

Mission: Protect Environment

Customer Service & Compliance



Operations Division

Customer Service & Compliance

Program Activities

- Customer Service & Compliance maintains the Commission's work order management system (CityWorks) and provides assistance to the Commission's customers with telephone inquiries

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$3,042,441 | \$2,606,437 | \$2,763,739 | \$157,302 | 6.0% |
| Overtime | \$27,301 | \$28,037 | \$28,037 | \$0 | 0.0% |
| Labor Related Cost/Benefits | \$29,062 | \$16,558 | \$20,023 | \$3,465 | 20.9% |
| Supplies and Materials | \$9,856 | \$11,000 | \$11,000 | \$0 | 0.0% |
| Repair and Maintenance | \$105,489 | \$109,500 | \$112,800 | \$3,300 | 3.0% |
| Professional Services | \$3,365 | \$5,000 | \$5,000 | \$0 | 0.0% |
| Total Direct Expenses | \$3,217,514 | \$2,776,532 | \$2,940,599 | \$164,067 | 5.9% |

Explanation of Major Variances

The 2018 budget for the Customer Service & Compliance Department is \$2,940,599, an increase of \$164,067 or 5.9% from 2017. The variance is due to Wages and Salaries, Labor Related Costs/Benefits and Repair and Maintenance line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-------------------------------|----------------|------------------|----------------|-----------------------|
| Customer Service & Compliance | 33.0 | 32.0 | 32.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

The Enforcement Division monitors the number of Non-compliant surveys and a follow-up system has been put in place to schedule and ensure that all violations have been corrected. During 2017, 120 non-compliant Surveys have been re-inspected and brought into compliance.

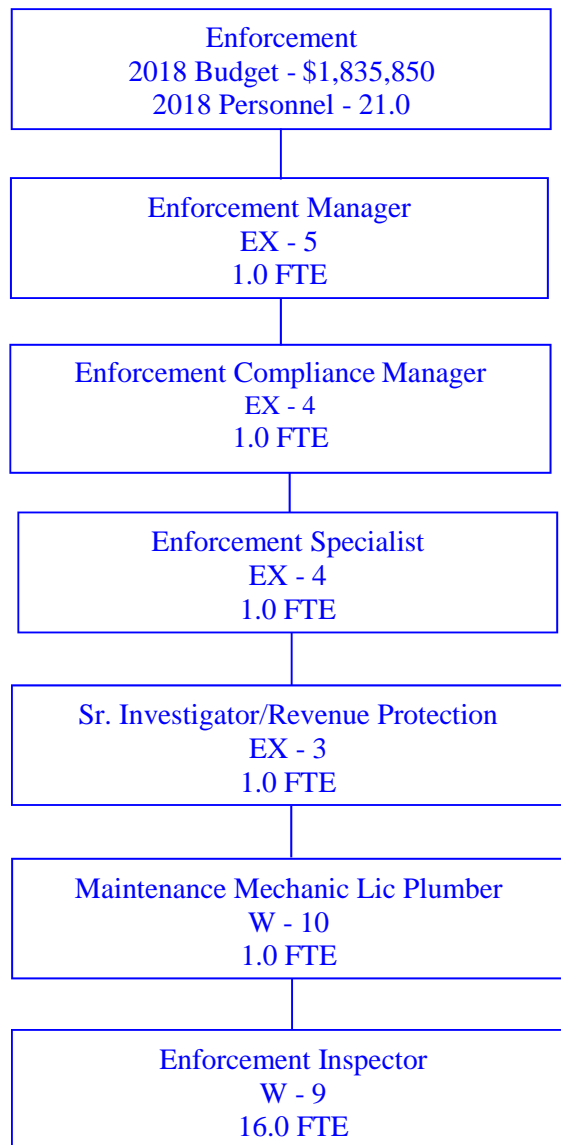
2018 Program Goals and Objectives

Goal: Develop a procedure to review the Cross Connection testing on a quarterly basis using the Checkmate and BESS software's.

Objectives: The objective of the goal is to ensure that the number of cross connection tests performed is accurate and to investigate any discrepancies as early as possible. This will confirm that the number of tests reported in the ASR is correct.

Mission: Improve/Develop Policy/Procedure

Enforcement



Operations Division

Enforcement

Program Activities

- Protect the public water systems distribution and water quality from contamination and/or pollution due to unprotected or improperly protected Cross Connection
- Provide water sampling as required by State and Federal Regulatory Agencies
- Provide weekly chlorine and bacteriological samplings to the MWRA and report results to the Boston Public Health Commission
- Administrate the BWSC Sewer Abatement Program
- Conduct field inspection of authorized Backwater Valve installations

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$2,028,345 | \$1,628,184 | \$1,818,974 | \$190,790 | 11.7% |
| Overtime | \$351 | \$2,593 | \$2,775 | \$182 | 7.0% |
| Labor Related Costs/Benefits | \$14,982 | \$13,425 | \$14,101 | \$676 | 5.0% |
| Total Direct Expenses | \$2,043,678 | \$1,644,202 | \$1,835,850 | \$191,648 | 11.7% |

Explanation of Major Variances

The 2018 budget for Enforcement Department is \$1,835,850, an increase of \$191,648 or 11.7% from 2017. The variance is due to Wages and Salaries, Overtime and Labor Related Costs/Benefits line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-------------|----------------|------------------|----------------|-----------------------|
| Enforcement | 21.0 | 21.0 | 21.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

The Enforcement Division is in year one of a two year cycle 2017-2018. Under the program the Commission must identify, inspect and monitor pollutants in Stormwater discharges to the Commission's drainage system from industrial facilities. 192 facilities are scheduled for inspection in 2017 and 202 facilities were inspected over the course of the year.

2018 Program Goals and Objectives

Goal: The Commission has developed and implemented an Industrial Facility Stormwater Pollution Prevention Program (IFSPPP). In 2017 the Enforcement Department completed the program's first two-year cycle schedule. During 2018 the department will research the City of Boston's SIC (Standard Industrial Classification) list and determine if new establishments need to be added to the inspection.

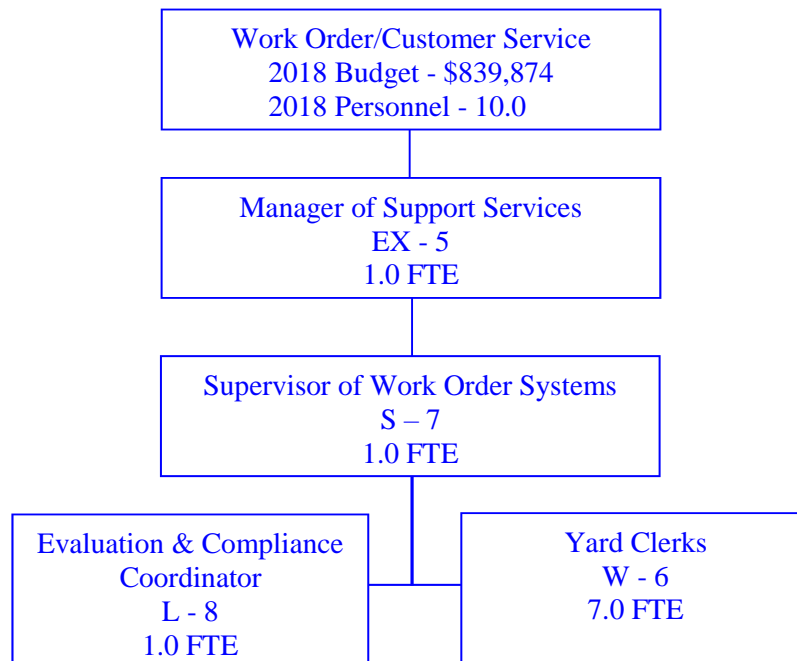
Objectives: To research the SIC list for new facilities and review the opportunity to streamline the IFSPPP inspections.

Mission: Protect Environment

Department Maintenance Goals

| Activity | 2015 Actual | 2016 Actual | 2017 Actual | 2018 Goal |
|--|----------------|----------------|----------------|--------------|
| Sewer Abatements: | | | | |
| Sewer Requests | 38 | 39 | 53 | 50 |
| Sewer Inspections | 57 | 56 | 69 | 50 |
| Sewer Approvals | 57 | 56 | 69 | 50 |
| Inspections of Backflow Device Installations: | | | | |
| Semi-annual | 13,114 | 13,507 | 13,517 | 13,507 |
| Annual | 7,672 | 7,911 | 8,051 | 7,911 |
| Initial Inspections of Backflow Devices | 631 | 619 | 572 | 500 |
| Conducting Cross Connection Surveys of Industrial, Institutional and Commercial Properties | 1,572 | 1,238 | 1193 | 960 |

Work Order/Customer Service



Operations Division

Work Order/Customer Service

Program Activities

- Work Order/Customer Service maintains the Commission's work order management system (CityWorks) and provides assistance to the Commission's customers with telephone inquiries

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$861,235 | \$729,588 | \$811,125 | \$81,537 | 11.2% |
| Overtime | \$26,950 | \$25,262 | \$25,262 | \$0 | 0.0% |
| Labor Related Cost/ Benefits | \$11,867 | \$2,716 | \$3,487 | \$771 | 28.4% |
| Total Direct Expenses | \$900,052 | \$757,566 | \$839,874 | \$82,308 | 10.9% |

Explanation of Major Variances

The 2018 budget for the Work Order/Customer Service Department is \$839,874, an increase of \$82,308 or 10.9% from 2017. The variance is due to Wages and Salaries and Labor Related Cost/Benefits line items.

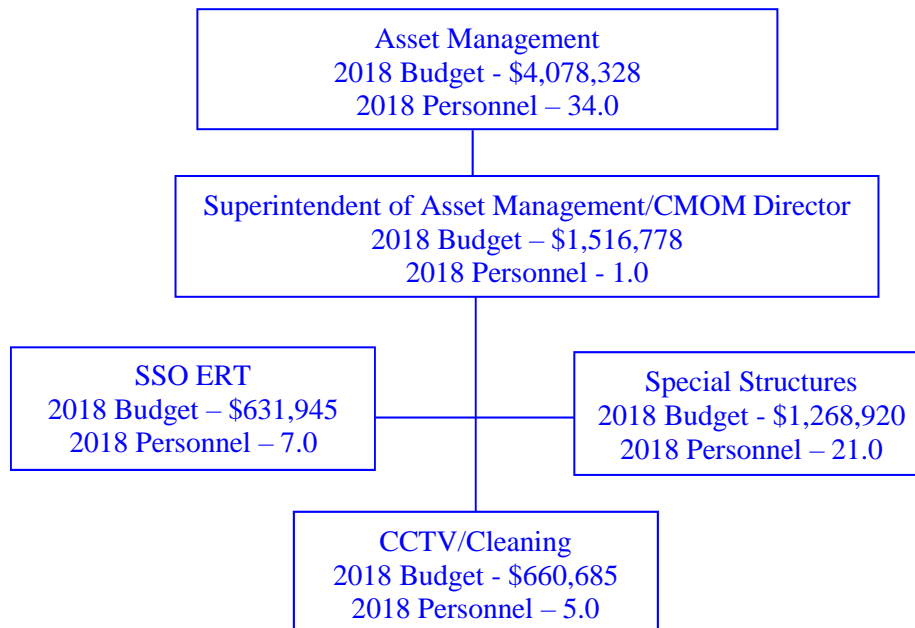
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-----------------------------|----------------|------------------|----------------|-----------------------|
| Work Order/Customer Service | 11.0 | 10.0 | 10.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

Asset Management/CMOM



Operations Division

Asset Management/CMOM

Program Activities

- Inspect and maintain the combined sewer overflow system in accordance with the Commission's National Pollutant Discharge Elimination System (NPDES) permit
- Inspect sewers and building connections within low groundwater areas to ensure that they are not causing the drawdown
- Inspect and ensure the operability of all large diameter water valves, division gates, and appurtenances.
- Inspect manholes, siphon chambers and tide gates for defects and recommend repair and/or replacement

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$2,879,754 | \$2,616,265 | \$2,723,402 | \$107,137 | 4.1% |
| Overtime | \$39,149 | \$37,478 | \$37,478 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$23,483 | \$73,442 | \$42,448 | (\$30,994) | -42.2% |
| Repair and Maintenance | \$916,564 | \$925,000 | \$1,225,000 | \$300,000 | 32.4% |
| Professional Services | \$17,456 | \$20,000 | \$50,000 | \$30,000 | 150.0% |
| Total Direct Expenses | \$3,876,406 | \$3,672,185 | \$4,078,328 | \$406,143 | 11.1% |

Explanation of Major Variances

The 2018 budget for Asset Management/CMOM Department is \$4,078,328, an increase of \$406,143 or 11.1% from 2017. The variance is due to the Wages and Salaries, Repair and Maintenance and Professional Services line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-----------------------|----------------|------------------|----------------|-----------------------|
| Asset Management/CMOM | 1.0 | 1.0 | 1.0 | 0.0 |
| SSO ERT | 7.0 | 7.0 | 7.0 | 0.0 |
| Special Structures | 21.0 | 21.0 | 21.0 | 0.0 |
| CCTV/Cleaning | 5.0 | 5.0 | 5.0 | 0.0 |
| Total | 34.0 | 34.0 | 34.0 | 0.0 |

Operations Division

Explanation of Personnel Changes

Asset Management/CMOM

There was no change to the position count.

SSO ERT

There was no change to the position count.

Special Structures

There was no change to the position count.

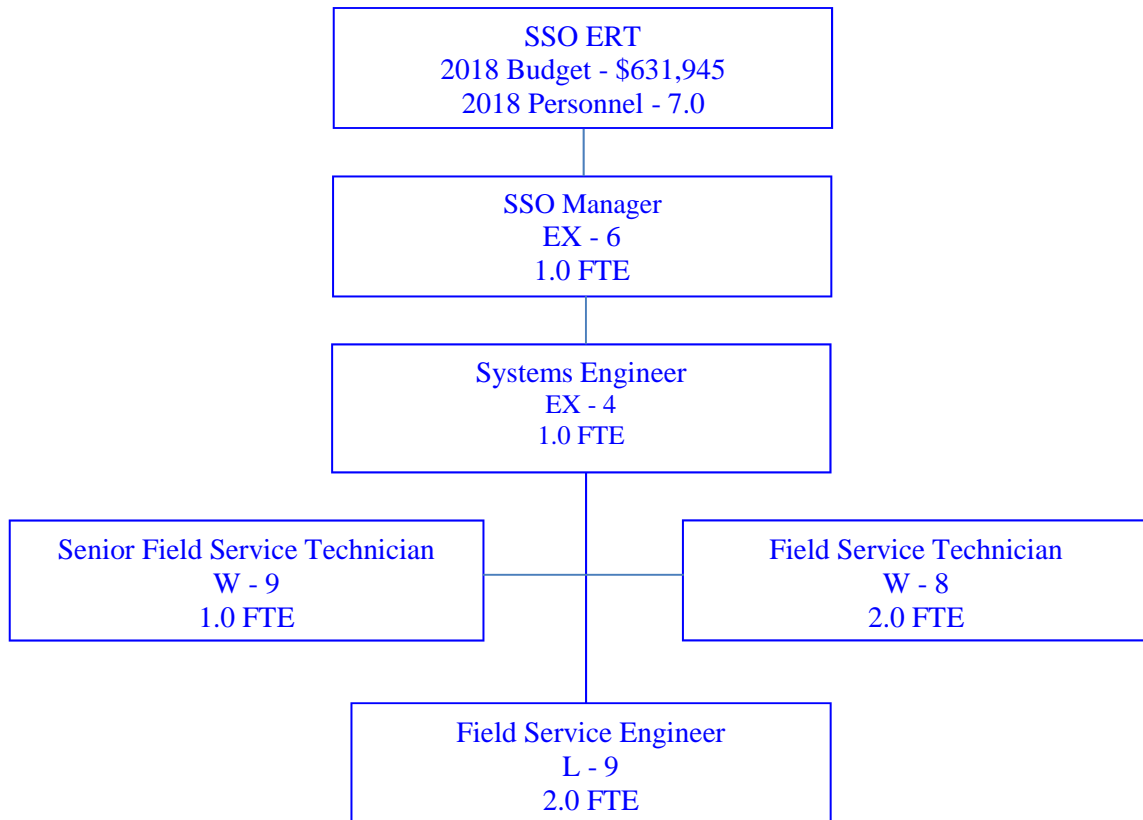
CCTV/Cleaning

There was no change to the position count.

Department Maintenance Goals

| Activity | 2016 Actual | 2017 Actual | 2018 Goal |
|---|----------------|----------------|--------------|
| <u>Capacity, Management, Operations and Maintenance (CMOM) :</u> | | | |
| Catch Basin Cleaning | 21,804 | 22,064 | 20,00 |
| Catch Basin Inspections | 10,665 | 12,673 | 10,000 |
| Clean and Inspect Sewers and Drains | 96.77 miles | 93.74 miles | 90 miles |
| Manhole Inspections | 6,273 | 7,376 | 5,000 |
| Siphon Chamber Inspections | 102 | 105 | 112 |
| Inspect CSO Regulator | 993 | 1099 | 984 |
| Inspect CSO Tide Gate | 843 | 828 | 720 |

SSO ERT



Operations Division

SSO ERT

Program Activities

- Ensure timely response, reporting, tracking and mitigation of SSOs in accordance with the Commission's 2012 Consent Decree with EPA
- Manage the Commission's SSO Emergency Response Plan. Conduct training in the standard operating procedures for responding to and reporting of SSOs
- Maintain the computerized record keeping system for SSO reporting to assure data validity and consistency
- Analyze SSO events and recommend/implement recommendations for future mitigation or elimination

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$609,140 | \$545,303 | \$624,287 | \$78,984 | 14.5% |
| Overtime | \$1,525 | \$2,570 | \$2,570 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$5,501 | \$2,941 | \$5,088 | \$2,147 | 73.0% |
| Total Direct Expenses | \$616,166 | \$550,814 | \$631,945 | \$81,131 | 14.7% |

Explanation of Major Variances

The 2018 budget for the SSO ERT Department is \$631,945, an increase of \$81,131 or 14.7% from 2017. The variance is due to Wages and Salaries and Labor Related Costs/Benefits line items.

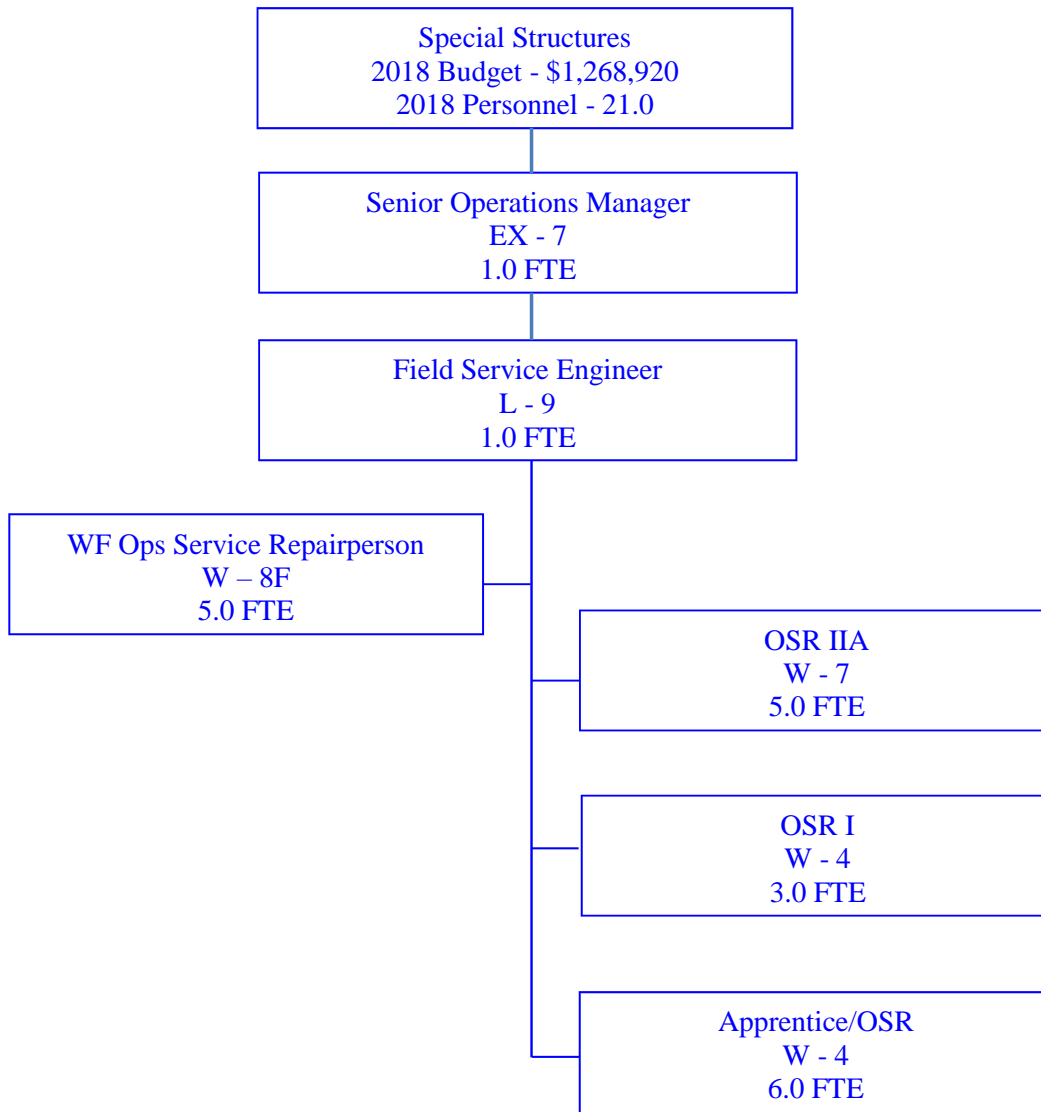
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------|----------------|------------------|----------------|-----------------------|
| SSO ERT | 7.0 | 7.0 | 7.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

SPECIAL STRUCTURES



Operations Division

Special Structures

Program Activities

- Inspect and maintain the combined sewer overflow system in accordance with the Commission's National Pollutant Discharge Elimination System (NPDES) permit
- Inspect sewers and building connections within low groundwater areas to ensure that they are not causing the drawdown
- Inspect and ensure the operability of all large diameter water valves, division gates, and appurtenances
- Inspect manholes, siphon chambers, and tide gates for defects and recommend repair and/or replacement

Department Budget Summary

| Expense Line Item | 2015 Actual | 2016 Budget | 2017 Budget | Dollar Variance | 2016-2017 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$1,512,452 | \$1,394,614 | \$1,225,311 | (\$169,303) | -12.1% |
| Overtime | \$37,624 | \$34,908 | \$34,908 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$14,459 | \$51,329 | \$8,701 | (\$42,628) | -83.0% |
| Total Direct Expenses | \$1,564,535 | \$1,480,851 | \$1,268,920 | (\$211,931) | -14.3% |

Explanation of Major Variances

The 2018 budget for Special Structure Department is \$1,268,920, a decrease of \$211,931 or 14.3% from the 2017 budget. The variance is due to Wages and Salaries and Labor Related Costs/Benefits line items.

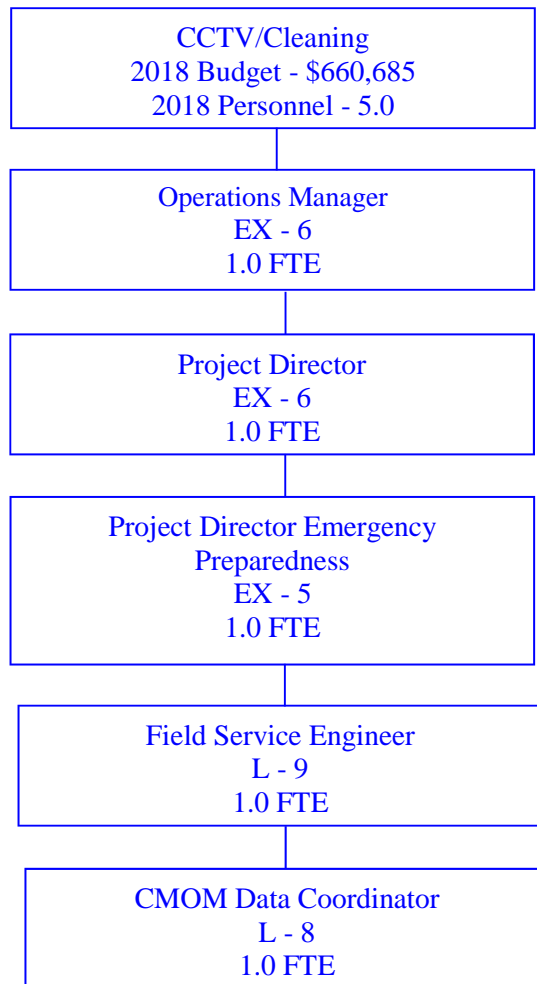
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|--------------------|----------------|------------------|----------------|-----------------------|
| Special Structures | 21.0 | 21.0 | 21.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

CCTV/Cleaning



Operations Division

CCTV, Pipe Cleaning and Catch Basins

Program Activities

- Clean and inspect approximately ten percent (10%) of the Commission's sewer system annually using a risk based approach. Analyze inspection data and make recommendations for repair and improvements
- Centralize all Closed Circuit Television (CCTV) data for reporting and scoring purposes
- Inspect all of the Commission's catch basins on an annual basis and clean as necessary. The current program is anticipated to clean approximately 20,000 catch basins annually
- Utilize catch basin inspection data to schedule cleaning, other maintenance and repairs of defects found

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$583,032 | \$430,876 | \$634,251 | \$203,375 | 47.2% |
| Labor Related Cost/Benefits | \$1,500 | \$17,011 | \$26,434 | \$9,423 | 55.4% |
| Total Direct Expenses | \$584,532 | \$447,887 | \$660,685 | \$212,798 | 47.5% |

Explanation of Major Variances

The 2018 budget for CCTV/CB Cleaning is \$660,685, an increase of \$212,798 or 47.5% from 2017. The variance is due to Wage and Salaries and Labor Related Cost/Benefits line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------------|----------------|------------------|----------------|-----------------------|
| CCTV/CB Cleaning | 5.0 | 5.0 | 5.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

During 2017, a pre-cleaning catch basin inspection program was developed to identify basins that require cleaning prior to contractors beginning cleaning. The new system in place identifies catch basins that have not been inspected or cleaned within the previous six-months and are then added to the current schedule at the start of each month. Inspections were completed on 11,816 of these basins and determined that 6,691 did not warrant cleaning were removed from the current schedule thus making the process more efficient. Operations and GIS staff met to discuss and choose a concept for selecting pipe attributes obtained during CCTV Inspections that can be compared and considered for updates to the production GIS. Utilizing database queries, the two data sources will be compared to determine the amount of discrepancies that currently exist. The results of this comparison will drive the decision on how often this information will have to be compiled. Staff tested the mobile functionality of Cityworks using a VPN connection on Commission issued iPads. The software was found to perform with acceptable capabilities in the mobile environment with only minor glitches and reduced functionality.

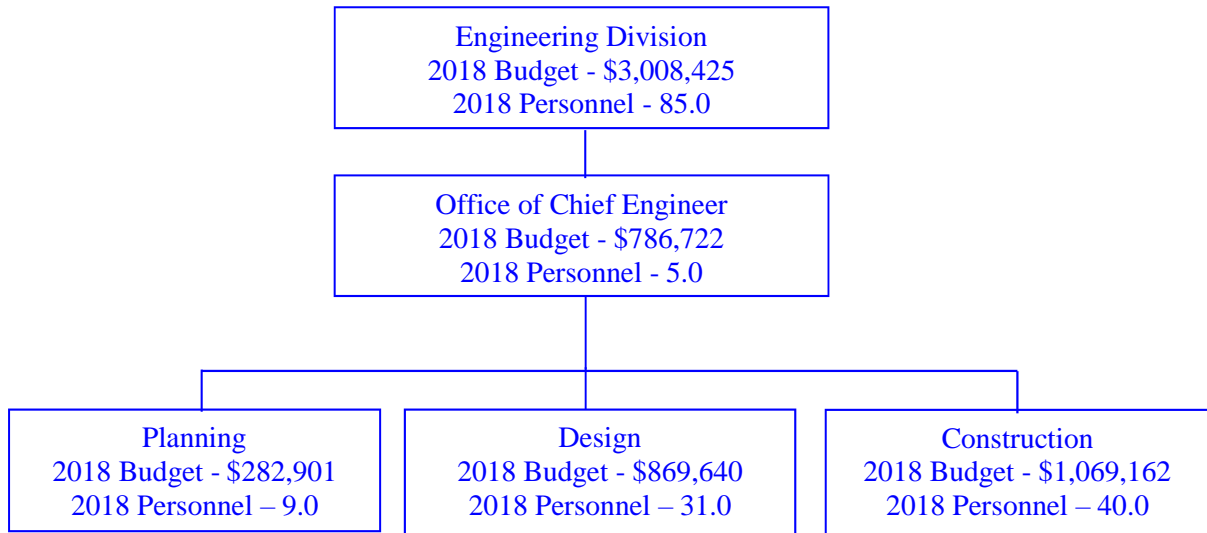
2018 Program Goals and Objectives

Goal: Piloting an environmentally sound program for the prevention of organic waste Buildup (FOG) at the Material Handling Facility.

Objectives: Digests grease, fat, oil, and other organic waste to keep the infrastructure system clean and flowing to prevent blockages and potential SSO's at the Alford Street Facility.

Mission: Protect Environment

ENGINEERING DIVISION



Engineering Division

Engineering Division Organization

The Engineering Division is comprised of the Office of the Chief Engineer and three other departments:

- **Planning**
- **Design**
- **Construction**

Division Mission

The Engineering Division ensures the provision of high quality, reliable water, sewer and drainage services while protecting the environment. The Engineering Division accomplishes this through pursuing an aggressive Renewal and Replacement program, supporting the Boston Harbor pollution abatement effort and meeting all federal and state water and wastewater laws.

Division Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Office of the Chief Engineer | \$749,029 | \$791,928 | \$786,722 | (\$5,206) | -0.7% |
| Planning | \$1,048,703 | \$258,098 | \$282,901 | \$24,803 | 9.6% |
| Design | \$3,195,791 | \$883,650 | \$869,640 | (\$14,010) | -1.6% |
| Construction | \$4,212,419 | \$1,058,747 | \$1,069,162 | \$10,415 | 1.0% |
| Total Direct Expenses | \$9,205,942 | \$2,992,423 | \$3,008,425 | \$16,002 | 0.5% |

Explanation of Major Variances

The 2018 budget for the Engineering Division is \$3,008,425, an increase of \$16,002, or 0.5% from the 2017 budget. The variance is due to increases in Planning and Construction Departments line items.

Engineering Division

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|---------------------------|----------------|------------------|----------------|-----------------------|
| Chief Engineering Officer | 5.0 | 6.0 | 5.0 | (1.0) |
| Planning | 8.0 | 8.0 | 9.0 | 1.0 |
| Design | 32.0 | 32.0 | 31.0 | (1.0) |
| Construction | 40.0 | 39.0 | 40.0 | 1.0 |
| Total Personnel | 85.0 | 85.0 | 85.0 | 0.0 |

Explanation of Personnel Changes

Office of the Chief Engineer

One position was transferred to Planning.

Planning

One position was transferred from Office of Chief Engineer.

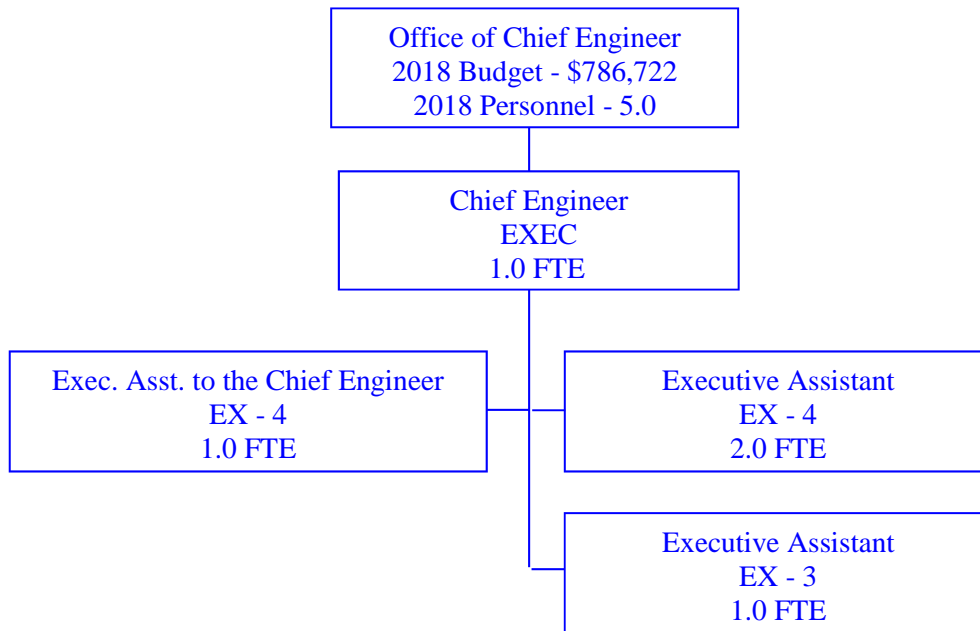
Design

One position was transferred to Construction

Construction

One position transferred from Design.

Office of the Chief Engineer



Engineering Division

Office of Chief Engineer

Program Activities

- Provide overall management and coordination of all engineering program development to ensure the provision of high quality, reliable water, sewer and drainage services
- Manage and coordinate all Commission activities with the MWRA
- Manage and coordinate all Commission activities regarding Central Artery/Tunnel Projects

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$572,364 | \$555,227 | \$551,661 | (\$3,566) | -0.6% |
| Overtime | \$0 | \$566 | \$0 | (\$566) | -100.0% |
| Labor Related Costs/Benefits | \$20,189 | \$20,515 | \$21,561 | \$1,046 | 5.1% |
| Professional Services | \$124,734 | \$191,120 | \$189,000 | (\$2,120) | -1.1% |
| Training/Seminar/Travel | \$31,742 | \$24,500 | \$24,500 | \$0 | 0.0% |
| Total Direct Expenses | \$749,029 | \$791,928 | \$786,722 | (\$5,206) | -0.7% |

Explanation of Major Variances

The 2018 budget for the Office of Chief Engineer is \$786,722, a decrease of \$5,206 or 0.7% from 2017. The variance is due to decreases in the Wages and Salaries, Overtime, and Professional Services line items.

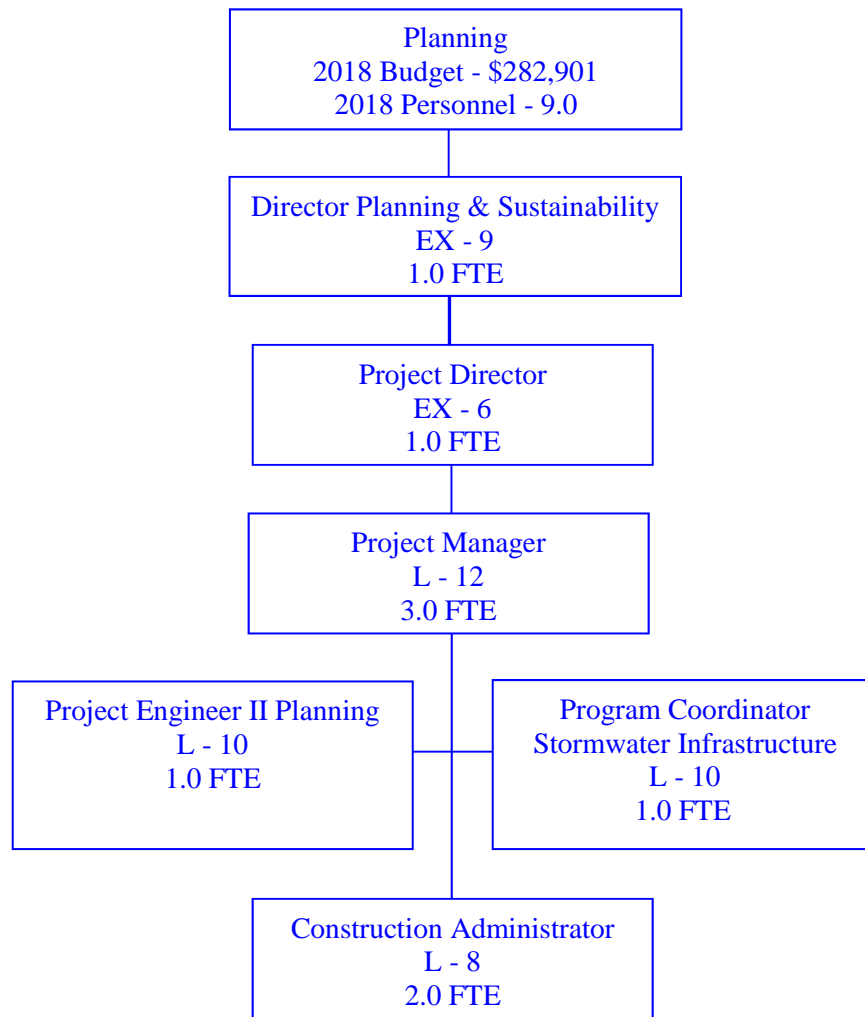
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|--------------------------|----------------|------------------|----------------|-----------------------|
| Office of Chief Engineer | 5.0 | 6.0 | 5.0 | (1.0) |

Explanation of Personnel Changes

One position transferred to Planning.

Planning



Engineering Division

Planning

Program Activities

- Conduct system-wide, area specific investigations and project planning
- Determine planning projects for three-year Capital Improvement Program
- Develop and coordinate Commission regulatory compliance activities
- Analyze and disseminate demographic, engineering and regulatory information
- Devise and manage consultant contracts
- Develop model capabilities
- Evaluate the impacts on Commission facilities of proposed public and private projects
- Participate in the review of MWRA projects and implementation of those assigned to BWSC

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$1,020,746 | \$210,554 | \$207,815 | (\$2,739) | -1.3% |
| Labor Related Costs/Benefits | \$17,904 | \$19,044 | \$41,586 | \$22,542 | 118.4% |
| Supplies and Materials | \$213 | \$8,500 | \$8,500 | \$0 | 0.0% |
| Professional Services | \$9,840 | \$20,000 | \$25,000 | \$5,000 | 25.0% |
| Total Direct Expenses | \$1,048,703 | \$258,098 | \$282,901 | \$24,803 | 9.6% |

Explanation of Major Variances

The 2018 budget for the Planning Department is \$282,901 an increase of \$24,803 or 9.6% from 2017. The variance is due to increases in the Labor Related Costs/Benefits and Professional Services line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------|----------------|------------------|----------------|-----------------------|
| Planning | 8.0 | 8.0 | 9.0 | 1.0 |

Explanation of Personnel Changes

One position transferred from Office of Chief Engineer.

2017 Program Goal Results

A first draft of the Commission's updated Stormwater Management Program Plan was prepared during 2017. A final report for the Urban Runoff Water Quality Project was completed based on weekly sampling at Pine Neck Creek, Tannery Brook, and Spring Street. An analysis was conducted of inspections that have been conducted during 2017 and found that there are 255 outfalls in the Commission's system that needed inspection and were inspected in dry and wet conditions.

2018 Program Goals and Objectives

Goal: Pursuant to the Consent Decree with EPA, prepare a revised priority ranking of storm drain sub-catchments being investigated under the Illicit Discharge Elimination Program; submit the priority ranking to EPA by January 31, 2018. In 2018, screen all BWSC outfalls and interconnections in preparation for the 2019 re-prioritization of sub-catchment investigations.

Objective: 2017 outfall screening data will be provided to the Commission before January 1, 2018. The data will be compiled and investigations of sub-catchments will be prioritized based on the water quality and other relevant data provided. A table showing the priority ranking and a written report summarizing the methods used to establish the priorities will be prepared and submitted to EPA by January 31, 2018. All BWSC outfalls and interconnections will be screened in 2018 for the re-prioritization of sub-catchments report to be submitted to EPA in 2019.

Mission: Comply with Local, State and Federal Regulations

Goal: Identify and evaluate alternative technologies and methodologies aimed at expediting the identification of the sources of illicit discharges to the Commission drainage system.

Objective: Under the Commission's Illicit Discharge Detection and Elimination Program some storm drains have shown evidence of sanitary influence, and despite having dye tested of all the adjacent buildings, and televised the adjacent sewers and drains, no source of the contamination has been identified. This goal will involve research and discussions with experts, colleagues, and field personnel to identify and explore alternative investigative technologies and methodologies (e.g. testing flows for human DNA) which could aid in, and expedite identification of sanitary sources of contamination in storm drains.

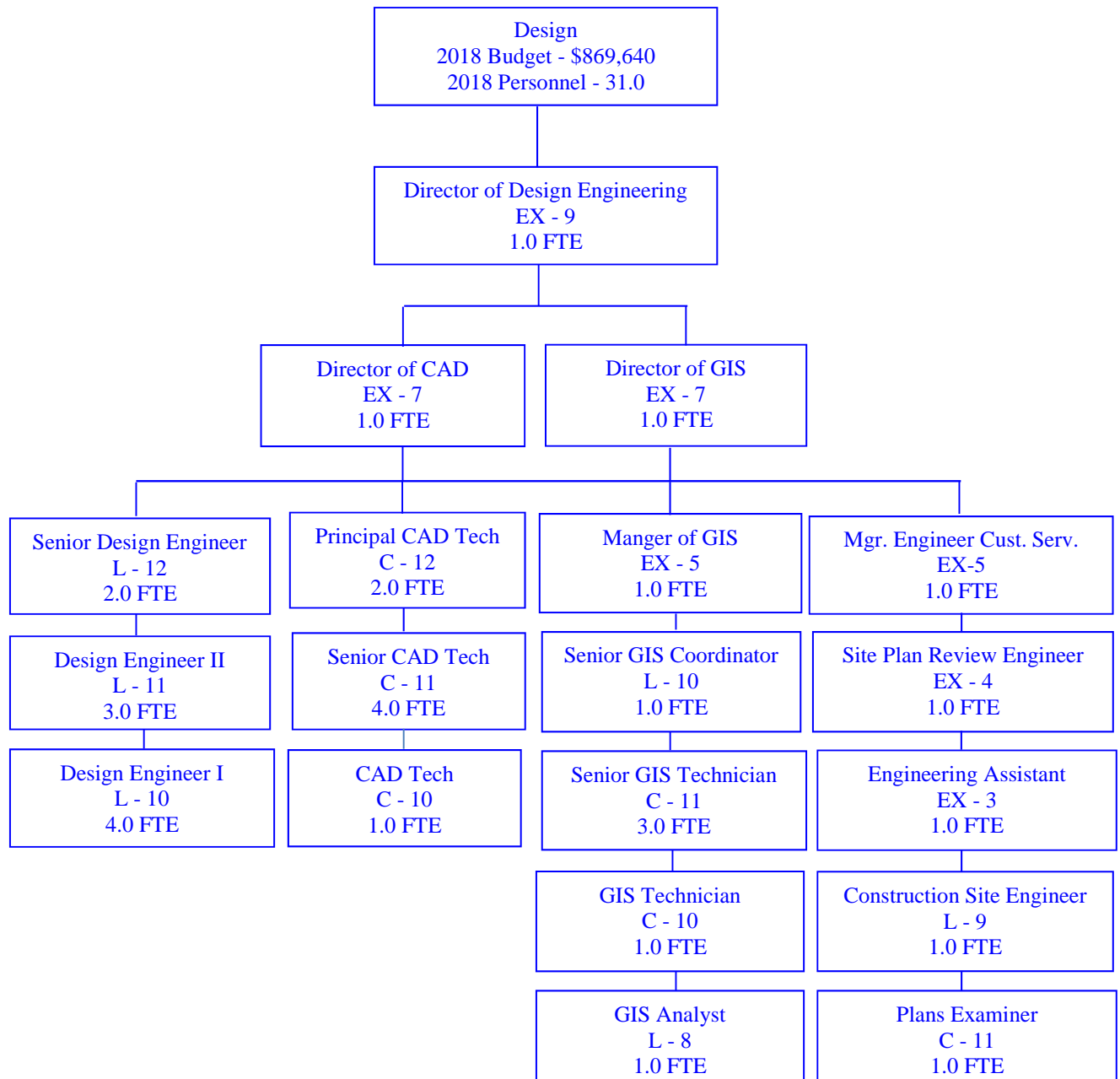
Mission: Comply with Local, State and Federal Regulations

Goal: Manage a database containing flow metering and rainfall data. Provide assistance to the Operations Department with understanding how the collections system responds to wet weather.

Objective: To achieve this, the Planning staff will manage the transfer of data into an existing database. Planning staff will develop graph and map from this data. These tools will be used to analyze the system's response in wet weather.

Mission: Protect Environment

Design



Engineering Division

Design

Program Activities

- Provide the Commission with professional engineering services for the design of water and wastewater construction projects
- Provide engineering review of outside projects that affect Commission facilities ensuring that those projects protect or enhance the Commission facilities
- Service BWSC's customers and in-house personnel by providing GIS information, research data, facility prints, water and sewer service location cards, As-Built and other relevant Street Log, Webpage, and Arcview information concerning the Commission's systems
- Schedule new water, sewer, drain installations and repair inspections and provide GIS with as built and inspector's reports for GIS input

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$3,096,218 | \$662,998 | \$709,767 | \$46,769 | 7.1% |
| Overtime | \$22,745 | \$8,857 | \$8,857 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$42,957 | \$108,895 | \$35,612 | (\$73,283) | -67.3% |
| Supplies and Materials | \$16,040 | \$57,400 | \$64,604 | \$7,204 | 12.6% |
| Repair and Maintenance | \$8,941 | \$19,500 | \$24,800 | \$5,300 | 27.2% |
| Professional Services | \$4,428 | \$15,000 | \$15,000 | \$0 | 0.0% |
| Other Services | \$4,462 | \$11,000 | \$11,000 | \$0 | 0.0% |
| Total Direct Expenses | \$3,195,791 | \$883,650 | \$869,640 | (\$14,010) | -1.6% |

Explanation of Major Variances

The 2018 budget for the Design Department is \$869,640 a decrease of \$14,010 or 1.6% from 2017. The variance is due to a decrease in the Labor Related Costs/Benefits line item.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------|----------------|------------------|----------------|-----------------------|
| Design | 32.0 | 32.0 | 31.0 | (1.0) |

Explanation of Personnel Changes

One position transferred to Construction.

2017 Program Goal Results

The Commission's Site Plan requirements were updated and revised as recommended by the 2015 Wastewater and Drainage Facilities Plan so that it now meets all current requirements for stormwater management. The GIS Department collected, cataloged, and linked all relevant record plans/documents for the Commission's Water Mains that are in or above MBTA Tunnels. Additionally, Design staff continued working on the Manhole Annotation Project, generating a process to identify where annotation was missing but inverts exist and completing the final 105 tiles completing this project.

2018 Program Goals and Objectives

Goal: Engage in specific outreach efforts amongst Commission divisions to increase employee engagement and understanding of the GIS system. Host multiple training and information sessions, develop a streamlined editing app, create a quick reference guide.

Objective: Our GIS system has extensive capabilities which may not be utilized by all personnel. Each division may have certain GIS needs that can be better served by a fully developed understanding of the full suite of layers and applications that exist within our system. Outreach efforts are necessary to educate and train staff to use these resources in their daily work.

Mission: Provide Staff Training

Goal: Create a fully-developed framework for a proposed Survey Department. Deliverables will include a statement of needs; an Org- chart; detailed job descriptions including grade and associated salary for each position; detailed narrative of staff impacts to Design, CAD, and Construction Depts; proposed workflow diagram; and an annual workload cycle narrative.

Objective: Decrease the amount of time it takes to develop bid documents. Increase efficiencies of the Design and CAD depts. Maximize internal resources and minimize the use of external survey and design consultants.

Mission: Increased Production or Efficiency Improvements

Goal: Create an on-boarding packet of materials to assist new hires and co-ops in their orientation to the Commission. These materials will serve as a guide to Commission systems such as GIS, CAD, SCREAM, and other programs used daily by Design and CAD staff.

Objective: Standardize new employee orientation, Systematically expose new hires to all available resources and work systems within the Engineering Division and Quickly integrate new hires into the group

Mission: Provide Staff Training

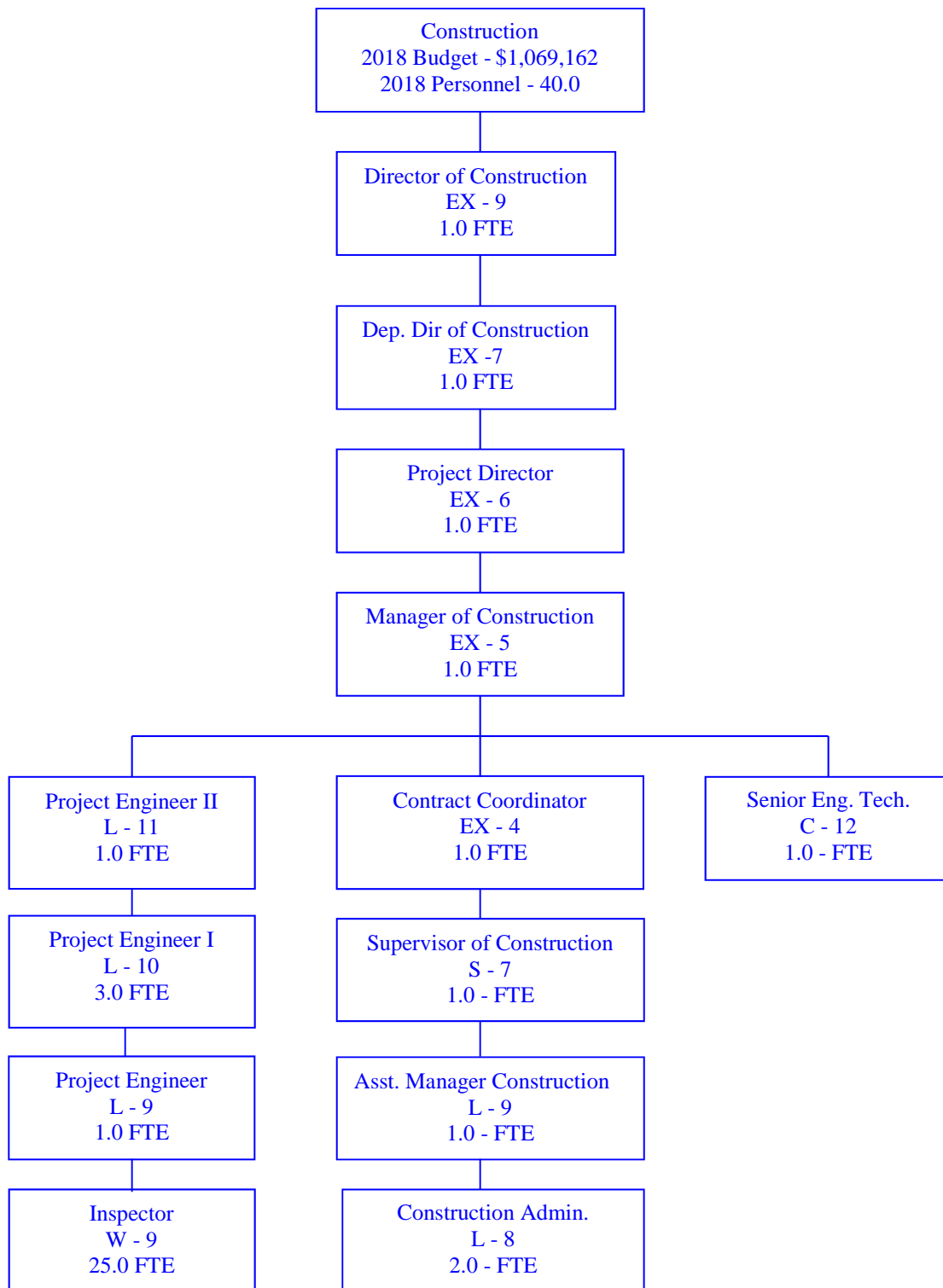
Department Maintenance Goals

| Activity | 2015 Actual | 2016 Actual | 2017 Actual | 2018 Goal |
|--|----------------|----------------|----------------|--------------|
| Design contracts to replace or rehabilitate water mains. | 12.87 miles | 11 miles | 12.86 | 11 miles |
| Design contracts to replace or rehabilitate sewer pipes. | 12,400 feet | 21,120 feet | 77,745 feet | 47,520 feet |

Department Maintenance Goals

| Activity | 2015 Actual | 2016 Actual | 2017 Actual | 2018 Goal |
|-------------------------|----------------|----------------|----------------|--------------|
| Drain Layers Licenses | 499 | 383 | 391 | 390 |
| Water and Sewer Prints | 148 | 89 | 44 | 100 |
| Repairs: | | | | |
| Fire pipe | 50 | 34 | 24 | 40 |
| Sanitary | 293 | 251 | 275 | 260 |
| Storm Drains | 11 | 5 | 5 | 10 |
| Site Plans: | | | | |
| Submitted | 478 | 604 | 589 | 625 |
| Approved | 530 | 635 | 685 | 40 |
| Dye Tests | 620 | 525 | 526 | 550 |
| Customer Service Visits | 5,373 | 5,932 | 6063 | 6,000 |

Construction



Engineering Division

Construction

Program Activities

- Provide construction management services for all the Commission's CIP projects and other major projects, which are undertaken by private developers or other agencies or utilities that impact our infrastructure

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$3,968,196 | \$1,324,197 | \$827,382 | (\$496,815) | -37.5% |
| Overtime | \$169,215 | \$193,405 | \$187,943 | (\$5,462) | -2.8% |
| Labor Related Costs/Benefits | \$67,267 | \$40,709 | \$42,947 | \$2,238 | 5.5% |
| Supplies and Materials | \$7,741 | \$9,950 | \$10,690 | \$740 | 7.4% |
| Repair and Maintenance | \$0 | \$200 | \$200 | \$0 | 0.0% |
| Total Direct Expenses | \$4,212,419 | \$1,568,461 | \$1,069,162 | (\$499,299) | -31.8% |

Explanation of Major Variances

The 2018 budget for the Construction Department is \$1,069,162, a decrease of \$499,299 or 31.8% from 2017. The variance is due to decreases in the Wages and Salaries and Overtime line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|--------------|----------------|------------------|----------------|-----------------------|
| Construction | 40.0 | 39.0 | 40.0 | 1.0 |

Explanation of Personnel Changes

One position transferred from Design.

2017 Program Goal Results

During 2017, mechanisms were developed to coordinate with customer service and notifying customers of upcoming work, water main shutdowns and emergencies when they occur. Notices are being prepared and provided to the customers. Monthly updates on large scale projects are being prepared and posted on the website, as well as distributed to email address books. Electronic mechanisms have been implemented, with the Communication's Department and are being utilized for scheduled water main shutdowns and liner installations done by Construction. A presentation was developed for mentoring programs and training sessions for succession planning.

2018 Program Goals and Objectives

Goal: Implement a review process with the Design Engineers on contract change orders and quantity overruns and underruns upon completion of each contract. This process will include review of the contract drawings with actual field conditions to determine the source of errant utility mapping. Also, review the current standards for contract estimating for major contract items.

Objective: To reduce the number of preventable change orders and to align estimated quantities with actual quantities.

Mission: Increased Fiscal Goals

Goal: Assist the Planning Division with field investigations of catch basins designated within potential inundation sewer areas. The field work will be within East Boston.

Objective: To determine which catch basins are still tied into sewers that could be separated. The area of interest is in the potential inundation areas of tide influence in East Boston.

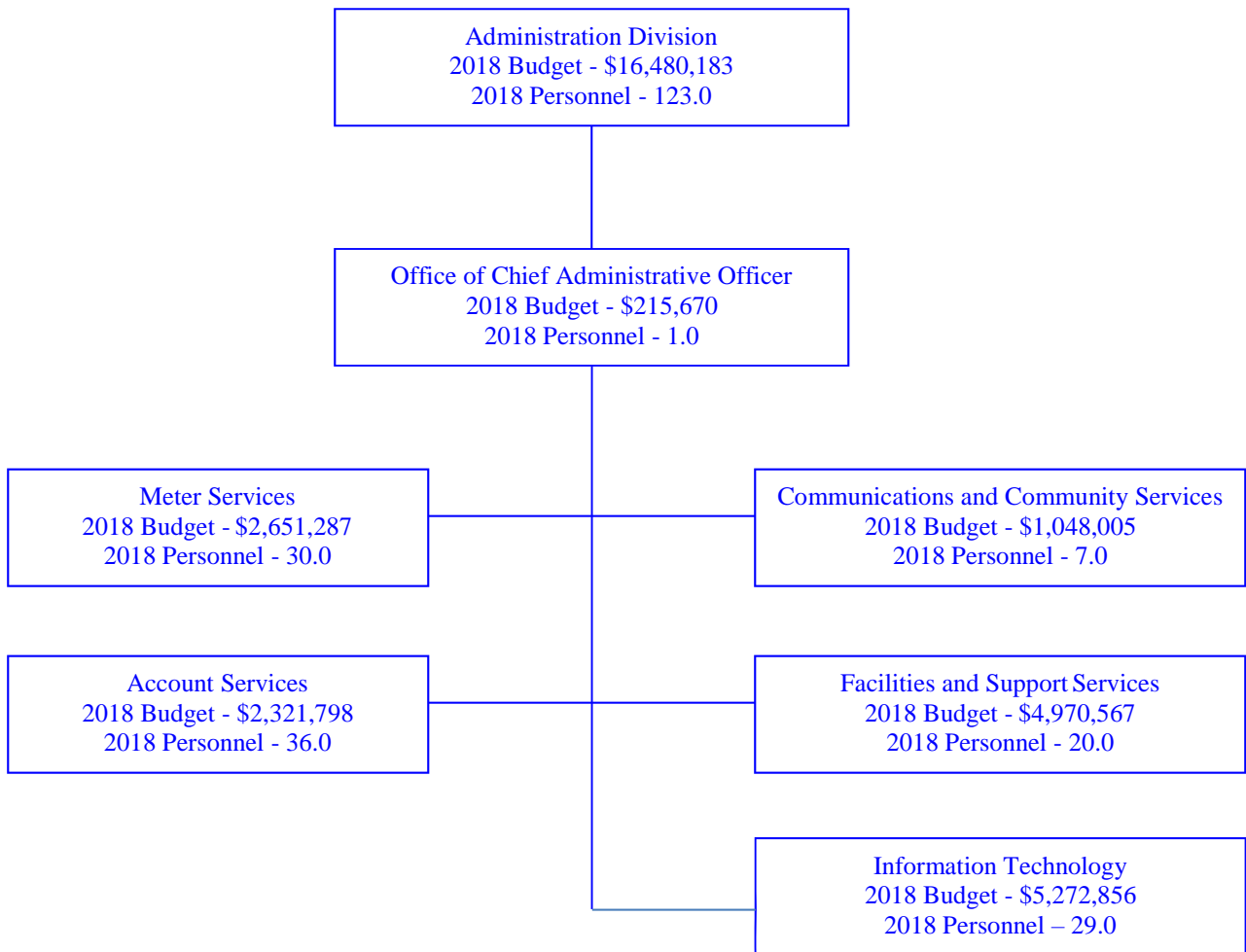
Mission: Protect Environment

Goal: Assist in the development of mentoring programs and training sessions for succession planning.

Objective: To ensure that key positions within the Commission can be filled in the future with qualified individuals.

Mission: Provide Staff Training

Administration Division



Administration Division

Administration Division

The Administration Division consists of the Office of Chief Administrative Officer and five other departments:

- **Meter Services**
- **Account Services**
- **Communications and Community Services**
- **Facilities and Support Services**
- **Information Technology**

Division Mission

The Administration Division performs support functions for the Commission by promoting proactive personnel services; providing prompt, efficient and knowledgeable service to our customers; providing timely and accurate reading of meters and installation of new meters; representing the Commission at various public and community meetings and coordinating all aspects of the Commission's buildings and properties including maintenance, repairs, security, mail distribution, office supplies and furniture, records archiving, office equipment leasing and food services.

Division Budget Summary

| Department | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|---------------------------------------|---------------------|---------------------|---------------------|--------------------|-----------------------|
| Office of Chief Administrator Officer | \$386,033 | \$347,378 | \$215,670 | (\$131,708) | -37.9% |
| Meter Services | \$2,911,703 | \$2,581,336 | \$2,651,287 | \$69,951 | 2.7% |
| Account Services | \$2,513,462 | \$2,084,849 | \$2,321,798 | \$236,949 | 11.4% |
| Communications and Community Srvc | \$923,957 | \$1,138,077 | \$1,048,005 | (\$90,072) | -7.9% |
| Facilities and Support Services | \$4,200,363 | \$4,509,099 | \$4,970,567 | \$461,468 | 10.2% |
| Information Technology | \$4,509,271 | \$4,217,707 | \$5,272,856 | \$1,055,149 | 25.0% |
| Total Direct Expenses | \$15,444,789 | \$14,878,446 | \$16,480,183 | \$1,601,737 | 10.8% |

Explanation of Major Variances

The 2018 budget for the Administration Division is \$16,480,183, an increase of \$1,601,737 or 10.8% from 2017. The variance is due to the Meter Services, Account Services, Facilities and Support Services and Information Technology departments line items.

Administration Division

Division Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|---------------------------------------|----------------|------------------|----------------|-----------------------|
| Office of Chief Administrator Officer | 2.0 | 2.0 | 1.0 | (1.0) |
| Meter Services | 30.0 | 30.0 | 30.0 | 0.0 |
| Account Services | 35.0 | 35.0 | 36.0 | 1.0 |
| Communications and Community Service | 7.0 | 8.0 | 7.0 | (1.0) |
| Facilities and Support Services | 22.0 | 21.0 | 20.0 | (1.0) |
| Information Technology | 29.0 | 27.0 | 29.0 | 2.0 |
| Total | 125.0 | 123.0 | 123.0 | 0.0 |

Explanation of Personnel Changes

Office of Chief Administrator Officer

One position transferred to Information Technology.

Meter Services

There was no change to the position count.

Account Services

One position transferred from Facilities and Support Services.

Communications and Community Services

One position transferred to Information Technology.

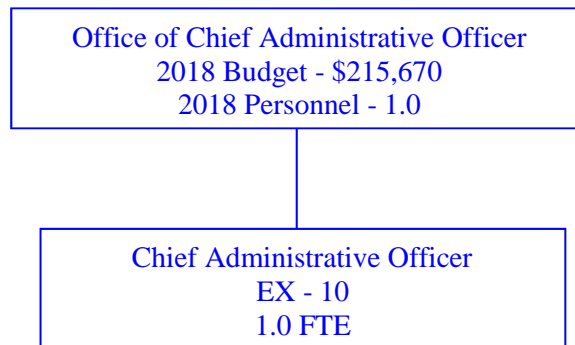
Facilities and Support Services

One position transferred to Account Services.

Information Technology

One position transferred from Communications and Community Services.
One position transferred from Office of Chief Administration Officer.

Office of Chief Administrative Officer



Administration Division

Office of Chief Administrative Officer

Program Activities

- Oversee efforts to provide outstanding service to all Commission employees and customers

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$346,530 | \$290,758 | \$149,782 | (\$140,976) | -48.5% |
| Labor Related Costs/Benefits | \$17,435 | \$18,620 | \$13,888 | (\$4,732) | -25.4% |
| Professional Services | \$0 | \$30,000 | \$30,000 | \$0 | 0.0% |
| Training/Seminar/Travel | \$22,067 | \$22,000 | \$22,000 | \$0 | 0.0% |
| Total Direct Expenses | \$386,032 | \$361,378 | \$215,670 | (\$145,708) | -40.3% |

Explanation of Major Variances

The 2018 budget for the Office of the Chief Administrative Officer is set at \$215,670, a decrease of \$145,708 or 40.3% from 2017. The variance is due to decreases in the Wage and Salaries, Labor Related Costs/Benefits line items.

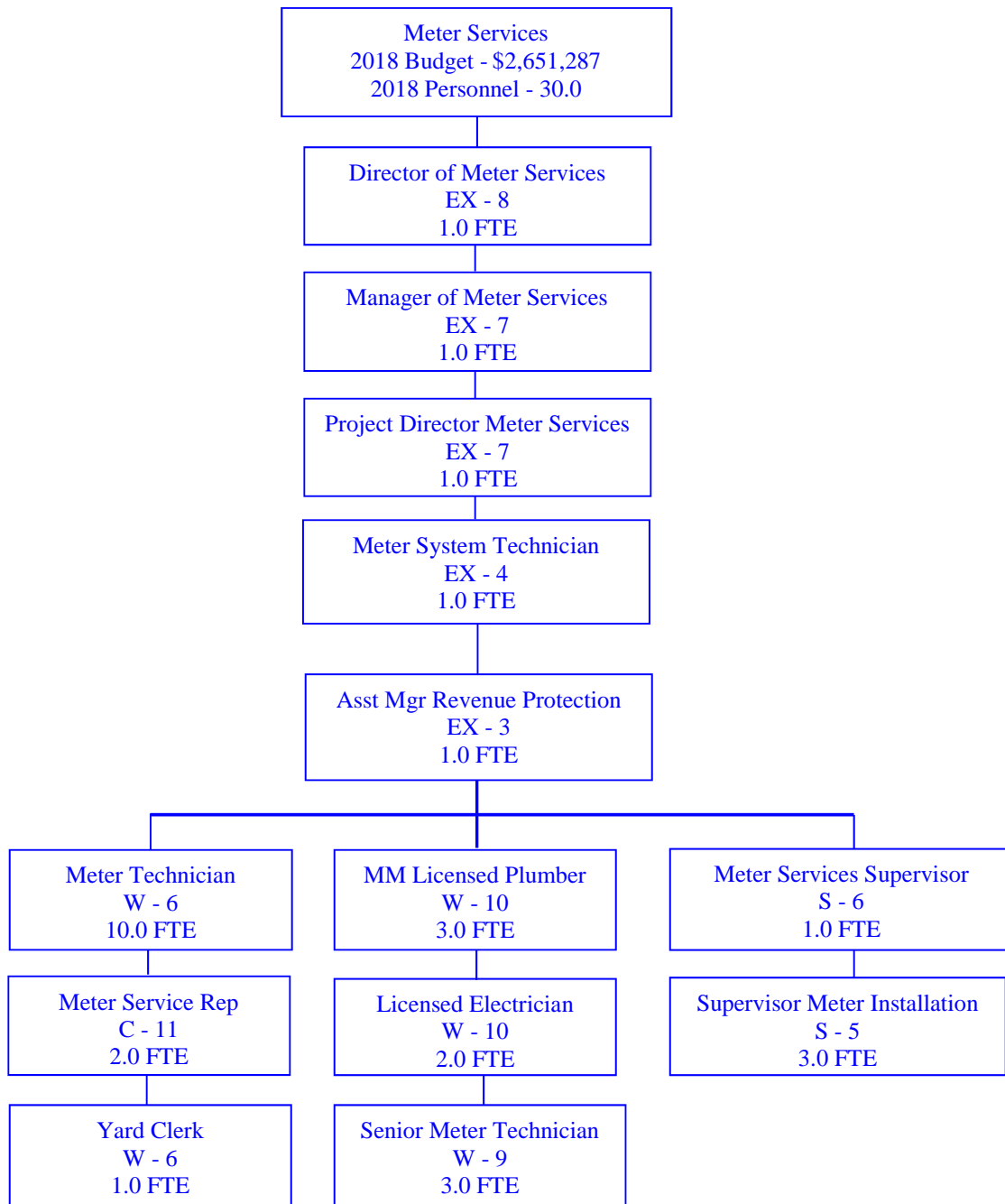
Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|--|----------------|------------------|----------------|-----------------------|
| Office of Chief Administrative Officer | 2.0 | 2.0 | 1.0 | (1.0) |

Explanation of Personnel Changes

One position transferred to Information Technology.

Meter Services



Administration Division

Meter Services

Program Activities

- Maintain the efficient operation of approximately 90,000 water meters and associated automatic meter reading devices in the system thus assuring accurate registration of consumption, including the tracking and evaluation of accounts with irregularities that may be the result of defective registration and/ or meter tampering
- Provide mechanical and technical support services by way of skilled personnel as requested

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$2,786,134 | \$2,465,257 | \$2,513,918 | \$48,661 | 2.0% |
| Overtime | \$64,565 | \$75,054 | \$75,054 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$16,415 | \$14,326 | \$14,515 | \$189 | 1.3% |
| Supplies and Materials | \$23,979 | \$24,500 | \$24,500 | \$0 | 0.0% |
| Repair and Maintenance | \$19,857 | \$21,000 | \$21,000 | \$0 | 0.0% |
| Other Services | \$753 | \$2,260 | \$2,300 | \$40 | 1.8% |
| Total Direct Expenses | \$2,911,703 | \$2,602,397 | \$2,651,287 | \$48,890 | 1.9% |

Explanation of Major Variances

The 2018 budget for Meter Services is \$2,651,287, an increase of \$48,890 or 1.9% from 2017. The variance is due to increases in the Wages and Salaries, Labor Related Costs/Benefits and Other Services line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|----------------|----------------|------------------|----------------|-----------------------|
| Meter Services | 30.0 | 30.0 | 30.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

The Commission finalized a contract with Itineris during 2017 to begin the process of developing and testing new CIS system. For 2017, a total of 17,475 MTU's were installed/replaced. BWSC did 3,383 and the contractor did 14,092. As of the end of the year there are 1,009 old style MTU's are remaining of which 613 are on domestic and 396 on abatement accounts. Meter Services Staff along with assistance from Customer Service and Revenue Audit and Analysis will continue to schedule appointments to install new MTU's on the remaining accounts. The Meter division tested 4,035 meters in 2017. Meter Services will continue to test large meters in accordance with the AWWA recommended test schedule as well as all working meters that are replaced as well as meters that customers request to be tested.

2018 Program Goals and Objectives

Goal: The American Water works Association recommends that meters 3" in diameter be tested every three years, 4" meters in diameter every two years and meters 6" and larger every year. In order to maintain this program, 450 – 500 meters need to be tested every year.

Objective: To ensure accurate water measurement by testing large meters

Mission: Increased Fiscal Controls

Goal: In Conjunction with Aclara Technologies replace the batteries, 4G / LTE card, and T - Board on the 62 Data Collection Units (DCUs) located throughout the City.

Objective: Upgrade the 4G / LTE card and T – Board for the Verizon Cell Phone service in the DCU's to be up to date with Verizon technology.

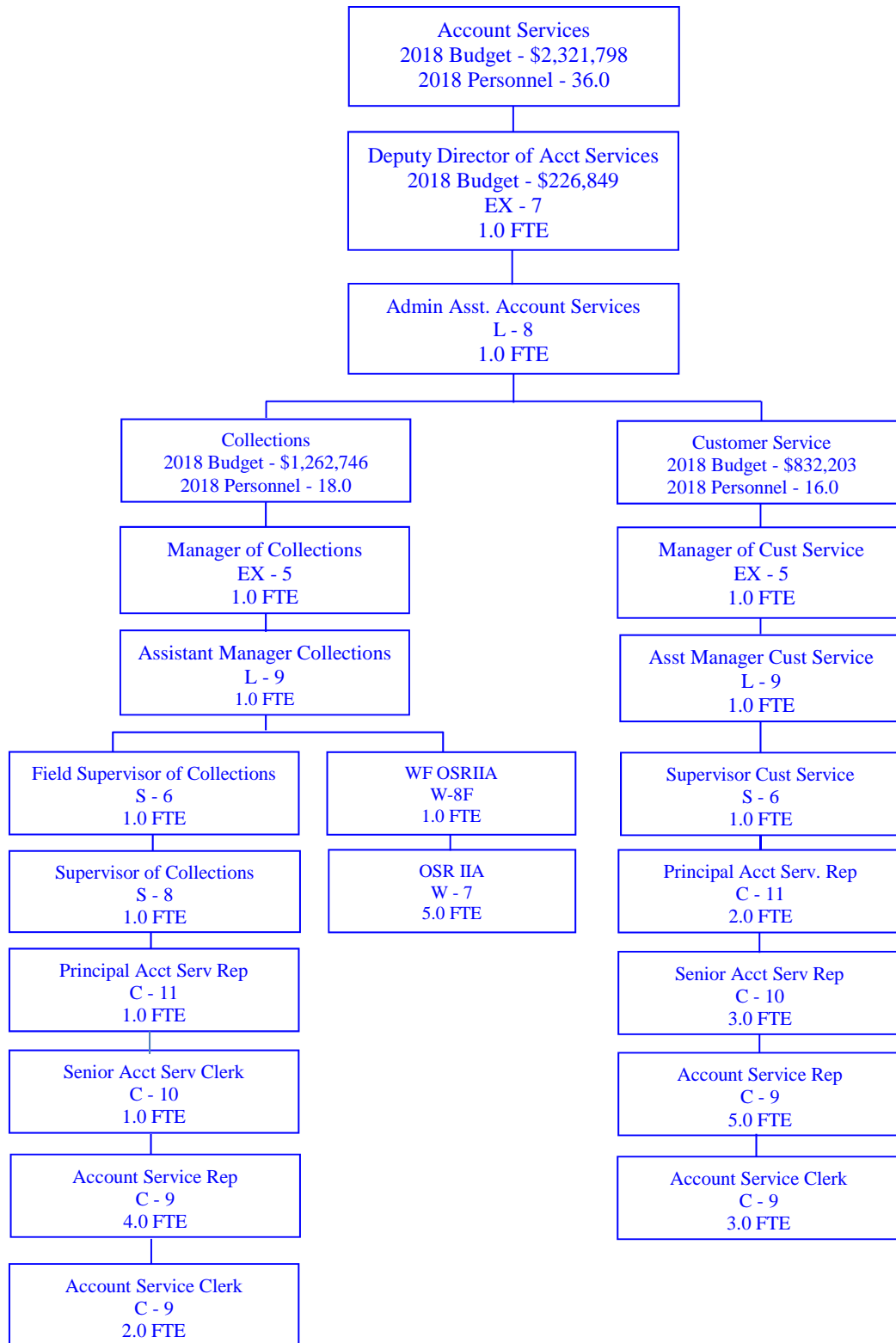
Mission: Increased Production or Efficiency Improvements

Goal: In conjunction with BWSC's IT Department and CIS Vendor, assist with the implementation and testing of the new CIS system.

Objective: Work directly with the new CIS vendor assisting with the development of business processes and work flows and as well as possible alternative business process relating to the functionality of the new CIS system.

Mission: Improved Production or Efficiency Improvements

Account Services



Administration Division

Accounts Services

Program Activities

- Respond quickly to customer inquiries and expeditiously resolve all disputes regarding customer account balances
- Reduce outstanding dollars on delinquent accounts
- Manage the automated calling system to increase the number of outgoing and follow-up calls on delinquent accounts
- Manage the Automated Dunning System and the Commission's integrated collection activities

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$2,432,253 | \$2,129,251 | \$2,261,014 | \$131,763 | 6.2% |
| Overtime | \$7,011 | \$5,426 | \$7,426 | \$2,000 | 36.9% |
| Labor Related Costs/Benefits | \$48,239 | \$19,638 | \$20,953 | \$1,315 | 6.7% |
| Supplies and Materials | \$25,959 | \$32,500 | \$32,405 | (\$95) | -0.3% |
| Total Direct Expenses | \$2,513,462 | \$2,186,815 | \$2,321,798 | \$134,983 | 6.2% |

Explanation of Major Variances

The 2018 budget for Account Services is \$2,321,798, an increase of \$134,983, or 6.2% from 2017. The variance is due to increases in the Wages and Salaries, Overtime and Labor Related Costs/Benefits line items.

Administration Division

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------------|----------------|------------------|----------------|-----------------------|
| Account Services | 2.0 | 2.0 | 2.0 | 0.0 |
| Collections | 18.0 | 18.0 | 18.0 | 0.0 |
| Customer Service | 15.0 | 15.0 | 16.0 | 1.0 |
| Total | 35.0 | 35.0 | 36.0 | 1.0 |

Explanation of Personnel Changes

Account Services

There was no change in the position count.

Collections

There was no change in the position count.

Customer Services

One position transferred from Facilities and Support Services.

2017 Program Goal Results

The analysis phase of the CIS implementation was completed during 2017 and the focus has shifted to the preliminary design phase for all business workflows in the UMAX System. Account Service Management attended workshops to design workflows and gain a better understanding of the functionality of the new UMAX System. Itineris provided a demonstration of the UMAX system to present its concepts and functionality to the project team. The design narratives and Visio's outlining business processes in UMAX were completed and are currently being reviewed for finalization. Upon completion of the design workflows, scripting and testing the UMAX System will begin in 2018 with the designated SME's who are assigned to work with Itineris. Account Service Management staff reviewed and researched the required legal documents needed to approve discounts for customers with properties held in a trust. To increase awareness of BWSC's inclusion of properties held in a trust, a meeting was held with Communications regarding a public outreach notice for BWSC customers.

2018 Program Goals and Objectives

Goal: In conjunction with BWSC's IT Department and Itineris, assist with testing the functionality of business processes and requirements in the new UMAX System.

Objectives: Assist with the development of test scripts and assign key personnel to test Account Service business processes in the UMAX System.

Mission: Increased Production or Efficiency Improvements

Goal: In conjunction with Legal, update the Billing, Termination and Appeal Regulations (BT&A's) and incorporate changes to reflect the updated business requirements of the new CIS system.

Objective: Review the BT&A's for updates and improvements as well as addressing changes in business processes which may directly be affected by the functionality and implementation of the new CIS system.

Mission: Increased Production or Efficiency Improvements

Goal: In conjunction with Meter Services and Revenue Audit and Analysis, upgrade and repair all sewer abatement MTU's and inactivate sewer abatement accounts as needed.

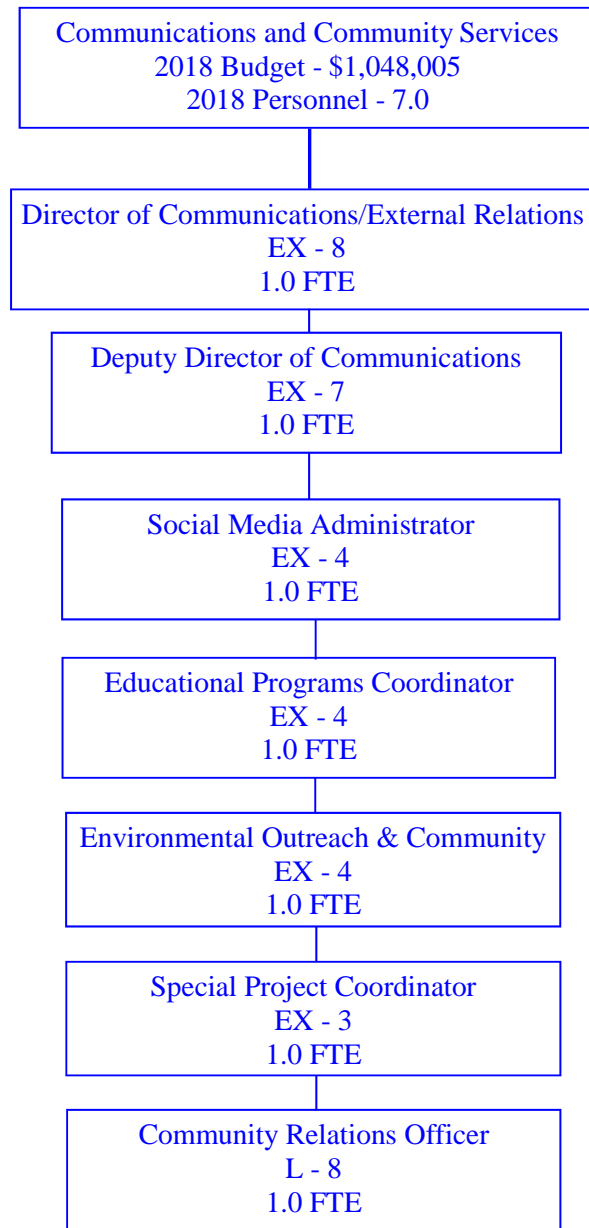
Objective: Outline procedures for MTU repairs, inspections for problematic accounts, and inactivating sewer abatement accounts. Develop a series of letters for MTU repair/missing or disconnect abatement meters.

Mission: Increased Production or Efficiency Improvements

Department Maintenance Goals

| Activity | 2015 Actual | 2016 Actual | 2017 Actual | 2018 Goal |
|--|----------------|----------------|----------------|---------------------------------|
| Reduce Customer Service & Collections Calls Abandoned | 1.49% | 1.41% | 1.10% | Less than 2.25% per month |
| Customer Visits | 7,684 | 7,481 | 7,604 | 7,515 |
| Dunning Letters Mailed | 44,969 | 45,292 | 44,402 | 45,041 |
| Payment Received | 8,267 | 8,263 | 7,424 | 8,180 |

Communications and Community Services



Administration Division

Communications and Community Services

Program Activities

- Produce the Commission's external communications such as informational and educational brochures, customer newsletters and text messages for the Commission's website
- Represent the Commission at various public and community meetings and at all remote customer service sites located in Boston's neighborhoods to resolve customer concerns
- Projecting a positive, responsive and proactive public image to the media, customers, businesses, communities and elected officials
- Coordinate and promote a variety of employee participation programs such as the annual Blood Drive, Walk for Hunger and Walk for Breast Cancer
- Assist other Commission departments in developing material, making contacts, and facilitating meetings

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$708,369 | \$762,898 | \$645,417 | (\$117,481) | -15.4% |
| Labor Related Costs/Benefits | \$29,470 | \$2,876 | \$2,288 | (\$588) | -20.4% |
| Supplies and Materials | \$13,050 | \$52,000 | \$55,000 | \$3,000 | 5.8% |
| Professional Services | \$17,579 | \$141,500 | \$20,500 | (\$121,000) | -85.5% |
| Other Services | \$155,489 | \$331,800 | \$324,800 | (\$7,000) | -2.1% |
| Total Direct Expenses | \$923,957 | \$1,291,074 | \$1,048,005 | (\$243,069) | -18.8% |

Explanation of Major Variances

The 2018 budget for Communications and Community Services is \$1,048,005, a decrease of \$243,069 or 18.8% from 2017. The variance is due to the Wages and Salaries, Labor Related Costs/Benefits, Professional Services and Other Services line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|---------------------------------------|----------------|------------------|----------------|-----------------------|
| Communications and Community Services | 7.0 | 8.0 | 7.0 | (1.0) |

Explanation of Personnel Changes

One position transferred to Information Technology.

2017 Program Goal Results

Staff continued expanding outreach to youth as well, presenting to 32 Greater Boston Area Schools and over 1,000 students in grades ranging from kindergarten students through seniors. Staff provided multiple presentations with programs whose focus involved the engagement of students in environmental knowledge and advocacy. Notable presentations involved collaboration with the Harbor Bound youth program, which took place at Deer Island; hands-on presentations at the Dearborn School which is a STEM focused educational program; and participating in a program hosted by the Roxbury Presbyterian Church, Learning Out Loud which focuses on activities that encouraged girls to consider the science and engineering fields. The website has been updated in the areas that are most public facing and also where there is duplication or outdated information. Communications staff continues to collaborate with other departments and IT to share information to display on the Board in an engaging and effective manner. Our consistent material includes milestones such as: retirements and anniversaries. Images of key initiatives for the agency such as Green Infrastructure event with the Washington Irving School and BWSC staff at tour of the Carroll Water Treatment Plant in Marlborough were of interest to staff throughout the agency. Communications team participated in many coordinated and planned events as a part of our planning for the calendar year. Our environmental messaging such as our FOG campaign, green infrastructure and catch basin messaging saw a high number of “likes” and “reshares” on Twitter and Facebook. Notifications of project updates, and water main break information increased followers on Twitter and Next Door with real time information. The increase in followers to BWSC’s Twitter account has broadened the public’s awareness of BWSC and provided an outlet for constituents and media to directly connect with and stay up to date with us.

2018 Program Goals and Objectives

Goal: Expand public outreach efforts of our environmental messages to renters, multi-unit private property owners and businesses, specifically, Keeping Wipes out of Pipes and Fats Oils and Grease.

Objective: Outreach will include presentations, exhibits, special mailings and participation at events. Target Audience includes residents in elderly and family BHA housing development through the REACH program, private rental property residents and management companies, and shoppers. Locate venues that are non-traditional locations, such as grocery stores during Thanksgiving holiday, events with Water Trailer targeting environmental, events coordinated with Environmental Partners. Outreach will include storm drain stenciling, getting environmental groups to help educate local business owners about stormwater matters. Outreach will schedule FOG presentations for residents and facilities management staff during Unity Days or other key events.

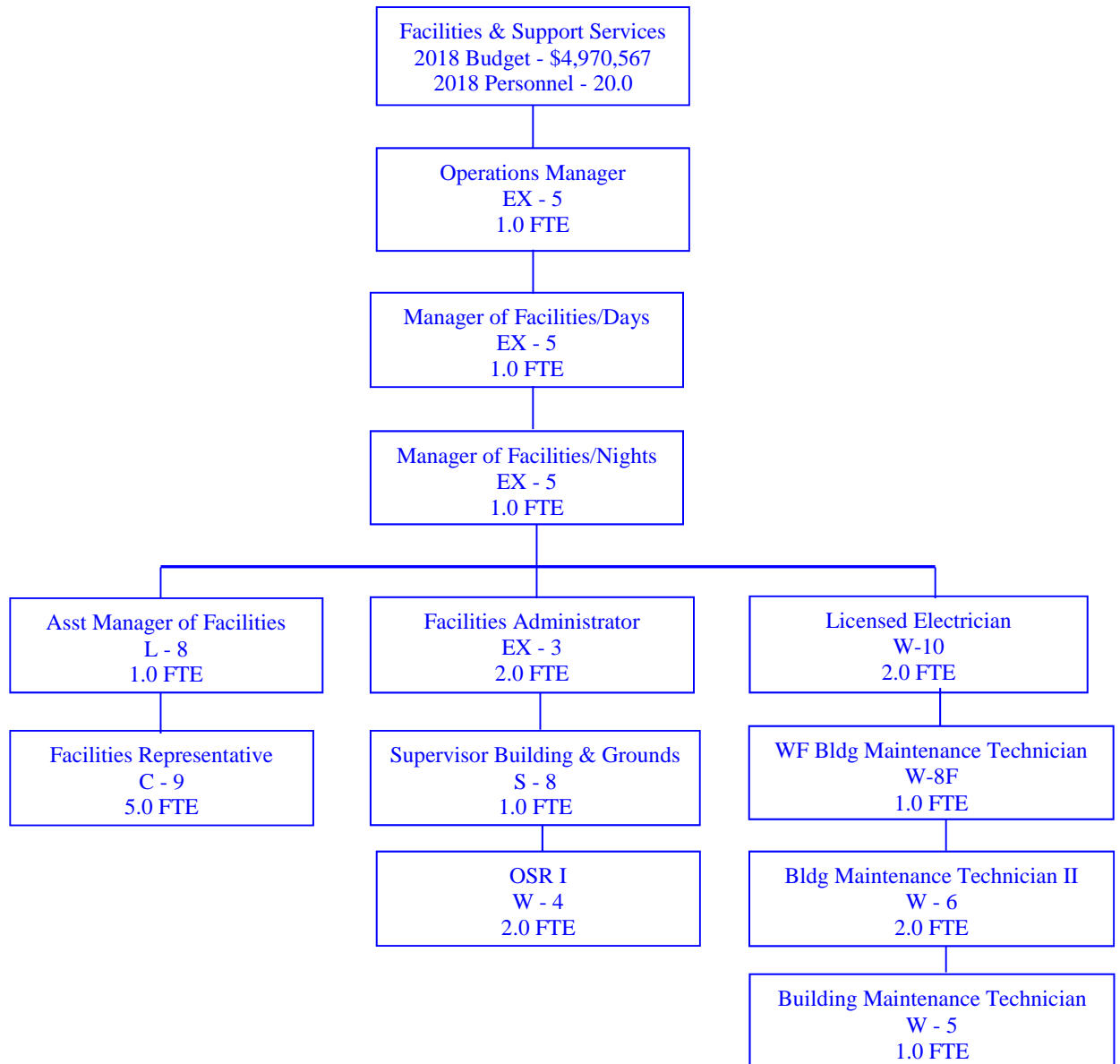
Mission: Protect Environment

Goal: Manage Social Media effort and further develop strategies with measurements to expand the reach of environmental messages and project information.

Objective: Identify appropriate training to determine best practices when utilizing social media platforms. Use Twitter, Facebook, Instagram, and Next Door to promote environmental messages and to update media/ratepayer in “real time” of relevant alerts /alerts. Use advertising and other media to expand reach to nontraditional audiences. Collaborate with External Partners on key messages

Mission: Improved Customer/Employee/Investor Relations

Facilities & Support Services



Administration Division

Facilities & Support Services

Program Activities

- The Facilities Department is responsible for coordinating all aspects of the Commission's buildings and properties including maintenance, repair, security, mail distribution, office supplies and furniture, records archiving, office equipment leasing and food services
- Facilities is also responsible for directing and monitoring the Commission's Safety Program including accident/injury reporting, safe work practices and alcohol/drug testing

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$1,570,030 | \$1,394,335 | \$1,380,782 | (\$13,553) | -1.0% |
| Overtime | \$24,526 | \$18,077 | \$18,077 | \$0 | 0.0% |
| Labor Related Costs/Benefits | \$11,497 | \$9,966 | \$9,744 | (\$222) | -2.2% |
| Supplies and Materials | \$287,292 | \$330,000 | \$362,700 | \$32,700 | 9.9% |
| Repair and Maintenance | \$727,752 | \$782,000 | \$951,100 | \$169,100 | 21.6% |
| Utilities | \$872,255 | \$1,220,000 | \$1,241,500 | \$21,500 | 1.8% |
| Professional Services | \$56,111 | \$135,000 | \$160,000 | \$25,000 | 18.5% |
| Space and Equipment | \$52,998 | \$58,284 | \$44,164 | (\$14,120) | -24.2% |
| Other Services | \$566,507 | \$648,000 | \$773,500 | \$125,500 | 19.4% |
| Capital Outlay | \$31,395 | \$20,000 | \$29,000 | \$9,000 | 45.0% |
| Total Direct Expenses | \$4,200,363 | \$4,615,662 | \$4,970,567 | \$354,905 | 7.7% |

Explanation of Major Variances

The 2018 budget for Facilities & Support Services Department is \$4,970,567, an increase of \$354,905 or 7.7% from 2017. The variance is due to increases in the Supplies and Materials, Repair and Maintenance, Utilities, Professional Services, Other Services and Capital Outlay line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-------------------------------|----------------|------------------|----------------|-----------------------|
| Facilities & Support Services | 22.0 | 21.0 | 20.0 | (1.0) |

Explanation of Personnel Changes

One position transferred to Account Services-Customer Service.

2017 Program Goal Results

In an effort to comply with the Commission's Industrial Stormwater Pollution Prevention Program and the Environmental Protection Agency's Multi-Sector General Permit Staff developed a draft Request For Proposals for professional engineering services to ensure Industrial Stormwater Pollution Prevention Program compliance at the Commission's Headquarters. The engineering firm would be expected to conduct an assessment of existing site conditions and develop written plans, programs and procedures in order to comply with the requirements of the Commission's Industrial Stormwater Pollution Prevention Program. Staff contacted two qualified firms for proposals and will review during the first quarter of 2018. Staff conducted a review of current Department procedures for opening/closing of work orders. Development of new work order procedures and training of Department Administrative Staff for opening/closing of work orders utilizing the Cityworks work order system will be implemented in the coming year.

2018 Program Goals and Objectives

Goal: Work with Boston Municipal Protective Services and other Commission staff in implementing new visitor access procedures for 980 Harrison Avenue.

Objectives: The objective of this goal is to modernize visitor access and monitoring to the Commission's Headquarters. Staff will be required to evaluate the Commission's current system of checking-in and monitoring of building visitors and assess the viability of utilizing technology as part of the enhancements.

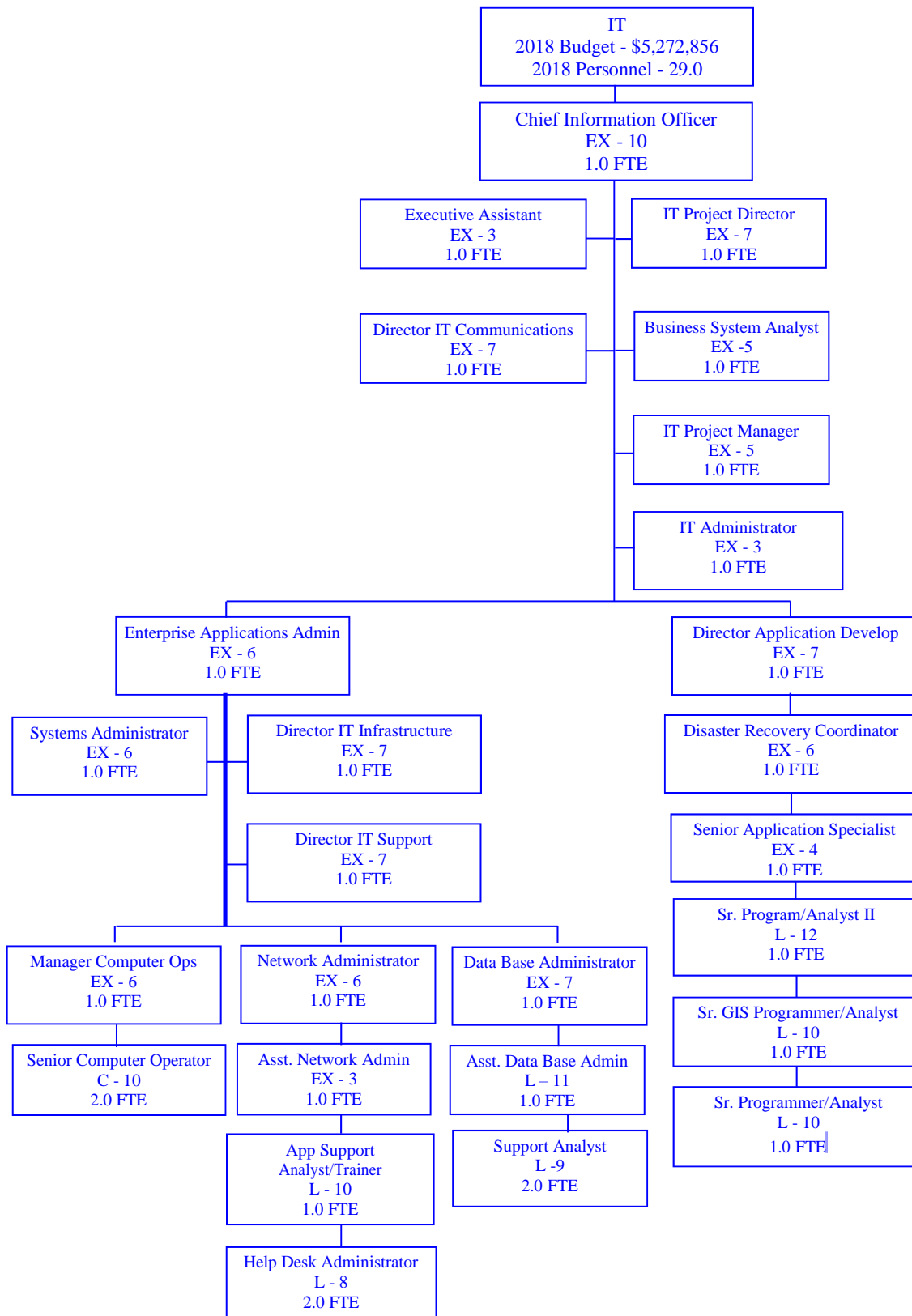
Mission: Limit Commission Liability/Increase Safety

Goal: Provide training to departmental representatives on the new archiving system.

Objectives: After a competitive bidding process, the City of Boston has changed vendors for records storage and retention. The objective of this goal is to train designated Commission employees as to the procedures and protocols of the City of Boston's new vendor retentions vendor, Apex Information Security.

Mission: Provide Staff Training

Information Technology (IT)



Administration Division

Information Technology (IT)

Program Activities

The mission of Information Technology (IT) is to provide support to all end users of computing resources throughout the Commission in a manner that maximizes the effectiveness of their duties while minimizing the expense to the Commission. Support is provided for the following activities:

- Billing functions
- Customer Service support
- Financial Management System support
- Human Resources System support
- Geographic Information System support
- Work order processing for Engineering and Operations
- Fleet Management System support
- Word Processing for all departments
- PC training and support
- Applications Development
- Miscellaneous computer support

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$3,109,236 | \$2,822,983 | \$3,078,420 | \$255,437 | 9.0% |
| Labor Related Costs/Benefits | \$63,894 | \$43,093 | \$50,316 | \$7,223 | 16.8% |
| Supplies and Materials | \$42,074 | \$49,000 | \$49,000 | \$0 | 0.0% |
| Repair and Maintenance | \$470,348 | \$690,940 | \$1,016,140 | \$325,200 | 47.1% |
| Utilities | \$292,668 | \$392,853 | \$454,980 | \$62,127 | 15.8% |
| Professional Services | \$315,733 | \$499,750 | \$389,000 | (\$110,750) | -22.2% |
| Space and Equipment | \$215,319 | \$230,000 | \$235,000 | \$5,000 | 2.2% |
| Total Direct Expenses | \$4,509,272 | \$4,728,619 | \$5,272,856 | \$544,237 | 11.5% |

Explanation of Major Variances

The 2018 budget for the IT Department is \$5,272,856, an increase of \$544,237 or 11.5% from 2017. The variance is due to the increases in the Wages and Salaries, Labor Related Costs/Benefits, Repair and Maintenance, Utilities and Space and Equipment line items.

Administration Division

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------|----------------|------------------|----------------|-----------------------|
| IT | 29.0 | 27.0 | 29.0 | 2.0 |

Explanation of Personnel Changes

One position transferred from Communications and Community Services.
One position transferred from Office of Chief Administration Officer.

2017 Program Goal Results

During 2017, the new IT Training Room was completed and the IT Department evaluated multiple IT training software systems and selected Velsoft as the Commissions IT training platform, hired an IT Trainer and began providing staff training on Windows 10 and Microsoft 2016. Three digital signage screens have been successfully deployed and are currently displaying content which is managed by the Communications Department. IT also contracted with Beacon Associates for the upgrades of PeopleSoft HR, Payroll, and Financial Management modules. Database replication was successfully tested using Oracle's Data Guard software.

2018 Program Goals and Objectives

Goal: The IT Department will be upgrading the Commission website to the latest technology.

Objective: Upgrade website to the latest technology, Consolidate all data related to website into SQL Server, Modernize user interface look and feel and Integrate Social Media platforms

Mission: Improved Customer/Employee/Investor Relations

Goal: Complete the analysis and design of the new CIS.

Objective: Design a new system to replace BESS which includes the following:

- Customer self-service options
- Electronic billing
- Flexible and extensive control of rate structure
- Customer appointment scheduling
- Management of special customer programs

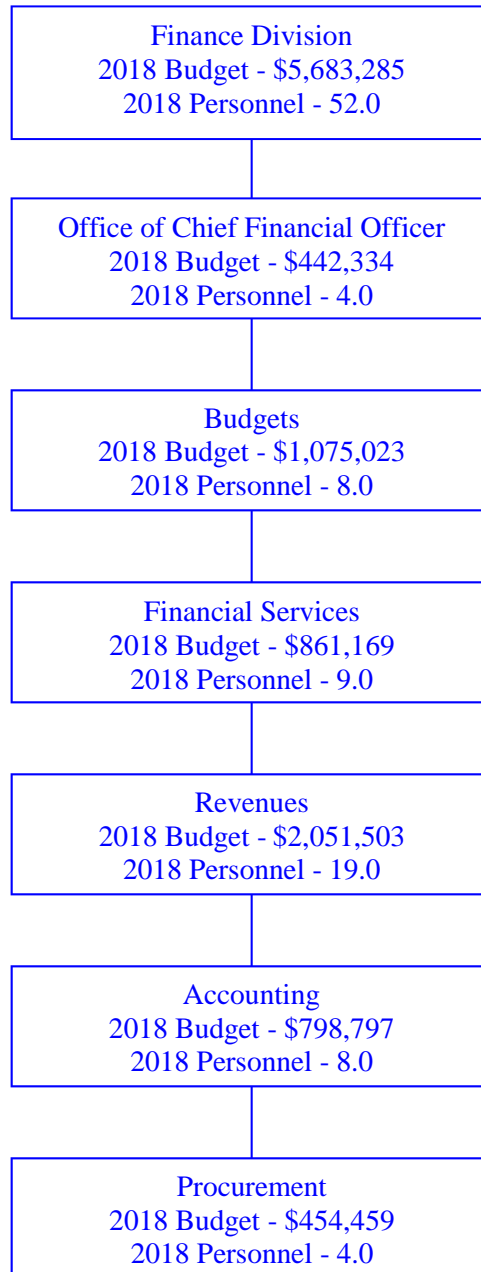
Mission: Increased Production or Efficiency Improvements

Goal: Development of a Project Management System

Objective: Develop a Commission-wide common project management framework using SharePoint

Mission: Increased Production or Efficiency Improvements

Finance Division



Finance Division

Finance Division Organization

Program Activities

The Finance Division is comprised of the Office of Chief Financial Officer and the following five departments:

- **Budgets**
- **Financial Services**
- **Revenues**
- **Accounting**
- **Procurement**

Division Mission

The Finance staff is responsible for the establishment of policies to provide maintenance of a strong financial structure designed to provide the lowest possible cost of water, wastewater and storm drainage services; establish a billing methodology that is fair and equitable to all rate payers; advance security for the Commission's bondholders; design and implement an internal control structure intended to provide reasonable security for the safeguard of Commission assets. The Finance staff carries out its mission through the activities of its five Departments: Budgets, Financial Services, Revenues, Accounting, and Procurement.

Division Budget Summary

| Department | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|-----------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Office of Chief Financial Officer | \$516,774 | \$430,885 | \$442,334 | \$11,449 | 2.7% |
| Budgets | \$1,187,296 | \$1,067,003 | \$1,075,023 | \$8,020 | 0.8% |
| Financial Services | \$886,081 | \$834,470 | \$861,169 | \$26,699 | 3.2% |
| Revenues | \$2,135,005 | \$2,044,704 | \$2,051,503 | \$6,799 | 0.3% |
| Accounting | \$862,424 | \$783,763 | \$798,797 | \$15,034 | 1.9% |
| Procurement | \$532,200 | \$535,817 | \$454,459 | (\$81,358) | -15.2% |
| Total Direct Expenses | \$6,119,780 | \$5,696,642 | \$5,683,285 | (\$13,357) | -0.2% |

Explanation of Major Variances

The 2018 budget for the Finance Division is \$5,683,285, a decrease of \$13,357, or 0.2% from 2017. The variance is attributed to increases Office of Chief Financial Officer, Budgets, Financial Services, Revenues and Accounting line items.

Division Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-----------------------------------|----------------|------------------|----------------|-----------------------|
| Office of Chief Financial Officer | 4.0 | 4.0 | 4.0 | 0.0 |
| Budgets | 8.0 | 8.0 | 8.0 | 0.0 |
| Financial Services | 9.0 | 9.0 | 9.0 | 0.0 |
| Revenues | 20.0 | 19.0 | 19.0 | 0.0 |
| Accounting | 8.0 | 8.0 | 8.0 | 0.0 |
| Procurement | 5.0 | 5.0 | 4.0 | (1.0) |
| Total | 54.0 | 53.0 | 52.0 | (1.0) |

Explanation of Personnel Changes

Office of Chief Financial Officer

There was no change to the position count.

Budgets

There was no change to the position count.

Financial Services

There was no change to the position count.

Revenues

There was no change to the position count.

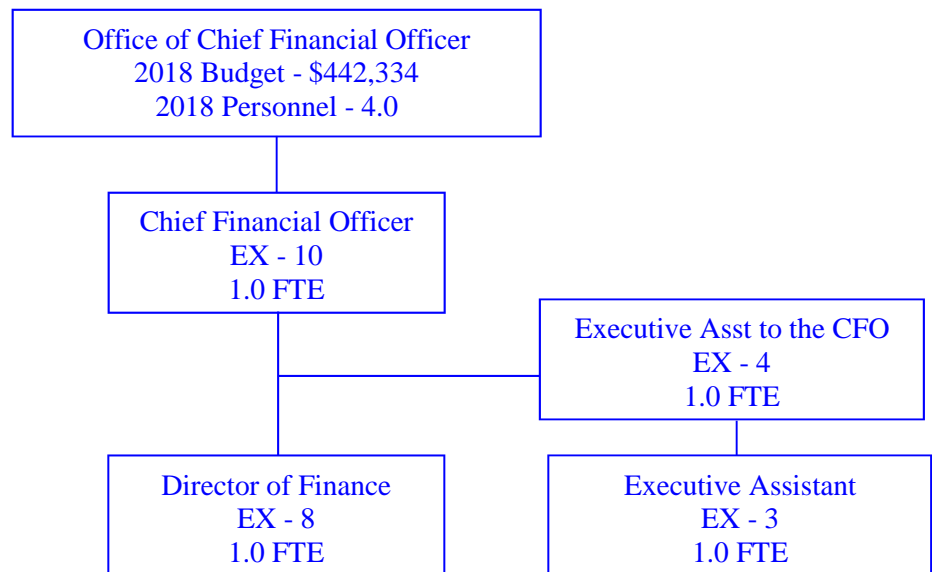
Accounting

There was no change to the position count.

Procurement

One position was attrited.

Office of Chief Financial Officer



Finance Division

Office of Chief Financial Officer

Program Activities

- Oversee the integration of all financial and analytical activities enabling the Commission to improve overall operational effectiveness and control expenses
- Ensure the adequacy of resources to implement near and long range initiatives

Department Budget Summary

| Department | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$496,450 | \$416,464 | \$428,902 | \$12,438 | 3.0% |
| Labor Related Costs/Benefits | \$12,665 | \$9,421 | \$8,432 | (\$989) | -10.5% |
| Training/Seminar/Travel | \$7,659 | \$5,000 | \$5,000 | \$0 | 0.0% |
| Total Direct Expenses | \$516,774 | \$430,885 | \$442,334 | \$11,449 | 2.7% |

Explanation of Major Variances

The 2018 budget for the Office of Chief Financial Officer is \$442,334 for an increase of \$11,449 or 2.7% from 2017. The variance is due to the Wages and Salaries line item.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-----------------------------------|----------------|------------------|----------------|-----------------------|
| Office of Chief Financial Officer | 4.0 | 4.0 | 4.0 | 0.0 |

Explanation of Personnel Changes

There was no change to the position count.

2017 Program Goal Results

During 2017, the Commission established a FEMA Committee with staff members and had an initial meeting. Commission staff and financial consultants reviewed the Investment Policy as well as the two alternate investment securities. Staff and the consultants reached an initial conclusion that the alternate investment securities are not permitted within the Commission's Investment Policy.

2018 Program Goals and Objectives

Goal: Add and implement upgrade of the new version of Peoplesoft™ 9.2 software for the purpose of improved functionality and efficiency throughout the Finance Division.

Objective: Update procedures and process changes and take advantage of new web based features resulting from the implementation of PeopleSoft 9.2.

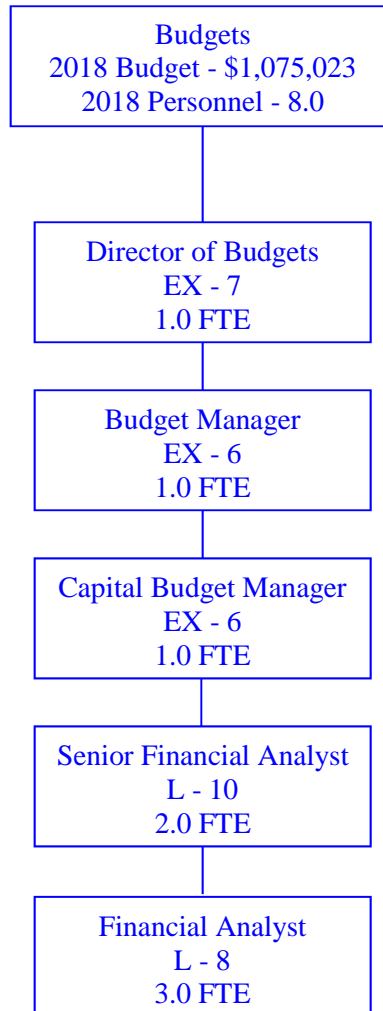
Mission: Increased Production or Efficiency Improvements

Goal: Review and upgrade all manuals within the following departments: Budget and Financial Planning, Accounts Payable, Accounts Receivables, General Accounting, Payroll and Procurement.

Objective: Update procedures and process changes in the budgeting and variance analysis functions resulting from the implementation of PeopleSoft 9.2. The manual will be used in training new employees and cross-training other staff.

Mission: Improve/Develop Policy/Procedure

Budgets



Finance Division

Budgets

Program Activities

Budgeting and Financial Planning

- Coordinate the development and review of program plans and resource requirements for all Commission operations and activities including capital improvement projects
- Analyze actual expenditures against authorized budgets
- Staff relating to Treasury functions, to monitor, coordinate and enhance the Commission's revenue stream in order to maximize yields and minimize cost

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|-----------------|--------------------|
| Wages and Salaries | \$735,432 | \$649,682 | \$661,007 | \$11,325 | 1.7% |
| Labor Related Costs/Benefits | \$8,354 | \$8,771 | \$12,066 | \$3,295 | 37.6% |
| Supplies and Materials | \$5,589 | \$3,950 | \$3,950 | \$0 | 0.0% |
| Professional Services | \$437,922 | \$404,600 | \$398,000 | (\$6,600) | -1.6% |
| Total Direct Expenses | \$1,187,297 | \$1,067,003 | \$1,075,023 | \$8,020 | 0.8% |

Explanation of Major Variances

The 2018 budget for the Budgets Department is \$1,075,023, an increase of \$8,020 or 0.8% from 2017. The variance is due to Wages and Salaries and Labor Related Costs/Benefits line items.

Department Personnel Summary

| Department | 2015 Actual | 2016 Approved | 2017 Budget | 2016-2017 Variance |
|-------------------------------|-------------|---------------|-------------|--------------------|
| Director of Budgets | 1.0 | 1.0 | 1.0 | 0.0 |
| Budget and Financial Planning | 6.0 | 7.0 | 7.0 | 0.0 |
| Total | 7.0 | 8.0 | 8.0 | 0.0 |

Explanation of Personnel Changes

Director of Budgets

There was no change to the position count.

Budget and Financial Planning

There was no change to the position count.

2017 Program Goal Results

The Budget and Financial Planning Department continued to provide financial analysis and managerial support to all Commission Departments, including assisting cost center managers with reviewing and managing both the operating and capital improvement budgets, as well as answering any pertinent budgetary questions. In addition to numerous forms of financial analysis for an assortment of departments, staff assisted in preparing, reviewing and updating the primary Commission fiscal books including the Current Expense Budget (CEB), the Capital Improvement Program (CIP), the various monthly transmittals, and the Rate Document. Staff also assisted with preparing PowerPoint Presentations to accompany the Rate Document and the Capital Improvement Program. Staff also assisted in the development of the Commission's Board of Commissioner's Quarterly Report.

2018 Program Goals and Objectives

Goal: The Budget Department will review delinquent Sage accounts and subsequently present analysis to the Chief Financial Officer for potential write-offs.

Objective: The utilization of Sage regarding an assortment of miscellaneous receivables accounts will discontinue as these accounts will instead be managed under the Commission's forthcoming billing system, UMAX. Consequently, the Budget Department aims to settle numerous delinquent Sage accounts prior to the system's go-live date in early 2019.

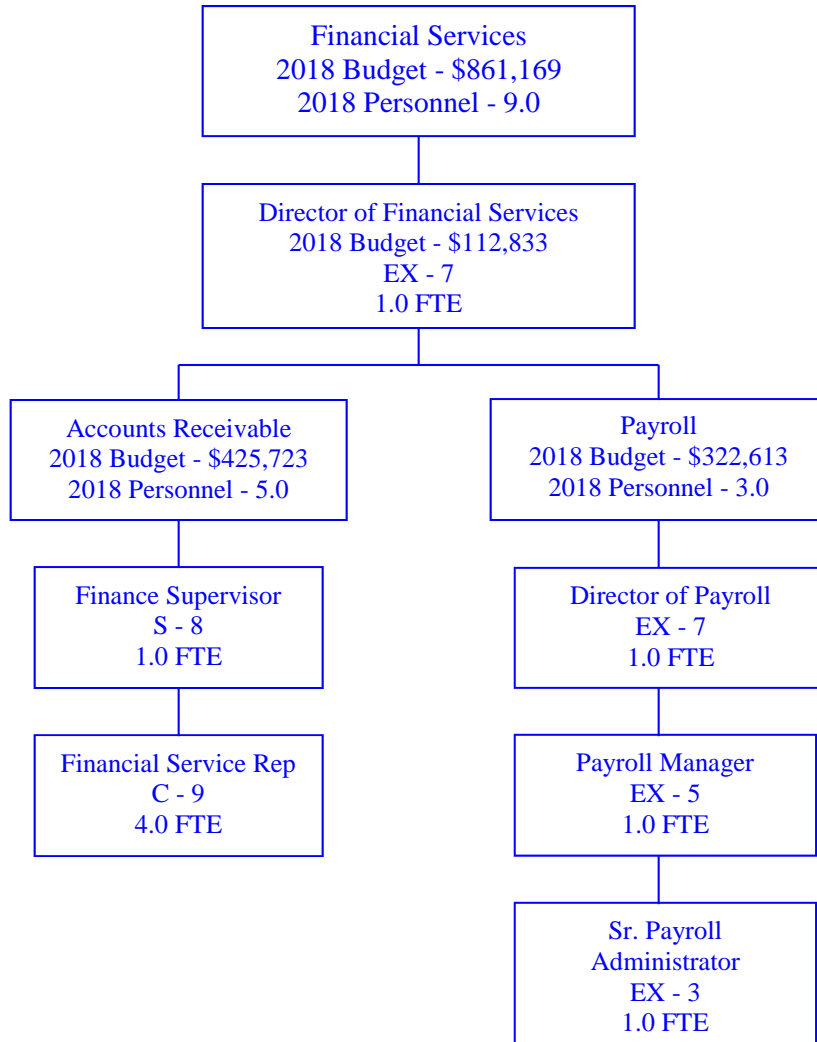
Mission: Increased Production or Efficiency Improvements

Goal: Budget & Financial Planning Staff will implement cross-training procedures, particularly for all Financial Analysts in the Department.

Objective: The primary objective is providing all Financial Analysts with an effective understanding of each pertinent function in the Department in an effort to establish an anticipatory system aimed at sustained accurate and punctual departmental performance.

Mission: Improve/Develop Policy/Procedure

Financial Services



Finance Division

Financial Services

Financial Services

- Accounts Receivable staff, receives and posts, in a timely manner, all cash receipts and accurately maintains a record of the Commission's investments, while generating monthly detailed reports of investment activities
- Payroll is responsible for generating and distributing accurate paychecks to employees on a weekly basis
- Payroll also enforces policies and procedures as stipulated by contracts, policies and state and federal payroll laws

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$744,930 | \$646,207 | \$663,988 | \$17,781 | 2.8% |
| Labor Related Costs/Benefits | \$20,523 | \$11,038 | \$10,315 | (\$723) | -6.6% |
| Supplies and Materials | \$4,770 | \$9,925 | \$14,366 | \$4,441 | 44.7% |
| Repair and Maintenance | \$115,857 | \$166,000 | \$171,500 | \$5,500 | 3.3% |
| Other Services | \$0 | \$1,300 | \$1,000 | (\$300) | -23.1% |
| Total Direct Expenses | \$886,080 | \$834,470 | \$861,169 | \$26,699 | 3.2% |

Explanation of Major Variances

The 2018 budget for the Financial Services Department is \$861,169, an increase of \$26,699 or 3.2% from 2017. The variance is due to the Wages and Salaries, Supplies and Materials and Repair and Maintenance line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|--------------------------------|----------------|------------------|----------------|-----------------------|
| Director of Financial Services | 1.0 | 1.0 | 1.0 | 0.0 |
| Accounts Receivable | 5.0 | 5.0 | 5.0 | 0.0 |
| Payroll | 3.0 | 3.0 | 3.0 | 0.0 |
| Total | 9.0 | 9.0 | 9.0 | 0.0 |

Explanation of Personnel Changes

Director of Financial Services

There was no change to the position count.

Accounts Receivable

There was no change to the position count.

Payroll

There was no change to the position count.

2017 Program Goals Results

MA Sick Time Law reverts back due to the Commission being exempt. All accruals and usages applied to temporary staff were eliminated. Additionally, the accruals have returned to being granted at the end of the six-month probationary period. (As opposed to the 3 months per the MA Sick Law.) Timesheets, sign-in sheets and calendars were also transferred to digital files

2018 Program Goals and Objectives

Goal: Upgrade to PeopleSoft HR9 from 9.1 to 9.2 Upgrade to People Soft Financial from 9.1 to 9.2

Objective: To ensure all modules of the Payroll/HR software are upgraded with no issues or interruptions to the on-time payment of wages of Commission staff. To take advantage of delivered functionality the application has to offer. Go live is 12/18/2017. But project will last into Q1 2018.

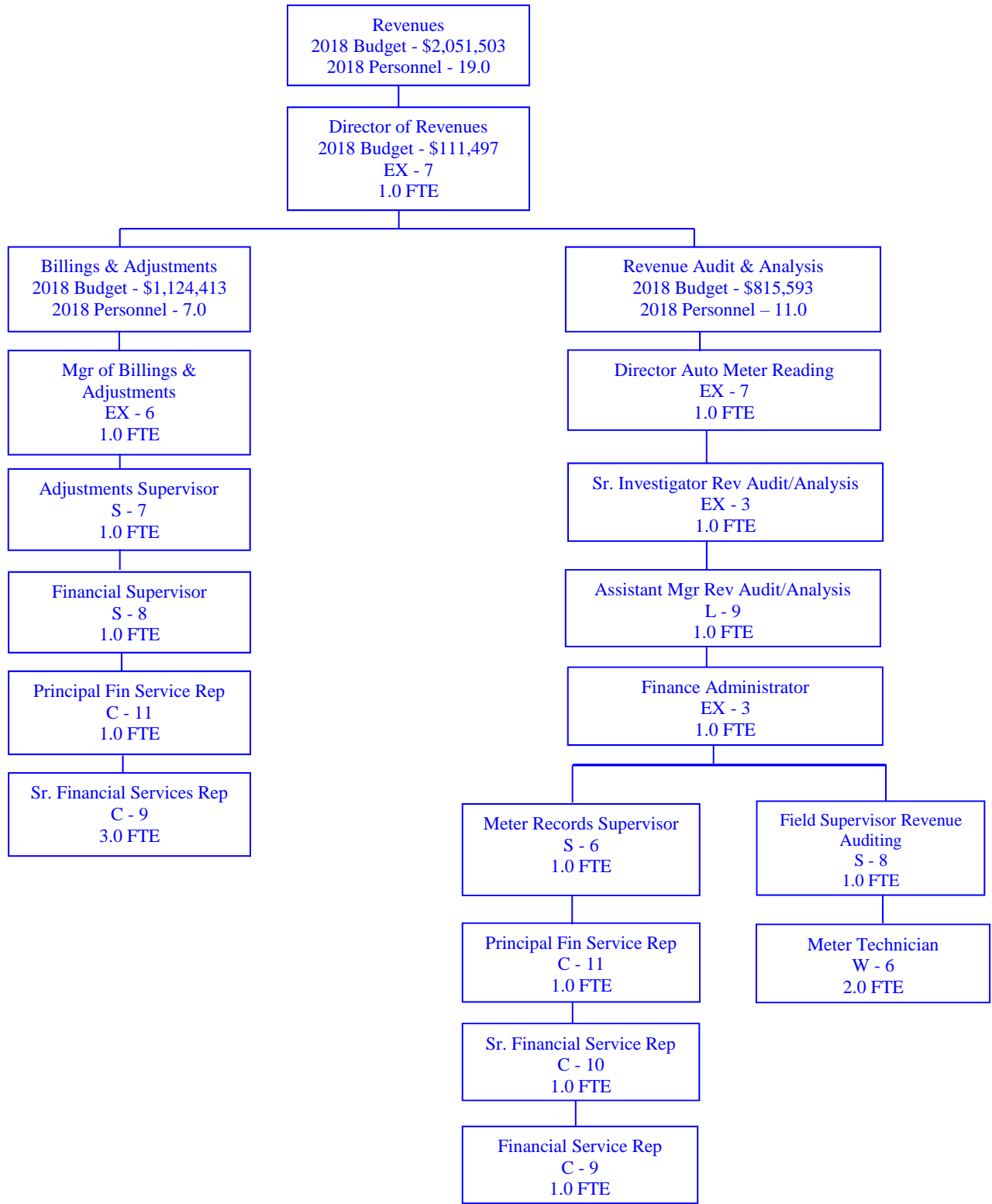
Mission: Increased Production or Efficiency Improvements

Goal: Transfer Payroll records from paper to digital files and continue to preserve the records in that format going forward (calendars, timesheets, overtime sheets and sign-in sheets). This is an ongoing project.

Objective: For payroll to go paperless as much as administratively possible, To reduce archiving costs associated with storing paper reports/documents and For ease of recovering payroll files by using electronic medium rather than wait for a vendor to deliver archived files.

Mission: Increased Production or Efficiency Improvements

Revenues



Finance Division

Revenues

Program Activities

Billings & Adjustments

- Staff provides timely and accurate billings in conjunction with processing adjustments to appropriate customers' accounts

Revenue Audit and Analysis

- Investigate, document and resolve all reports of erratic reads, low usage, no usage, meter tampering and illegal connections, including communicating with BWSC departments and customers during follow-up
- Maintain integrity of Hexagram and BESS records of meters and MTUs by reviewing and verifying information on replacement/repair/reprogram work orders before entering data/closing out, and by running and reviewing numerous queries/reports to identify problems and correct such problems by updating/editing or correcting BESS and/or Hexagram records as needed
- Monitor Hexagram and/or BESS processes such as processing MTU programmer files into BESS work orders, transfer of readings from Hexagram to BESS, DCU status, report problems and follow-up with appropriate staff to resolve

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Wages and Salaries | \$1,649,251 | \$1,374,810 | \$1,376,027 | \$1,217 | 0.1% |
| Overtime | \$9,114 | \$2,435 | \$7,435 | \$5,000 | 205.3% |
| Labor Related Costs/Benefits | \$14,654 | \$15,196 | \$15,778 | \$582 | 3.8% |
| Supplies and Materials | \$436,953 | \$600,513 | \$609,513 | \$9,000 | 1.5% |
| Professional Services | \$0 | \$9,000 | \$0 | (\$9,000) | -100.0% |
| Other Services | \$25,033 | \$42,750 | \$42,750 | \$0 | 0.0% |
| Total Direct Expenses | \$2,135,005 | \$2,044,704 | \$2,051,503 | \$6,799 | 0.3% |

Explanation of Major Variances

The 2018 budget for the Revenues Department is set at \$2,051,503, an increase of \$6,799 or 0.3% from 2017. The variance is due to Wages and Salaries, Overtime, Labor Related Costs/Benefits and Supplies and Materials line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|--------------------------|----------------|------------------|----------------|-----------------------|
| Director of Revenues | 1.0 | 1.0 | 1.0 | 0.0 |
| Billings & Adjustments | 7.0 | 7.0 | 7.0 | 0.0 |
| Rates & Revenues | 1.0 | 0.0 | 0.0 | 0.0 |
| Revenue Audit & Analysis | 10.0 | 11.0 | 11.0 | 0.0 |
| Total | 19.0 | 19.0 | 19.0 | 0.0 |

Explanation of Personnel Changes

Director of Revenues

There was no change to the position count.

Billings & Adjustments

There was no change to the position count.

Rates & Revenues

There was no change to the position count.

Revenue Audit & Analysis

There was no change to the position count.

2017 Program Goals Results

RAA FSRs, plus Finance interns and co-ops, continued to contact customers in efforts to schedule appointments, and pursued non-responsive, non-compliant accounts to termination of water service, and as a result approximately 98.9% of all MTUs have been replaced. RAA will continue to act on the remaining 613 water/sewer accounts. BWSC CSRs are working on scheduling MTU repairs and upgrades for the approximately 396 sewer abatement meters remaining.

2018 Program Goals and Objectives

Goal: Continue with implementation of UMAX, BWSC's selected new CIS/Billing System.

Objective: Continue with all phases of the project including Analysis, Design, Development, and Deployment: provide business function and process information including forms, reports and letters; participate in meetings and workshops involving discovery, functional and technical requirements, design, development, configuration, testing, design and system acceptance, training, business decision/changes workshops and meetings.

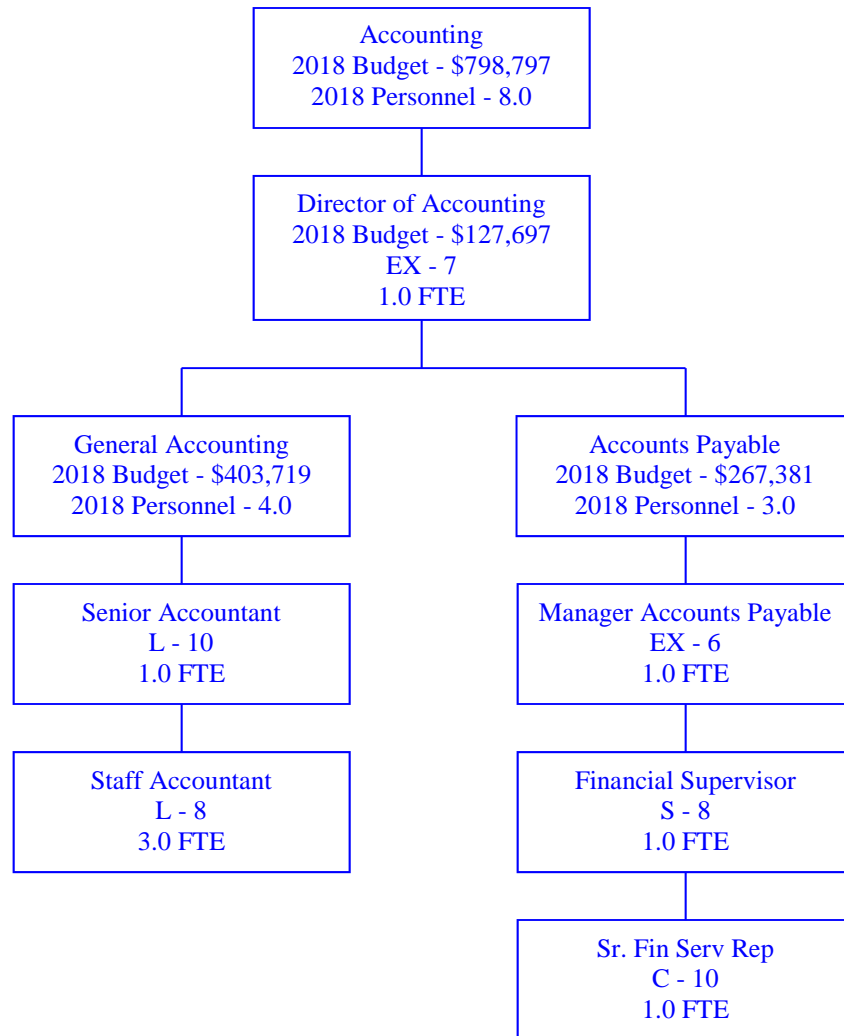
Mission: Increased Production or Efficiency Improvements.

Goal: Continue to update and clean up sewer abatement meter account data in BESS in preparation for implementation of UMAX, BWSC's selected new CIS/Billing system.

Objective: Staff from Billing, RAA, Meter Services and Account Services will continue to review and identify problem sewer abatement accounts, develop, send and track letters, work with customers to resolve problem accounts, and eliminate sewer abatement accounts found to be inactive or non-complaint.

Mission: Increased Production or Efficiency Improvements.

Accounting



Finance Division

Accounting

Program Activities

General Accounting

- Produce monthly financial management reports and annual interim financial statements

Accounts Payable

- Efficiently handles and process all accounts payable functions

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$739,505 | \$634,105 | \$664,182 | \$30,077 | 4.7% |
| Labor Related Costs/Benefits | \$16,648 | \$14,508 | \$19,465 | \$4,957 | 34.2% |
| Supplies and Materials | \$1,048 | \$4,400 | \$4,400 | \$0 | 0.0% |
| Professional Services | \$105,223 | \$130,000 | \$110,000 | (\$20,000) | -15.4% |
| Other Services | \$0 | \$750 | \$750 | \$0 | 0.0% |
| Total Direct Expenses | \$862,424 | \$783,763 | \$798,797 | \$15,034 | 1.9% |

Explanation of Major Variances

The 2018 budget for the Accounting Department is \$798,797, an increase of \$15,034 or 1.9% from 2017. The variance is due to Wages and Salaries and Labor Related Costs/Benefits line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|------------------------|----------------|------------------|----------------|-----------------------|
| Director of Accounting | 1.0 | 1.0 | 1.0 | 0.0 |
| General Accounting | 4.0 | 4.0 | 4.0 | 0.0 |
| Accounts Payable | 3.0 | 3.0 | 3.0 | 0.0 |
| Total | 8.0 | 8.0 | 8.0 | 0.0 |

Explanation of Personnel Changes

Director of Accounting

There was no change to the position count.

General Accounting

There was no change to the position count.

Accounts Payable

There was no change to the position count.

2017 Program Goal Results

The Accounting Department has kept working closer with the Engineering, Operating, and IT Departments than they had in recent years to ensure that accrual estimates were as accurate as possible and to prepare for the accrual estimates at year-end 2017. This will continue into 2018, as the Accounting Department has already received accrual estimates from the other departments and are ensuring that they are accurate. The Accounting Department, in conjunction with the Capital Budget Manager, now verifies the correct category for each asset before vouchering invoices related to IT and automotive purchases. As a result, their useful lives are accurate and allow for an appropriate and smooth depreciation process. The Accounting Department has identified only one problem asset, and has found a solution to circumvent around the asset depreciating incorrectly.

2018 Program Goals and Objectives

Goal: Accounting Staff will work in conjunction with the Storeroom to ensure a more accurate year-end inventory number.

Objective: Staff will offer recommendations for changes that would result in a more efficient manual inventory count, and make it possible to generate an accurate inventory report with Cityworks in the future.

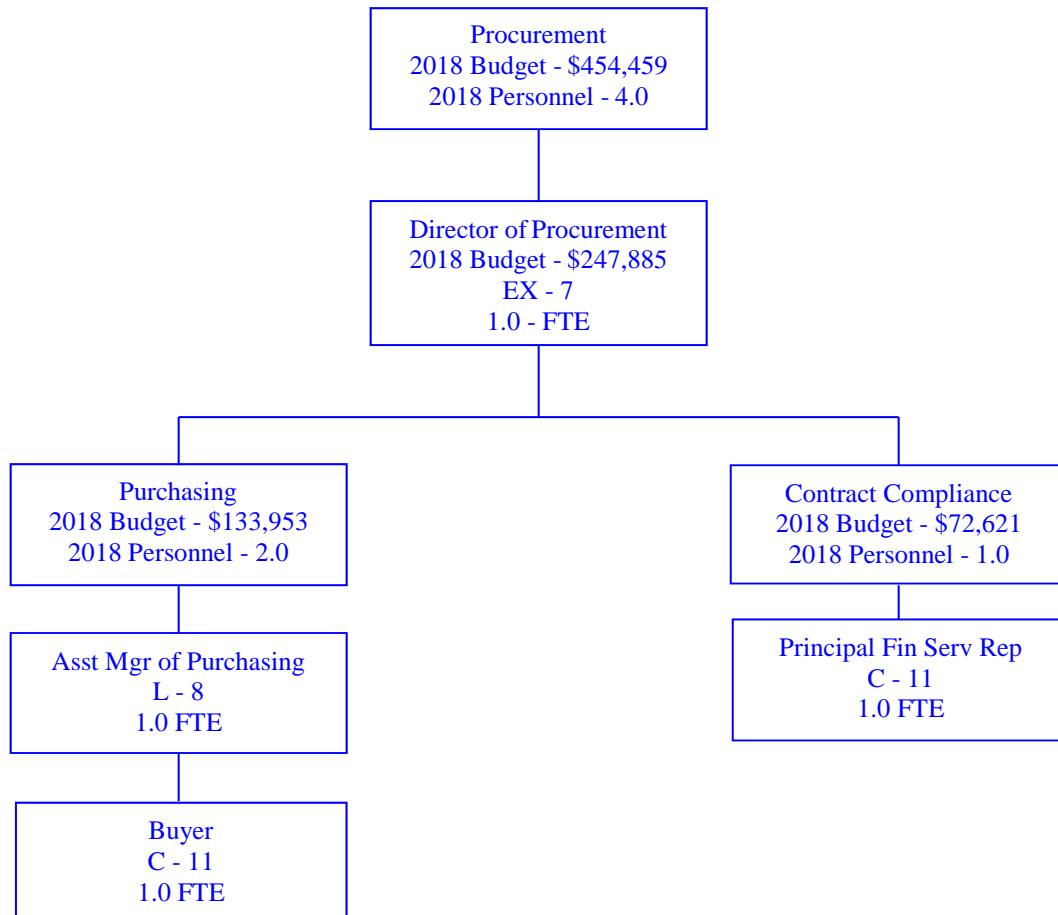
Mission: Improve/Develop Policy/Procedure

Goal: Utilize new features in the Peoplesoft system to make the process of performing quarterly reconciliations of accounts more efficient.

Goal Objective: Run account reconciliations through Peoplesoft to make the process more accurate and efficient, and also have reconciliations backed up on the system.

Mission: Increased Production or Efficiency Improvements

Procurement



Finance Division

Procurement

Program Activities

Purchasing

- Provide purchase and contract support services in a cost-effective manner
- Ensure fair and equitable treatment of all persons who offer to provide supplies or services
- Provide safeguards for the maintenance of the procurement system of quality and integrity and to maximize, to the fullest extent practicable, the purchasing value of public funds

Contract Compliance

- The Contract Compliance Officer monitors: minority/residency/women participation goals, payment of prevailing wage rates, MBE/WBE contract goals, OSHA training requirements and responds to all “Freedom of Information” requests relating to construction contractual information

Department Budget Summary

| Expense Line Item | 2016 Actual | 2017 Budget | 2018 Budget | Dollar Variance | 2017-2018 Variance |
|------------------------------|------------------|------------------|------------------|--------------------|-----------------------|
| Wages and Salaries | \$475,984 | \$405,234 | \$329,345 | (\$75,889) | -18.7% |
| Labor Related Costs/Benefits | \$0 | \$61,058 | \$55,589 | (\$5,469) | -9.0% |
| Supplies and Materials | \$1,519 | \$2,375 | \$2,375 | \$0 | 0.0% |
| Other Services | \$54,697 | \$67,150 | \$67,150 | \$0 | 0.0% |
| Total Direct Expenses | \$532,200 | \$535,817 | \$454,459 | (\$81,358) | -15.2% |

Explanation of Major Variances

The 2018 budget for the Procurement Department is \$454,459, a decrease of \$81,358 or 15.2% from 2017. The variance is due to the Wages and Salaries and Labor Related Costs/Benefits line items.

Department Personnel Summary

| Department | 2016 Actual | 2017 Approved | 2018 Budget | 2017-2018 Variance |
|-------------------------|----------------|------------------|----------------|-----------------------|
| Director of Procurement | 1.0 | 1.0 | 1.0 | 0.0 |
| Purchasing | 2.0 | 2.0 | 2.0 | 0.0 |
| Contract Compliance | 2.0 | 2.0 | 1.0 | (1.0) |
| Total | 5.0 | 5.0 | 4.0 | (1.0) |

Explanation of Personnel Changes

Director of Procurement

There was no change to the position count.

Purchasing

There was no change to the position count.

Contract Compliance

One position was attrited.

2017 Program Goal Results

During 2016, Procurement established a pilot program to promote Electronic Bid Documents. A Digital Electronic RFP was developed. Proposers were required to review and download the document from the BWSC BidNet Portal. All responses will be delivered by electronic submission. This goal is designated as complete. Utilizing the Massachusetts State Contract, the Commission was able to engage in direct contracts with Minority Business Enterprise and Women's Business Enterprise vendors for printing services for the Communications Dept.

2018 Program Goals and Objectives

Goal: Implementation of PeopleSoft Financials Upgrade to Version 9.2

Objective: Test and Implement new enhancements, correct software bugs and processes. Test applied upgrade software and Oracle patches into the production software application.

Mission: Increased Production or Efficiency Improvements

Goal: Develop and Implement a training program on the new functions associated with the PeopleSoft Financials upgrade to version 9.2

Objective: Training will be required in each area of the upgrade application, i.e. Requisitioning, Purchase Orders, Vendor Maintenance, Reports and Development.

Mission: Provide Staff Training

2018 – 2020 Capital Improvement Program

Boston Water and Sewer Commission (“the Commission” or “BWSC”) is a body politic and corporate a political subdivision of the Commonwealth created by Chapter 436 of the Acts of 1977 (“The Enabling Act”). The Enabling Act abolished the water and sewer divisions within the City of Boston Public Works Department and transferred the ownership, operation and control of the water, sewer and storm drain systems to the Commission. As a public instrumentality, the Commission performs an essential public function in providing water and sewer services to the residents of the City of Boston. The Enabling Act authorizes the Commission to construct and make improvements to the water and sewer systems, establish and collect rates and charges for its services and finance its operations and improvements through revenue collections and the sale of bonds and notes payable solely from the Commission’s revenues.

The Enabling Act further provides that any revenue surplus realized by the Commission in any fiscal year shall be used to offset future rate increases.

DISCUSSION OF MANAGEMENT OBJECTIVES AND ACCOMPLISHMENTS

The Commission was created to maintain and improve the long-term quality and reliability of water and sewer services for all users in the City and to assure adequate funding for operation and maintenance of the systems. For the purposes of this document, “Systems” include the water distribution system (including potable water and fire suppression facilities) and sewer system (including separate sanitary sewers, separate stormwater drains and combined sewers) and the related appurtenances and fixtures. The Commission is committed to four primary goals:

- To maintain and improve the Water Distribution and Wastewater Collection Systems. The Commission is committed to a number of improvements to the Water Distribution and Sewer Systems, including following an aggressive renewal and replacement program, reducing unaccounted for water, encouraging conservation and improving the environment.
- To establish and administer a billing and collections system that is fair and efficient. The Commission has worked to establish a rate structure that fully reflects its costs, fairly distributes the financial obligation concerning its customer base and encourages water conservation. The metering, billing and collection process is a central focus of the Commission’s full management team and the Commission is committed to maintaining its strong record in this area.
- To maintain a strong financial structure. The Commission consistently employs conservative financial projections and budgeting assumptions, maintains adequate reserves and strikes a balance between debt funding and rate funding of capital expenses.

2018 – 2020 Capital Improvement Program

- Sustaining Effectiveness of Investments / Compliance of Regulations. The Commission is committed to complying with all its regulatory obligations under federal and state laws, including the Safe Drinking Water Act (“SDWA”), Clean Water Act (“CWA”) and its National Pollutant Discharge Elimination System (“NPDES”) permitting obligations for both its stormwater system and combined sewer system. Compliance obligations also extend to meeting and exceeding the goals and requirements of the Boston Harbor Decree and the Consent Decree executed in 2012 with the Environmental Protection Agency (“EPA”) related to stormwater discharges.

The Enabling Act and the Commission’s General Revenue Bond Resolution, adopted December 6, 1984 (“the Resolution”) require the Commission, on an annual basis, to develop a three-year Capital Improvement Program (“CIP”). Information generated by the Commission’s ongoing monitoring programs for the Systems and from various engineering data files, together with information concerning the development needs of the City, is used to compile a list of pipes, conduits, transmission mains and other System components to be either renewed, replaced, relocated or added to the Systems each year. The CIP outlines the schedule and implementation of the capital projects necessary to maintain and improve the water and sewer systems for the ensuing three-year period.

Complying with the requirements of the Enabling Act and the Resolution, the Commission projected cost of the Commission’s Capital Improvement Program from Fiscal Years 2018 through 2020 totals approximately, \$219,1 million.

On August 23, 2012, the Commission entered in a Consent Decree with the EPA and others in settlement of a CWA suit in the U.S. District Court. As a result, the Commission is undertaking remedial measures designed to improve the Commission’s practices, compliance and MS4 water quality discharges. These remedial measures include a Capacity, Maintenance, Operations and Management (“CMOM”) self-assessment study to analyze all aspects of the Commission’s sanitary sewer and storm drainage facility operations and maintenance; tracking and mitigating sanitary sewer overflows (SSO’s); prioritizing sub-catchment areas for investigation and elimination of illicit discharges to the drainage system; improved its mapping capabilities; tracking industrial facility and construction site discharges; development of a comprehensive stormwater model, implementation of structural Best Management Practices (BMPs) including green infrastructure and low impact development (GI/LID) and other activities. The Commission’s goal is to meet and exceed all of its compliance obligations and improve water quality and the environment for the City of Boston’s residents and visitors.

As part of the CMOM Corrective Action Plan filed with the EPA, the Commission must increase its inspection and assessment of its sewer and drainage systems. The program represents progressive (“CIP”) information generated by the Commission’s ongoing monitoring programs for the Systems and from various engineering data files, together with information concerning the development needs of the City, is used to compile a list of pipes, conduits, transmission mains and other System components to be either renewed, replaced, relocated or added to the Systems each year.

2018 – 2020 Capital Improvement Program

In planning its CIP, the Commission balances the recognized need for ongoing renewal and replacement and preservation of its Systems with the desirability of specific improvements to accommodate development or redevelopment plans for the City. Wherever feasible, capital improvements are scheduled in cooperation with the street rebuilding and reconstruction activities of the City's Department of Public Works, the Boston Planning and Development Agency and the Commonwealth of Massachusetts Highway Department.

The overall objectives of the Commission 2018-2020 CIP are to ensure the delivery of high quality potable water for consumption and fire protection, as well as the efficient collection of sewage for transport and delivery to a treatment facility or for approved discharge. In addition, the CIP includes projects to improve overall efficiency of the Commission and to enhance the Commission's ability to provide services to its customers

The CMOM Department oversees the response and reporting of Sanitary Sewer Overflows (SSO), preventative maintenance, catch basin cleaning program and inspection and maintenance of the combined overflow system, in accordance with the Commission's National Pollutant Discharge Elimination (NPDES) Permit.

The Asset Management/CMOM team reports and conducts a root cause analysis of all SSOs as well as conducts sewer flow metering and dye testing.

Since the implementation of the CMOM program in 2014, the Commission has televised and cleaned annually since the onset of the program, as well as the projected amount of pipe to be televised and cleaned in the 2018-2020 CIP.

| | |
|--------|--------------|
| ✓ 2014 | 37.27 miles |
| ✓ 2015 | 72.45 miles |
| ✓ 2016 | 60.46 miles |
| ✓ 2017 | 93.74 miles |
| ✓ 2018 | 261.00 miles |

The Citywide Illicit Identification Program seeks to identify, through dye testing, improper sanitary lateral connections to storm drains and sources of inflow and infiltration entering the sewer system. Corrective actions will be taken to eliminate illicit connections and identify the sources of inflow and infiltration. This program also includes the inspection of sewer and building connections within low groundwater areas to ensure that they do not cause drawdown groundwater through infiltration.

The Commission added the Stormwater Category in the 2017-2019 Capital Improvement Program. The primary purpose of the Stormwater Program is to encourage participation in the Boston Harbor pollution abatement projects and implement green infrastructure to improve the water quality of discharges to the local receiving waters. The goal is also to study existing conditions and make recommendations for placement of new best management practices designed to promote improved water quality, ensure compliance with state and federal regulations, minimize flooding and manage stormwater throughout the City of Boston.

2018 – 2020 Capital Improvement Program

Funding for the 2018-2020 Capital Improvement Program totals \$219.1 million. The CIP is comprised of Water, Sewer, Support, and Stormwater Programs.

CIP expenditures are divided into four categories: Water Distribution System projects, Sewer System projects, Support projects and stormwater projects. Water Distribution System projects account for \$97.6 million, or 44.6% of the 2018 CIP. Sewer System projects comprise \$96.5 million, or 44%, Support projects total \$18.1 million, or 8.3% of the expenditures outlined in the program, and Stormwater projects account for \$6.9 million, or 3.1% of the 2018-2020 CIP.

Total capital expenditures of \$94.7 million are outlined for 2018. Water Distribution projects comprise \$41.4 million, or 43.7%. Sewer System projects account for \$41.7 million, or 44.1%, Support projects account for \$7.9 million, or 8.4% of the 2018 amount. Stormwater projects totaling \$3.7 million consist of the remaining 3.9% of the 2018 amount.

2018 – 2020 Capital Improvement Program

2018-2020 Capital Improvement Program Cash Flows

| <i>Program Source*</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>TOTAL</i> |
|------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|
| <i>Water</i> | <i>\$41,403,000</i> | <i>\$38,057,000</i> | <i>\$18,095,000</i> | <i>\$97,555,000</i> |
| <i>Sewer</i> | <i>\$41,749,000</i> | <i>\$34,842,000</i> | <i>\$19,886,000</i> | <i>\$96,477,000</i> |
| <i>Support</i> | <i>\$7,925,000</i> | <i>\$5,810,000</i> | <i>\$4,400,000</i> | <i>\$18,135,000</i> |
| <i>Stormwater</i> | <i>\$3,672,000</i> | <i>\$2,106,000</i> | <i>\$1,115,000</i> | <i>\$6,893,000</i> |
| <i>TOTAL</i> | <i>\$94,749,000</i> | <i>\$80,815,000</i> | <i>\$43,496,000</i> | <i>\$219,060,000</i> |

NOTE: Although expenditures decrease from periods 2019 to 2020, it is anticipated that funding for 2019 will be equal or greater than funding presented in 2019. The decrease in 2020 is primarily due to the CIP being a one-year cash flow, over a three-year budget period.

2018-2020 Capital Improvement Program Funding Sources

| <i>Funding Source*</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>TOTAL</i> |
|------------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|
| <i>BWSC Bonds</i> | <i>\$58,113,000</i> | <i>\$46,484,000</i> | <i>\$24,732,000</i> | <i>\$129,329,000</i> |
| <i>Rate Revenue</i> | <i>\$17,236,000</i> | <i>\$19,736,000</i> | <i>\$12,564,000</i> | <i>\$49,536,000</i> |
| <i>MWRA Water Assistance</i> | <i>\$8,303,000</i> | <i>\$9,335,000</i> | <i>\$3,355,000</i> | <i>\$20,993,000</i> |
| <i>MWRA I/I Assistance</i> | <i>\$11,097,000</i> | <i>\$5,260,000</i> | <i>\$2,845,000</i> | <i>\$19,202,000</i> |
| <i>TOTAL</i> | <i>\$94,749,000</i> | <i>\$80,815,000</i> | <i>\$43,496,000</i> | <i>\$219,060,000</i> |

NOTE: Although expenditures decrease from periods 2019 to 2020, it is anticipated that funding for 2019 will be equal or greater than funding presented in 2019. The decrease in 2020 is primarily due to the CIP being a one-year cash flow, over a three-year budget period.

PROJECT HIGHLIGHTS

The Commission's CIP includes projects to improve the overall efficiency of the Commission and to enhance the Commission's ability to provide services to its customers. The projects included in this CIP are intended to accomplish these objectives in the most efficient and cost-effective manner. The Commission intends to enhance Boston's water and sewer infrastructure with several targeted projects included in the 2018 – 2020 Capital Improvement Program. Some of the major projects are listed below:

- ✓ Water Main Replacement Program
- ✓ Inspection and Rehabilitation of Steel Water Mains
- ✓ Sewer and Drain Replacement Program
- ✓ Sewer & Drain Rehabilitation & Replacement in the North End
- ✓ Sewer Separation and System Improvements in South Boston
- ✓ Sewer Separation in Roxbury
- ✓ City-wide Illegal Connections Investigations
- ✓ Upgrade of Automatic Metering Infrastructure (AMI)
- ✓ Projects affiliated with Consent Decree; includes cleaning and televising ninety miles of sewer and drains
- ✓ Implement Stormwater/Green Infrastructure Program designed to improve water quality, the environment and manage stormwater resources
- ✓ Improvements to Information Technology

The Commission completed its Wastewater and Storm Drainage System Facilities Plan in 2015. The major objective of the plan was to develop facility plans for the operation of the Commission's sewer and storm drains that are aligned with the Commission's primary service goals and supported by effective operations, maintenance, and engineering practices. This plan has reviewed all aspects of the Commission Sewer System, including the Commission's design standards, assets, mapping and operational practices and future impacts of climate change on the Commission's facilities.

Critical elements of this project include:

- ✓ Assessment of the Commission's Service Goals and other factors affecting long-term planning including changing regulatory requirements, climate change and financial conditions
- ✓ Systematic use of Risk-based tools to govern prioritization of investments in condition assessments, repairs and replacements
- ✓ Integration of Business Process needed to sustain effective Capacity, Management, Operation and Maintenance (CMOM) Programs for sanitary sewer collections systems and engineering programs
- ✓ Training and Education to embrace the use of new tools and business processes and to sustain knowledge of the system and its operations

2018 – 2020 Capital Improvement Program

In addition to establishing a sustainable framework for planning and management, Plan projects include a broad spectrum of data collection, engineering evaluation and tool development activities.

PROJECTS ASSOCIATED WITH THE CONSENT DECREE & WATER QUALITY IMPROVEMENTS

There are projects that the Commission is currently performing and planning to undertake to fulfill and exceed recommendations of the Environmental Protection Agency (“EPA”) under the Consent Decree. The following projects will support the Commission’s goal of compliance with the Consent Decree and improved water quality discharges and the environment.

Consent Decree

Sewer R&R

Cleaning and Inspections of Sewers and Storm Drains (CMOM-Capacity Management Operations and Maintenance)

Separation

Citywide Illegal Connection Investigation Program Phase IV (Contract 16-206-001)

Augment Drain Model to Characterize Water Quality

Sewer Special

CCTV of Sewers and Storm Drains (Contamination Investigation)

Stormwater

Construct BMPs & Green Infrastructure At City Hall Plaza

Construct BMPs & Green Infrastructure at Audubon Circle

Water Quality Improvements

Separation

Separation of Sewer House Laterals (Contract 14-309-007 & 17-309-003)
Owner Correction of Illegal Connections

Sewer Special

Urban Runoff Water Quality Evaluation

Interactive Training Tool

Fort Point Channel Implementation of Recommendations

Model Improvements

Stormwater

Constructed Wetland in Stormwater Tributary Area

Green Infrastructure Low Impact Development Area (North Beacon Street)

Green Infrastructure Low Impact Development Area II (Stony Brook)

Green Infrastructure Low Impact Development Area III (Canterbury Brook)

Stormwater Utility Evaluation

Wastewater/Drainage Facilities Plan

Design of Constructed Wetland in Stormwater Tributary Area (Daisy Field)

Design of Constructed Rain Gardens

Constructed Rain Gardens

2018 – 2020 Capital Improvement Program

Projects associated with the Plan in the Sewer System CIP include the rehabilitation or replacement of approximately 8.5 miles of deteriorated or collapsed sanitary sewers and storm drains and the television inspection of approximately 90 miles of sewer pipe. Also included are drainage improvements and the replacement of faulty tide-gates.

The CIP continues funding for the separation of combined sewers and for the reduction of infiltration and inflow into the sanitary system. Infiltration and inflow I/I is extraneous quantities of water, which enters the sanitary sewers and reduces the capacity of the system to transport sanitary sewage. Reduction of I/I also decreases the quantity of water transported to the Massachusetts Water Resource Authority (“MWRA”) wastewater treatment facilities, thereby reducing overall transportation costs, treatment costs and BWSC’s sewer assessments.

2018 – 2020 Capital Improvement Program

BACKGROUND

The Commission was established pursuant to the Boston Water and Sewer Reorganization Act of 1977, Chapter 436 of the Acts of 1977 (“the Enabling Act”) and is governed by a three-member Board of Commissioners. Since the Commission’s inception in 1977, the Commission has set forth its Capital Improvement Plan to provide for long-term sustained capital improvements to its water distribution and sewer collection system, governed by a core commitment to prudent fiscal management. Comprehensive and well-planned water distribution system maintenance and planning has sustained superior water service for our customers and resulted in a low incidence of failure. The Commission has also led the industry in implementing effective water conservation measures, including dedication to deploying the most efficient technologies and practices enabling the Commission to maximize cost savings.

The Commission utilizes effective conservation measures through continued efforts to eliminate leaks across the system through advanced leak detection technology and proactive maintenance of the system’s water mains.

Major sewer system improvements have resulted in increased system capacity and the virtual elimination of dry weather overflows from combined sewers into Boston Harbor and the Neponset, Charles and Mystic Rivers. These improvements have also increased water quality and improved accessibility to the waterways.

In addition, the Commission completed construction of a new Materials Handling Facility in 2010 to effectively dispose of catch basin debris and sewer cleaning materials. This facility will also reduce the Commission’s costs for transportation and disposal of catch basin debris by dewatering the materials.

In 2011, the Commission completed a comprehensive water distribution study that reviewed all aspects of the Commission’s distribution system, including a prioritization of every water pipe in the system. The Commission utilizes the study’s results to prioritize capital improvements and invest in the most cost-effective maintenance projects. A subsequent update to the prioritization models was completed in 2016.

Water distribution system improvements made since 1978 include the replacement of 350.1 miles of older water mains, the cleaning and lining of 274.8 miles of water mains, hydrant replacements and valve upgrades and replacements.

The Commission has also recently completed a comprehensive review of the sewer and storm drainage facilities. This project has reviewed all aspects of the Commission Sewer System, including the Commission’s design standards, assets, mapping, maintenance and operational practices and future impacts of climate change on the Commission’s facilities. This review completed in 2015. The final plan has provided a detailed and efficient sewer program for the next twenty-five years.

Since 1978, 83.3 miles of deteriorated or collapsed sanitary sewers and drains have been replaced, 58.7 miles of sewers and drains have been rehabilitated, 664 miles of sewer pipe have been television inspected, 45.6 miles of large sewers and drains have been cleaned and approximately 159 miles of new storm drains have been installed for separation purposes.

2018 – 2020 Capital Improvement Program

WATER DISTRIBUTION SYSTEM EXPENDITURES

Over the three-years of the CIP, the Commission will expend \$84.6 million on improvements to the Water Distribution System. The majority of these expenditures will occur in the replacement of water mains.

The projects scheduled for initiation in 2018 will result in the replacement of 8 miles of water mains.

The table below presents a summary of the 2018-2020 capital expenditures for the Water Distribution System.

Water Distribution System Expenditures by Program Category

| <i>Program Source</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>TOTAL</i> |
|--------------------------|---------------------|---------------------|---------------------|---------------------|
| <i>Water Replacement</i> | <i>\$34,458,000</i> | <i>\$33,322,000</i> | <i>\$14,860,000</i> | <i>\$82,640,000</i> |
| <i>Water Special</i> | <i>\$6,945,000</i> | <i>\$4,735,000</i> | <i>\$3,235,000</i> | <i>\$14,915,000</i> |
| <i>TOTAL</i> | <i>\$41,403,000</i> | <i>\$38,057,000</i> | <i>\$18,095,000</i> | <i>\$97,555,000</i> |

NOTE: Although expenditures decrease for 2019, it is anticipated that funding for 2020 will be equal or greater than funding presented in 2019. The decrease in 2020 is primarily due to the CIP being a one-year cash flow, over a three-year budget period.

SEWER SYSTEM EXPENDITURES

The CIP for the Sewer System includes a total of \$96.5 million for various types of system improvements. These include in-kind replacement and rehabilitation of sewer pipe, installation or replacement of sewers and storm drains that increase the overall capacity of the system, separation of combined systems, identification and reduction of infiltration and inflow and compliance with permit requirements in the areas of combined sewer overflows and stormwater discharges.

2018 – 2020 Capital Improvement Program

The table below presents a summary of the 2018-2020 capital expenditures for the Sewer System.

Sewer System Expenditures by Program Category

| <i>Program Source</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>TOTAL</i> |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <i>Sewer R&R</i> | \$24,988,000 | \$25,755,000 | \$13,700,000 | \$64,443,000 |
| <i>Increased Capacity</i> | \$799,000 | \$ | \$ | \$799,000 |
| <i>Separation</i> | \$12,964,000 | \$6,309,000 | \$3,834,000 | \$23,107,000 |
| <i>Infiltration/Inflow</i> | \$ | \$100,000 | \$100,000 | \$200,000 |
| <i>Sewer Special</i> | \$2,998,000 | \$2,678,000 | \$2,252,000 | \$7,928,000 |
| <i>TOTAL</i> | <i>\$41,749,000</i> | <i>\$34,842,000</i> | <i>\$19,886,000</i> | <i>\$96,477,000</i> |

NOTE: Although expenditures decrease for 2020, it is anticipated that funding for 2019 will be equal or greater than funding presented in 2018. The decrease in 2019 is primarily due to the CIP being a one-year cash flow, over a three-year budget period.

SUPPORT PROJECT EXPENDITURES

The capital projects included in the Support category contribute to the overall efficient operation of the Commission and improve the Commission's ability to manage, administer projects and collect revenues. Monies allocated for Support projects in the 2018-2020 CIP total \$18.1 million.

Monies budgeted in this section of the CIP are included expenditures for Advanced Meter Infrastructure, Information Technology, and various Administrative Equipment

Support Expenditures by Project Category

| <i>Program Source</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>TOTAL</i> |
|-------------------------|---------------------------|---------------------------|---------------------------|----------------------------|
| <i>Metering</i> | \$1,515,000 | \$1,015,000 | \$1,015,000 | \$3,545,000 |
| <i>IT</i> | \$3,555,000 | \$2,740,000 | \$2,305,000 | \$8,600,000 |
| <i>Admin. Equipment</i> | \$2,855,000 | \$2,055,000 | \$1,080,000 | \$5,990,000 |
| <i>TOTAL</i> | <i>\$7,925,000</i> | <i>\$5,810,000</i> | <i>\$4,400,000</i> | <i>\$18,135,000</i> |

2018 – 2020 Capital Improvement Program

Stormwater Project Expenditures

The primary purpose of the Stormwater Program is to encourage participation in the Boston Harbor pollution abatement projects and implement green infrastructure to improve the water quality of discharges to the local receiving waters. The goal is also to study existing conditions and make recommendations for placement of new best management practices designed to promote improved water quality, ensure compliance with state and federal regulations, minimize flooding and manage stormwater throughout the City of Boston. Monies allocated for Stormwater projects in the 2018-2020 CIP total \$6.9 million.

| <i>Program Source</i> | <i>2018</i> | <i>2019</i> | <i>2020</i> | <i>TOTAL</i> |
|-----------------------|--------------------|--------------------|--------------------|--------------------|
| <i>Stormwater</i> | <i>\$3,672,000</i> | <i>\$2,106,000</i> | <i>\$1,115,000</i> | <i>\$6,893,000</i> |
| <i>Total</i> | <i>\$3,672,000</i> | <i>\$2,106,000</i> | <i>\$1,115,000</i> | <i>\$6,893,000</i> |

MASSACHUSETTS WATER RESOURCES AUTHORITY (MWRA)

The Commission obtains its water supply and sewer treatment services from the MWRA. The MWRA provides water services to 51 cities, towns and special purpose entities including the Commission (45 in greater Boston and the Metro west areas; 3 in Central Massachusetts; and a back-up water supply in 3 other communities) and wastewater treatment to nearly half of the State's population in 43 cities, towns and special purpose entities located throughout central and eastern Massachusetts.

MWRA Background

On December 19, 1984, MWRA was created by Chapter 372 of the Acts of 1984 ("the Act"). In accordance with the provisions of the Act effective July 1, 1985 the ownership, possession and control of all personal property comprising the Metropolitan District Commission ("MDC") water and sewer systems were transferred to MWRA. The Act authorizes MWRA to repair, replace, rehabilitate, modernize and extend the water delivery system and the sewage collection, disposal and treatment systems on a self-sustaining basis. The Act also allows for the issuance of bonds and notes to finance any of its corporate activities.

On January 31, 1985, a suit commonly referred to as the Boston Harbor case, was brought against the MDC, the Commonwealth, MWRA (as a successor to the MDC) and the Commission alleging water pollution of and alleged illegal discharges into Boston Harbor in violation of the Clean Water Act. As the successor to the MDC, MWRA assumed responsibility for taking the Court-ordered actions to achieve and maintain compliance with the Clean Water Act. Such large-scale projects are financed through the issuance of revenue bonds, proceeds of federal and state grants and operating revenues.

2018 – 2020 Capital Improvement Program

MWRA Rates and Charges

Under the Act, MWRA was empowered to establish charges for its services and commodities. One of the basic goals achieved by the MWRA Act was the substitution of assessments, or user fees, to the member communities for the prior tax-based system of charges.

The Commission is the largest single customer for MWRA. For MWRA fiscal year 2018, the Commission will be assessed 35.4% of the water system charges and 28.6% of the sewer system charges. On a combined basis, the Commission will pay 30.9% of the total MWRA assessments.

Assessments for water services are calculated by MWRA based on the metered water use in the calendar year immediately preceding the MWRA fiscal year. The Commission's water charges for the MWRA fiscal year of 2018 total \$85.9 million based on the Commission's calendar year 2016 metered water use.

Through fiscal year 1995, sewer assessments were calculated by a formula using, among other things, population and population equivalents. In accordance with legislation enacted in 1993, the MWRA Advisory Board developed a new sewer rate methodology for calculating assessments beginning in fiscal year 1996. The new methodology allocates operating and maintenance costs based on total metered annual flow and total annual average strength, septage contributions and high strength flow loads. Septage contributions are allocated based on volume, total suspended solids ("TSS") and biochemical oxygen demand ("BOD") loadings. High-strength flow loads are generated by those permitted entities whose flows exceed 25,000 gallons per day and whose TSS and/or BOD concentrations exceed 400 milligrams per liter.

Capital or debt service costs are allocated as follows: two-eighths based on maximum month metered flow and total annual average strength, septage and high strength flow loads; three-eighths based upon contributing (sewer) population; and three-eighths based on census population. Metered wastewater flow from the immediately preceding calendar year is used in calculating assessments. The Commission's sewer assessment for fiscal year 2018 based on calendar year 2016 data, totals \$136.0 million. Total assessments for water and sewer charges for MWRA fiscal year 2018 are \$221.9 million.

As the largest of MWRA's water community members, BWSC represents 36.1 percent of the current demand on the MWRA water supply. BWSC's water comes from the Quabbin Reservoir and the Wachusett Reservoir, located about 65 miles and 35 miles west of Boston. The two reservoirs combined supplied an average of 203.7 mgd (millions of gallons a day) to consumers in 2015. The safe yield of the reservoir system is 300 mgd.

Water distributed to the Boston metropolitan area is conveyed from the reservoirs through the Cosgrove or Wachusett Aqueducts and treated at the MWRA's John J. Carroll Water Treatment Plant at Walnut Hill in Marlborough. Treatment includes ozone disinfection, pH adjustment with sodium bicarbonate and the addition of chloramines and fluoride. Water leaves the plant through the Metro-West Water Supply Tunnel and is stored in covered storage tanks, such as Norumbega Reservoir and the Loring Road Tanks, where it is held for delivery to BWSC's service networks. MWRA mains distribute water to the BWSC system at 29 metered delivery points.

Today, Boston is one of 52-member communities that purchases its water (fluoridated and disinfected by ozone with chlorine residual added) wholesale from the MWRA and represents

2018 – 2020 Capital Improvement Program

approximately 36.1 percent of the current demand on the MWRA water supply. BWSC's water distribution system currently provides service to approximately 90,000 active accounts throughout the City. Boston's resident population of nearly 646,000 almost doubles each day by commuting workers and students, shoppers, tourists, conventioners, hospital patients and visitors.

MWRA has completed construction of major transmission and treatment facilities to service the Greater Boston area including the Metro West Tunnel. These improvements will ensure that Boston receives a reliable source of clean water.

FUNDING SOURCES AND FINANCIAL IMPACT

Funding for the CIP is provided through four sources; Commission general revenue bonds, current year rate revenues, and two grant/loan programs provided by the MWRA

The primary funding source for the three-year capital program is the sale of Commission general revenue bonds. Over the three-year plan, general revenue bonds will comprise \$129.3 million, or 59% of the total funding requirement. In 2018, bonds will make up \$58.1 million, or 61% of the funding required for that year.

As in past CIP's, the 2018-2020 program funds renewal and replacement ("R&R") work from current rate revenues. Renewal and replacement projects include water main relining, water main replacement (only replacement with the same size pipe), and sewer pipe rehabilitation. The 2018-2020 CIP outlines R&R expenditures of \$49.6 million, or 22.6% of total expenditures over the three years of the program. In 2018, approximately \$17.2 million or 18% will be expended out of current rate revenues for CIP projects.

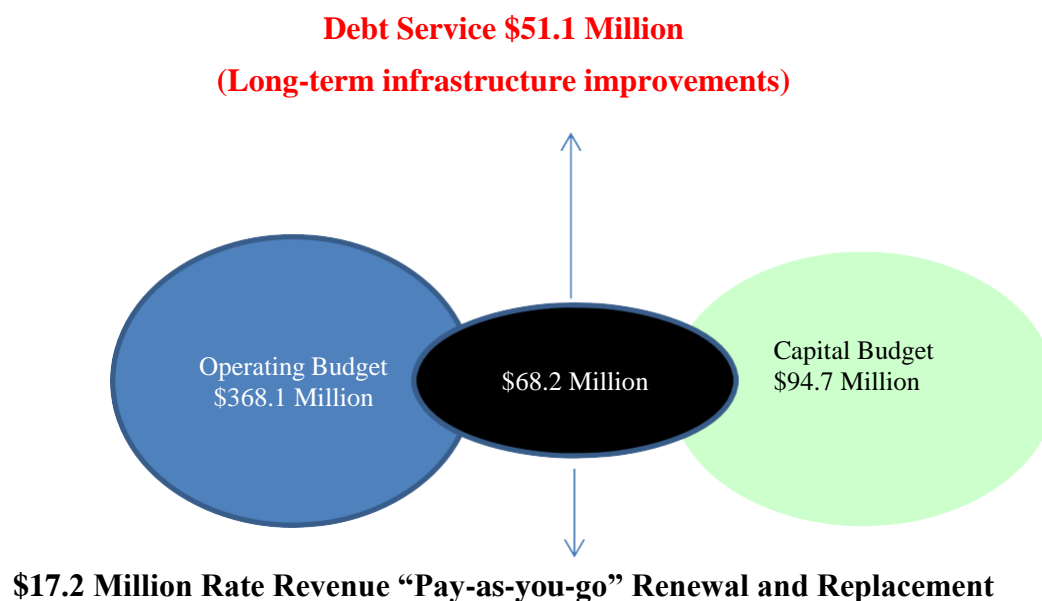
Each year the Commission participates in the MWRA's Infiltration/Inflow program for Infiltration/Inflow and Separation projects. Since 1993, the Commission has received \$83.7 million in MWRA funding for various Infiltration/Inflow and Separation projects. The Commission plans to continue to take advantage of MWRA funding over the 2018-2020 period. \$19.2 million in funding is anticipated to be used for projects that are ongoing along with new projects for the three years 2018-2020.

In 2010, the MWRA Board voted to authorize the development of a loan program to assist its member communities in the performance of water system improvement projects. The program is the MWRA Local Water System Assistance Program (LWSAP). The program offers interest free loans payable over a ten-year period and is designed to improve water quality in local distribution systems. The amount of funds available in the program is \$34.3 million dollars per year with Boston receiving a share of approximately \$5.3 million dollars. The loans will be repaid to the MWRA over a 10-year period. Loan funds are approved for distribution from fiscal year 2011 through fiscal year 2020. The Commission has applied for loan funding for certain water main replacement projects awarded through the remainder of this program. Project costs incurred since January 1, 2010 have been considered for eligibility in applications under the LWSAP. From 2010-2017 the Commission has received \$27.1 million in LWSAP funding.

2018 – 2020 Capital Improvement Program

It is anticipated in 2018-2020, Capital Improvement Program \$21 million will be funded using the LWSAP Program

Impact of CIP on Current Expense Budget 2018



WATER DISTRIBUTION SYSTEM

The system serves approximately 90,000 accounts through five major service networks: Southern Low Service, which serves City Proper, South Boston and parts of Roxbury; Northern Low Service which serves Allston/Brighton, Charlestown and East Boston; Southern High Service, which serves Brighton, Dorchester, Hyde Park, Roslindale, and parts of Jamaica Plain, Roxbury and West Roxbury; and Southern Extra-High Service which serves portions of Jamaica Plain, West Roxbury and Hyde Park. In addition, a relatively small area in the Orient Heights section of East Boston is served by a single connection to the MWRA Northern High Service System.

Approximately 90% of the water consumed in the city is delivered through the Southern Low Service and Southern High Service, with most of the remainder delivered through the Northern Low Service. These service networks are supplied with potable water purchased from MWRA at 29 metered delivery points. This water is drawn from the Quabbin and Wachusett Reservoirs located in western and central Massachusetts. Supply is conveyed via aqueducts from these reservoirs to the Loring Road Tanks and Norumbega Reservoirs, where it is held for delivery to the Commission’s service networks.

2018 – 2020 Capital Improvement Program

The Commission's current water distribution system consists of the following:

| APPURTENANCES | | WATER MAIN CITY WIDE | | PRESSURE ZONE | |
|---------------|--------|----------------------|-----------|---------------------------|-----------|
| Hydrants | 12,681 | Total Linear Feet | 5,334,918 | High Pressure Fire System | 16 Miles |
| | | Total Linear Miles | 1,010 | Northern High | 4 Miles |
| Gate Valves* | 17,526 | Pumping Stations | 1 | Northern Low | 89 Miles |
| | | | | Southern Extra High | 80 Miles |
| | | | | Southern High | 562 Miles |
| | | | | Southern Low | 259 Miles |

*Includes only facilities owned by BWSC

OBJECTIVES

The primary objectives of the 2018-2020 Water Distribution System CIP are:

- ✓ To ensure a continued adequate supply of high quality, potable water at adequate pressure, for consumption by the Commission's customers and for fire protection
- ✓ To reduce the amount of non-revenue producing water and to reduce the long-term maintenance costs of the system
- ✓ To improve the operability of valves and appurtenances so as to advance the efficient operation of the water system
- ✓ To coordinate the scheduling of system improvements with related projects of other public agencies

To ensure the above stated objectives are attained, the Commission has implemented projects of the rehabilitation and replacement water mains, the replacement of valves and hydrants and the installation or replacement of water mains associated with bridge reconstruction projects.

Over the last ten years, the Commission has completed a total of \$260.0 million in water distribution improvements. These improvements have resulted in the replacement of 104.2 miles of water mains, and cement lining of 34.9 miles of water mains.

2018-2020 WATER DISTRIBUTION SYSTEM CAPITAL PROGRAM

The Commission's 2018-2020 CIP for the Water Distribution System continues the investments necessary to maintain and improve the water distribution infrastructure. Projects are planned in the following areas: the rehabilitation or replacement of water mains, including the replacement of water pipes and the upgrade of valves and hydrants. Also included are water mains which are replaced as part of the Commission's sewer separation work. Together, these planned program activities will result in significant improvements to the water distribution system.

Three-year expenditures are projected to be \$97.6 million, of which \$41.4 million is anticipated to occur in 2018. The three-year amounts are distributed in the Water Program as follows: Replacement \$34.5 million or 83.2%, and Special \$6.9 million or 16.8%.

WATER MAIN REPLACEMENT PROGRAM

DESCRIPTION AND JUSTIFICATION

Funding is provided in the 2018-2020 CIP for the continuation of the Commission's Water Main Rehabilitation Program. The program consists of the replacement of unlined cast-iron water mains and water mains that have reached the end of their useful life.

The primary purpose of the Water Main Replacement Program is to ensure the quality and quantity of water provided by the Commission to its customers. Over long periods of time the internal and external surfaces of water mains are subject to corrosion and deterioration. Internal corrosion of water mains can affect water quality, particularly taste, odor and color as well as reduce the hydraulic capacity of the pipe. Internal and external corrosion can also reduce the structural integrity of pipe, causing potential leakage and main breaks.

The largest component of the Internal Water Distribution System CIP is the program to replace water mains. The replacement program replaces aged, undersized or structurally deteriorated pipe. The program also includes rehabilitation of pipe by structural lining.

The 2018-2020 CIP for the Water Distribution System continues programs for the replacement of water mains, the replacement of older or defective hydrants as necessary on all replacement projects, the replacement of water mains on new or reconstructed bridges and various design services, permits and paving fees associated with the capital funded projects.

The Water Main Replacement Program accomplishes the following:

- ✓ Reduces the occurrence of main breaks, public inconvenience, loss of water and associated costs
- ✓ Decreases water leakage
- ✓ Increases the capacity of water mains
- ✓ Reduces discolored water conditions associated with water main tuberculation
- ✓ Reduces long-term maintenance costs
- ✓ Contributes in the control of bio-film in complying with the requirements of the Safe Drinking Water Act

In 2011, the Commission completed a Water Distribution Study, which analyzed the effectiveness and stability of the water system. Incorporating a progressive approach to understanding system needs, the new study outlines a detailed maintenance and improvement plan.

This study provided a multi-faceted methodology for strategic investments over the next twenty years. As part of the Water Distribution Study all pipes in the BWSC system were placed in a ranking system through specialized software utilizing several factors including pipe age, material, soil conditions, break history and consequence of failure. The study recommended replacing 11 miles of pipe per year. This ranking system was updated in 2016 resulting in a recommendation to replace and rehabilitate 8 mile of pipe per year.

2018 – 2020 Capital Improvement Program

This system is used in the selection of pipes for replacement under the Capital Improvement Program. Pipes with the higher ranking are considered for replacement. Pipes are also selected within proximity to other selected pipe to create geographic based contracts. All streets are coordinated with City and State Paving Programs.

Using the latest technology solutions, we are identifying new areas where BWSC can make sustainable improvements to the quality of our environment and services.

WATER MAIN REPLACEMENT PROGRAM 2018 SUMMARY

The projects scheduled for initiation in 2018 will result in the replacement of approximately 8 miles of water mains.

Prior to construction the Commission inspects sewer and drain pipes in streets where water pipes are scheduled to be replaced. All sewer and drain replacement and rehabilitation work is then performed along with the water pipe replacement. This avoids disruption of the streets and saves projects costs. Funding for the sewer and drain work is included in the sewer section of the CIP.

METHODOLOGY FOR SELECTING WATER MAINS FOR REHABILITATION

The Commission conducts an annual evaluation of its water distribution system to determine and prioritize water main rehabilitation needs. Based on this annual evaluation staff prepares a priority list of pipes to be replaced.

Candidates are based on: information and recommendation from the 2016 update of the pipe ranking system as well as water main breaks, customer complaints concerning water quality or pressure deficiency; BWSC maintenance records; pressure and fire-flow tests; and construction work planned by other agencies.

To the highest extent possible the Commission coordinates the replacement and lining of water mains with roadway and highway construction, urban development, housing development and mass transit work planned by state and local government entities.

For example, if the City of Boston PWD is planning to resurface a roadway within the next few years, the Commission would make every effort to replace the water main in that street before it is resurfaced,

The coordination of the Commission's capital programs with other infrastructure improvements minimizes temporary construction related impacts to Boston's residential neighborhoods and commercial centers.

2018 – 2020 Capital Improvement Program

WATER SYSTEM

WATER REPLACEMENT

The following pages contain a brief summary of each on-going and new water replacement project included in the 2018-2020 CIP.

NEW PROJECTS

Water Main Replacement in City Proper Contract No. 18-308-001: This project includes the replacement of older cast iron water mains that have reached their useful life in the City Proper. Construction is projected to commence April 2019 and be completed by October 2020. The three-year budget for this project is \$6,700,000.

Water Main Replacement in City Proper, Back Bay and Roxbury Contract No. 18-308-002: This project includes the replacement of older cast iron water mains that have reached their useful life in the City Proper, Back Bay and Roxbury. Project involves the rehabilitation by trenchless methods of large diameter steel mains. Also included is the dewatering and inspection of a 42-inch steel water pipe which lies beneath the Copley Place Development to determine its condition. Construction is projected to commence June 2019 and be completed by May 2020. The three-year budget for this project is \$9,000,000.

Water Main Replacement in Dorchester Contract No. 18-308-003: This project includes the replacement of older cast iron water mains that have reached their useful life in Dorchester. Construction is projected to commence April 2019 and be completed by September 2019. The total three-year budget for this project is \$1,000,000.

Water Main Replacement in Fenway Contract No. 18-309-001: This project includes the replacement of older cast iron water mains that have reached their useful life in Fenway. Construction is projected to commence May 2019 and be completed by June 2020. The three-year budget for this project is \$3,330,000.

Water Main Replacement in Hyde Park, Fenway & Roslindale Contract No. 18-309-003: This project includes the replacement of older cast iron water mains that have reached their useful life in Hyde Park, Fenway and Roslindale. Construction is projected to commence July 2019 and be completed by November 2020. The total three-year budget for this project is \$3,000,000.

ONGOING PROJECTS

Water Main Replacement in East Boston Contract No. 17-308-001: This project includes the replacement of older cast iron water mains that have reached the end of their useful life in East Boston. Construction is projected to commence May 2019 and be completed by November 2020. The total three-year budget for this project is \$3,700,000.

2018 – 2020 Capital Improvement Program

Water Main Replacement in Dorchester & Roxbury Contract No. 17-308-002: This project includes the replacement of older cast iron water mains that have reached the end of their useful life in Dorchester and Roxbury. Construction is projected to commence May 2018 and be completed by May 2019. The total three-year budget for this project is \$2,300,000.

Water Main Replacement in Jamaica Plain, Mattapan, Hyde Park and West Roxbury Contract No. 17-308-003: This project includes the replacement of older cast iron water mains that have reached their useful life in Jamaica Plain, Mattapan, Hyde Park and West Roxbury. Construction is projected to commence June 2018 and be completed by May 2019. The total three-year budget for this project is \$2,100,000.

Water Main Replacement in City Proper (North Washington St.) Contract No. 17-308-004: This project includes the replacement of 2,310 linear feet of old cast iron water mains that have reached their useful life in City Proper. Construction is projected to commence April 2018 and be completed by September 2018. The total three-year budget for this project is \$2,700,000.

Water Main Replacement in City Proper (Bowdoin St.) Contract No. 17-308-04A: This project includes the replacement of 5,275 linear feet of older cast iron water mains that have reached their useful life in City Proper. Construction is projected to commence September 2018 and be completed by May 2020. The total three-year budget for this project is \$4,314,000.

Water Main Replacement in the South End Contract No. 17-308-005: This project includes the replacement of older cast iron water mains that have reached their useful life in the South End as well as associated sewers and drain that are in disrepair. Construction is projected to commence May 2018 and be completed by November 2019. The total three-year budget for this project is \$3,400,000.

Water Main Replacement in Curlew St., West Roxbury: This project includes the replacement of older cast iron water mains that have reached their useful life on Curlew Street in West Roxbury. Construction is projected to commence April 2018 and be completed by July 2018. The total three-year budget for this project is \$127,000.

Water Main Replacement in Dorchester and Roxbury Contract No. 17-309-002: This project includes the replacement of older cast iron water mains that have reached the end of their useful life in Dorchester. Construction is projected to commence in May 2018 and be completed by September 2018. The total three-year budget for this project is \$700,000.

Water Main Replacement Citywide Contract No. 17-309-02A: This project includes replacement of older water mains that have reached their useful life throughout the City. Construction is projected to commence April 2019 and be completed by October 2020. The total three-year budget for this project is \$835,000.

Water Main Replacement in East Boston Contract No. 17-309-005: This project includes the replacement of older cast iron water mains that have reached their useful life in East Boston. Construction is projected to commence May 2018 and be completed by November 2019. The total three-year budget for this project is \$835,000.

2018 – 2020 Capital Improvement Program

Water Main Replacement in the Roxbury – Contract No. 17-309-011: This project includes water main replacement of older cast iron water mains that have reached their useful life in Roxbury. Construction is projected to commence August 2018 and be completed by December 2019. The total three-year budget for this project is \$150,000.

Water Portion of Sewer Separation Contract in Roxbury Contract No. 15-309-011: This project includes the replacement of water mains as part of the sewer separation in Roxbury. Construction commenced in August 2016 and is projected to be completed by July 2018. The total three-year budget for this project is \$372,000.

Water Portion of Sewer Separation in East Boston Contract No. 16-309-005: This project includes the replacement of older cast iron water mains that have reached their useful life in East Boston. Construction is projected to commence May 2018 and a completion date of June 2019. The total three-year budget for this project is \$740,000.

Water Main Replacement in East Boston Contract No. 16-308-001: This project includes the replacement of 7,140 linear feet of older cast iron water mains that have reached their useful life in East Boston. Construction commenced in September 2017 and is projected to be completed by September 2019. The three-year budget for this project is \$3,308,000.

Water Main Replacement in Roxbury Contract No. 16-308-002: This project includes the replacement approximately 6,000 linear feet of older cast iron water pipes in Roxbury. Construction is projected to commence in April 2018 and be completed by May 2019. The total three-year budget for this project is \$1,700,000.

Water Main Replacement in Hyde Park, Mattapan, Roslindale and West Roxbury Contract No. 16-308-003: This project includes the replacement of 5,980 linear feet of older cast iron water mains that have reached their useful life in Hyde Park, Mattapan, Roslindale and West Roxbury. Construction is projected to commence April 2018 and be completed by July 2019. The total three-year budget for this project is \$1,700,000.

Water Main Replacement in the Fenway Contract No. 16-308-004: This project includes the replacement of older iron water mains in the Fenway. Construction commenced April 2017 and is projected to be completed by September 2018. The total three-year budget for this project is \$798,000.

Water Main Replacement in Dorchester and the South End Contract No. 16-308-005: This project includes the replacement of 6,320 linear feet of older cast iron water mains in Dorchester and the South End. Construction is projected to commence in April 2018 and is projected to be completed in October 2019. The total three-year budget for this project is \$1,800,000.

Water Main Replacement in Dorchester and the South End Contract No. 16-308-006: This project includes the replacement of 4,625 feet of older cast iron water mains in Dorchester and the South End. Construction is projected to commence April 2018 and projected to be completed in October 2019. The total three-year budget for this project is \$1,800,000.

2018 – 2020 Capital Improvement Program

Water Main Replacement City-Wide Contract No. 16-309-002: This project includes the replacement of older cast iron water mains that have reached the end of their useful life throughout Boston. Construction commenced in April 2017 and be completed October 2019. The total three-year budget for this project is \$212,000.

Water Main Replacement in Roxbury Contract No. 16-309-011: This project includes the replacement of older cast iron water mains that have reached the end of their useful life in Roxbury. Construction commenced in August 2017 and is projected to be completed by December 2018. The total three-year budget for this project is \$226,000.

Water Main Replacement in Fenway/Kenmore Square Contract No. 15-308-001: This project includes the replacement of 3,640 linear feet of older cast iron water mains that have reached their useful life in Fenway/Kenmore Square and City Proper. Construction commenced in August 2017 and is projected to be completed by May 2019. The total three-year budget for this project is \$3,178,000.

Water Main Replacement in the South End, Roxbury and City Proper Contract No. 15-308-004: This project includes the replacement of 3,640 linear feet of older cast iron water mains that have reached their useful life in the South End, Roxbury and City Proper. Construction commenced July 2017 with a completion date of August 2018. The three-year budget for this project is \$1,979,000.

Dorchester, Hyde Park, Roslindale, South End & Roxbury Contract No. 15-308-005: This project includes the replacement of approximately 8,800 linear feet of water pipes in Dorchester and Hyde Park. Construction commenced September 2017 with a completion date of June 2019. The total three-year budget for this project is \$1,744,000 for water only.

Water Main Replacement in Allston/Brighton & Charlestown Contract No. 15-308-006: This project includes the replacement older cast iron water mains that have reached their useful life in Allston/Brighton and Charlestown. Construction commenced in April 2017 and is projected to be completed by June 2018. The three-year budget for this project is \$2,075,000.

Water Main Replacement in Roslindale, Hyde Park & West Roxbury Contract No. 15-308-007: This project includes the replacement of older cast iron water mains that have reached their useful life in Roslindale, Hyde Park & West Roxbury. This project commenced in August 2017 and is projected to be completed by September 2018. The total three-year budget for this project is \$1,630,000.

Water Main Replacement in Dorchester, East Boston & Mattapan Contract No. 15-309-001 This project includes the replacement of older cast iron water mains that have reached their useful life in Dorchester, East Boston & Mattapan. Construction commenced August 2017 and is scheduled to be completed by July 2019. The three-year budget for this project is \$428,000.

Water Main Replacement in West Roxbury Contract No. 14-308-003: This project includes the replacement of 15,655 linear feet of older cast iron water mains that have reached their useful life in West Roxbury. Construction is projected to commence in April 2018 and be completed by October 2020. The three-year budget for this project is \$5,600,000.

2018 – 2020 Capital Improvement Program

Water Main Replacement in Fenway/Kenmore, Jamaica Plain & Roxbury Contract No. 14-308-004: This project included the replacement of 6,300 linear feet of older cast iron water mains that have reached their useful life in Fenway/Kenmore, Jamaica Plain & Roxbury. Construction commenced October 2016 and is projected to be completed by November 2018. The total three-year budget for this project is \$56,000.

Water Main Replacement in South Boston, East Boston & Hyde Park Contract No. 14-308-005: This project includes the replacement of 9,000 linear feet of water pipes in South Boston, East Boston & Hyde Park. Construction commenced in August 2016 and was completed August 2017. A budget of \$50,000 will be established to cover the closing costs of this contract.

Allston/Brighton, Dorchester Contract No. 14-308-006: This project includes the replacement of 5,300 linear feet of water pipes in Allston/Brighton and Dorchester. Construction is projected to commence in February 2018 and be completed by October 2018. The total three-year budget for this project is \$2,375,000.

Water Main Replacement City-Wide Contract No. 14-309-001: This project includes the replacement of 4,840 linear feet of older cast iron water mains that have reached their useful life throughout the City of Boston. Construction is projected to commence April 2018 and be completed by August 2020. The total three-year budget for this project is \$2,178,000.

Water Main Replacement City-Proper Contract No. 12-308-008: This project included the replacement of 2,735 linear feet of older cast iron water mains in City Proper. Construction commenced March 2015 and was completed June 2016. A budget of \$75,000 will be established in 2018 to cover the closing costs of this contract.

Water Main Replacement City-Proper Contract No. 11-308-010: This project included the replacement of 5,150 linear feet of older cast iron water mains in City Proper. Construction commenced July 2013 and was completed November 2014. A budget of \$50,000 will be established in 2018 to cover the closing costs of this contract.

WATER DISTRIBUTION SYSTEM SPECIAL PROJECTS

DESCRIPTION AND JUSTIFICATION

Special Projects includes funding for a variety of system planning and other studies, professional services associated with the rehabilitation and operation of the water system, and for the engineering design and construction of the installation or replacement of water mains associated with bridge improvement projects undertaken by other agencies. Also included are the associated design and engineering services required for the implementation of capital projects and the permanent paving fees for ongoing and future capital improvements.

Overall, the objectives of the Water Distribution System Special Projects are to extend the useful life of water mains, reduce long-term maintenance and repair costs, reduce the occurrence of main breaks and the resulting impacts, conserve drinking water and coordinate improvements with other agencies to minimize disruptions.

2018 – 2020 Capital Improvement Program

NEW PROJECTS

No new projects

ONGOING PROJECTS

Traffic Management Services Contract No. 15-206-008: In support of the capital plan, on occasion it is necessary to develop traffic management plans for construction phasing of water, sewer and drain replacement projects. This project allows the Commission to utilize transportation engineers to develop these plans in accordance with BTB regulations. The three-year budget for this project is \$125,000.

(CWS)Leak Detection – Large Mains: This project will be a pilot program to test the installation of a permanent leak detection system on large diameter transmission water mains. By monitoring these mains, unnoticeable leaks can be detected early and repaired before catastrophic failure of the pipe occurs and sensors can be installed to monitor for indicators of possible drinking water contamination. This contract will survey 165 miles of BWSC's large water mains ranging in size from 48" to 16" water main. There will also be a pilot to test a fixed network for large main detection. Construction for this project commenced in July 2017 with a completion date of September 2020. The total three-year budget for this project is \$1,230,000.

Water Pipe Testing Services Contract No. 15-206-010: The Commission has developed an ongoing pipe sampling and testing program to analyze water pipe for failure causes and likelihood which supports the water capital plan. This is a three-year contract which began in August 2015 and is set to be completed in August 2018. The total three-year budget for this project is \$300,000.

Water Main Flushing Program No. 14-203-001: This project involves the implementation and maintenance of a water main flushing program for the Commission's water distribution system by a qualified professional engineering consulting firm. Since 1997, the Commission has maintained a system-wide water main flushing program to ensure water quality throughout its entire water distribution system. The flushing program was initiated as part of the Commission's Biofilm Corrective Action Plan developed in response to a 1996 violation of the Coliform Rule, a national primary drinking water regulation. Since implementation of the water main flushing program, the Commission has had no Coliform bacteria violations.

The Commission unidirectional water main flushing program is designed to flush all meter sections individually and includes water main pipes less than 16-inches in diameter. Unidirectional water main flushing is achieved by closing valves to isolate water mains from the actual main being flushed. After isolating the desired pipe and creating one intake main, hydrant(s) are flowed downstream from a dead-end valve. Water main flushing is intended to bring stronger chloramines residuals into areas where it is low and scour pipe walls of biofilm and tuberculation.

2018 – 2020 Capital Improvement Program

Annually the Commission flushes approximately 200 miles of water main with the intended goal of flushing 800 miles over a four-year cycle. This project commenced in April 2015 with a completion date of December 2018. This program will be continued in 2019 with another four-year contract. The total three-year contract for this project is \$750,000.

Subsurface Investigation Services Contract No. 14-206-004: In support of capital projects it is necessary to gain information on the location, depth and size of underground facilities such as manholes, pipes and structures. This contract supplements BWSC staff in these efforts. During the construction of capital projects, it is often necessary to install Commission facilities in areas with a great deal of utilities. This project includes services for non-destructive excavation with electronic detection to locate subsurface utilities during the design phase in streets included in the Capital Improvement Program. Knowledge of the locations of other underground utilities helps to alleviate change orders during construction. This is a three-year professional services contract. The three-year budget for this project is \$300,000.

Hydrant Replacement Contract No. 13-103-004: Replacement of defective and inoperative hydrants is essential to maintain public safety and reduce unaccounted-for-water resulting from hydrant leaks. Older fire hydrants, many of which are impossible to repair due to unavailability of replacement parts, must be replaced to ensure Public Safety. Standardization of hydrants also reduces the number and styles of hydrant repair parts needed to be stored in inventory. Large quantity purchases significantly reduce unit costs and assure cost over a three-year period. Construction is projected to commence January 2018 with a completion date of December 2020. New Hydrants will be installed through the Annual Area Emergency Contracts, Construction Projects and by Operations personnel. Custodian-equipped hydrants discourage illegally-opened hydrants and reduce unaccounted-for-water loss by preventing water theft. The total three-year budget for this project is \$975,000.

City of Boston Street Opening Permit Fees: The Boston Water and Sewer Commission is required by the City of Boston's regulations to obtain street opening permits for any construction activity that will require the removal of existing street and/or sidewalk material in the public way. This project involves obtaining street opening permits from the City of Boston for excavation activities performed by the Commission forces in the public way. The City of Boston Public Works Department issues the street opening permits for which the Commission reimburses the City. This project is renewed annually. The three-year budget totals \$6,000,000.

City of Boston Paving Restoration: The Boston Water and Sewer Commission is responsible for the permanent restoration of streets and sidewalks excavated during construction activities. On an annual basis, the Commission publicly advertises and awards to private contracts permanent restoration work. In addition, the Commission is required to reimburse City of Boston's contractors for the repairs and/or replacement of the Commission's castings as a result of the permanent restoration of the streets under the City contracts. The three-year budget totals \$5,235,000.

| <i>Streets</i> | <i>2018</i> | <i>2019</i> | <i>2020Paving</i> | <i>2018-2020</i> |
|----------------|--------------------|--------------------|--------------------|---------------------|
| <i>Permits</i> | \$2,000,000 | \$2,000,000 | \$2,000,000 | \$6,000,000 |
| <i>Paving</i> | \$3,735,000 | \$1,500,000 | | \$5,235,000 |
| <i>Total</i> | \$5,735,000 | \$3,500,000 | \$2,000,000 | \$11,235,000 |

2018 – 2020 Capital Improvement Program

SEWER SYSTEM

The Commission owns and operates a system for the collection and transport of wastewater and storm drainage in the City of Boston.

The original backbone of the sewer system was the Boston Main Drainage System (“BMDS”). The BMDS was constructed from 1877 to 1884 under the direction of a special committee established by the City of Boston for that specific purpose. The original system consisted of five combined interceptors; the Calf Pasture pumping station and the Dorchester Bay Tunnel. Neither the pumping station, nor the tunnel is in use today. The BMDS interceptors were initially designed to carry a peak dry weather sanitary flow together with an allowance for stormwater.

In 1988, construction of the New Boston Main Interceptor and the New East Side Interceptor were completed, replacing portions of the original system. The interceptors serve the sewer needs of downtown Boston, the South End, Roxbury, Dorchester, and South Boston. The work has increased capacity, eliminated dry weather overflows, and the volume of wet weather overflows has been reduced as well.

Other collection facilities provide sewer services to different parts of the City. Charlestown is served by a separated system, except for one small area. East Boston, South Boston and Roxbury are served mainly by combined systems; however, major portions of each area have been or are in the process of being separated. The South End has been partially separated under a program initiated by the City’s urban renewal program and continued by the Commission where feasible and cost effective. Allston/Brighton, Roslindale, West Roxbury, Hyde Park, Mattapan and portions of Dorchester and Jamaica Plain, all of which are located in the southern part of the City, are essentially served by separate systems.

The backbone of the Commission’s sewer system is a number of major interceptors which convey flows from the Commission’s system to the MWRA’s interceptors. The New East Side Interceptor and the New Boston Main Interceptor completed in 1988, and the New Albany Interceptor completed in 1990, serve downtown Boston, South Boston, South End and Dorchester. Other interceptors and the neighborhoods they serve are:

Interceptor

Neighborhood Served

Boston Main Interceptor

South End, Roxbury and North Dorchester

Dorchester Interceptor

Dorchester and Neponset

East Side Interceptor

Downtown and North End

Faneuil Street Trunk Sewer

Allston/Brighton

Roslindale Interceptor

Roslindale and West Roxbury

South Boston Interceptors

South Boston

Southwest Corridor Interceptor

Roxbury and Jamaica Plain

2018 – 2020 Capital Improvement Program

| | |
|--------------------------------|-------------------------------------|
| Stony Brook Interceptor | Roxbury |
| Stony Brook Valley Sewer | Roxbury and Jamaica Plain |
| West Side Interceptor | Back Bay, Beacon Hill and West End |
| Talbot Avenue High Level Sewer | Dorchester, Mattapan and Roslindale |
| Hyde Park Trunk Sewer | Hyde Park |
| East Boston Low Level Sewer | East Boston |
| Dorchester High Level Sewer | Mattapan and Hyde Park |

The sewer system is comprised of the following:

| APPURTENANCES | | SEWER PIPES CITY WIDE | | TYPE OR DESIGNATION | |
|---------------|--------|-----------------------|-----------|----------------------------|-----------|
| Catch Basins | 30,273 | Total Linear Feet | 8,126,629 | Combined Sewer | 159 Miles |
| Manholes | 49,379 | Total Linear Mile | 1,539 | Combined Sewer Overflow | 3 Miles |
| Outfalls | 253 | Pumping Stations | 9 | Sanitary Sewer | 707 Miles |
| Regulators | 147 | | | Storm Drain | 669 Miles |
| Tide Gates | 191 | | | | |

All wastewater collected by Commission facilities are conveyed to the MWRA's Deer Island Treatment Plant.

DEDICATED INFILTRATION INFLOW 4:1 PROJECTS

In 2004, the Massachusetts Department of Environmental Protection ("DEP"), in conjunction with the MWRA and its member communities implemented a program to help remove storm-water infiltration and inflow ("I/I") from the sewer system. Private developments may add substantial flows to the sewer collection, requiring additional MWRA treatment.

In order to offset the effect of these additions, the Massachusetts DEP previously recommended to the Massachusetts Environmental Policy Act Office and the Executive Office of Environmental Affairs that new developments with a sewer flow estimated at greater than 50,000 GPD be required to remove I/I AT A 4:1 ratio from the sanitary sewer system, as part of the requirements by the Secretary of Environmental Affairs.

The Commission conducts investigations to identify sources of I/I to the Commission's system. These projects identify both public and private sector sources of I/I. Commission staff initially planned on developing a database with locations of I/I sources, which would be provided to a developer. The developer would correct sources from that list in order to fulfill their I/I removal requirement.

2018 – 2020 Capital Improvement Program

However, the Commission staff believed that this process would be unwieldy and unmanageable. Subsequently, at the July 28, 2005 Commission meeting, the Commission approved the establishment of a dedicated account into which developers assessed a 4:1 ratio I/I reduction requirement by the DEP would contribute funds to fulfill their requirements. These funds will be used by the Commission to fund I/I identification and reduction projects.

During private project design, Engineering Customer Services receives and reviews a Site Plan for conformance with the Commission's Engineering Design and Construction standards. The Commission will confirm if the project is subject to the 4:1 compliance requirement as required by the new regulations.

In April 2014, the DEP promulgated new regulations. These regulations require the Commission to mitigate the impacts of development of all new sewer connections exceeding 15,000 gpd by removing four gallons of I/I for each new gallon of wastewater flow. For example, if a proposed project's calculated new daily wastewater flow is 100,000 gallons per day (gpd), the developer must remove 400,000 gpd of I/I from the sewer system.

The Engineering Customer Service department will coordinate with the Planning Department of the most current estimated wastewater flow that has been submitted by the developer. The developer will coordinate with the Commission how to comply with the proposed assessment. The developer can either remove sources of I/I or make a requisite monetary contribution.

To date, the Commission has implemented six contracts, which are funded by the 4:1 Infiltration/Inflow Reduction Mitigation Account. Contracts 09-309-008, 10-206-005, 10-309-004 are complete and Contracts 14-206-002, 15-206-001 are ongoing. All costs reflected in the DEDII account and are 100% reimbursable; therefore, are not included in the 2018-2020 cash flow.

OPEN CONTRACTS

Roxbury Separation Design Contract No. 14-206-002: This project includes the final design and subsequent construction for sewer separation in the Dudley Square of Roxbury. Sewer Separation removes gross inflow from the sewer system and is the most direct and efficient form of I/I reduction. It avoids the need for expensive I/I studies and flow monitoring. Sewer Separation decreases the Commission's sewer payments to MWRA and decreases CSO activity. Work includes construction of new drains and where necessary new sewer and water pipes. The design phase of this project began in July 2014 and is expected to be completed in June 2018. The three-year budget for the project is \$75,000.

Infiltration and Inflow Analysis SSES (Dorchester) Contract No. 17-206-004: The Massachusetts Department of Environmental Protection (DEP) developed regulations requiring sewer system operators to create and implement a long-term infiltration and inflow (I/I) reduction plan to remove extraneous flows from the wastewater collection system. The I/I reduction plan was completed in May 2017. The I/I reduction plan recommends that the Commission conduct sewer system evaluation surveys in sections of the wastewater collection system exhibiting excessive flows. This project is intended to identify sources of extraneous flows in the portion of

2018 – 2020 Capital Improvement Program

wastewater collection system tributary to the Dorchester Interceptor. This project will entail an infiltration and inflow sewer system evaluation survey (SSES) to identify sources of extraneous in the area tributary to the Dorchester Interceptor. The SSES may include flow monitoring, manhole inspections, smoke testing, dyed water testing and television inspection of sewer pipes. The finding will be provided to the Commission in a report with recommendation for capital improvements to eliminate the sources of extraneous flows. The planning phase of this project commenced in January 2017 and is estimated to be completed in December 2018. The three-year budget is \$1,050,000.

Infiltration and Inflow Analysis SSES (Roslindale) The Massachusetts Department of Environmental Protection (DEP) developed regulations requiring sewer system operators to conduct an infiltration and inflow I/I analysis of their wastewater collection system and implement long term plans to identify and remove extraneous flows. The I/I analysis was completed and the final report was delivered to the Commission in May 2017. The report's long-term plan divided wastewater collection system into 11 regions and recommended that the BWSC conduct a sewer system evaluation survey (SSES) in one region each year. This project is initiated to identify sources of extraneous flows in the Roslindale region of the wastewater collection system. This project will entail an Infiltration and Inflow sewer system evaluation survey (SSES) to identify sources of extraneous flow in the Commission's wastewater collection. The SSES may include flow monitoring, manhole inspections, smoke testing, and dyed water testing and television inspection of sewer pipes. The finding will be provided to the Commission in a report with recommendation for capital improvements to eliminate the sources of extraneous flows. The planning phase of this project is expected to commence in February 2018 and is estimated to be completed in June 2020. The three-year budget is \$1,500,000.

| <i>Contract</i> | <i>Description</i> | <i>Cost</i> | <i>Status</i> |
|-------------------|---------------------------------------|----------------|---------------|
| 09-309-008 | Dorchester-Brook-Regulator-Relocation | \$6,924,672.92 | Complete |
| 10-206-005 | Roxbury-Separation-Design-Contract | \$1,732,975.60 | Complete |
| 10-309-004 | East Boston Separation | \$504,381.30 | Complete |
| 14-206-002 | Roxbury-Separation-Design-Contract | \$1,049,954.30 | Active |
| 15-206-001 | Infiltration-and-Inflow-Analysis | \$1,998,970.00 | Active |
| 17-206-004 | Infiltration and Inflow Analysis | \$1,050,000.00 | Active |
| N/A | Infiltration and Inflow SSES | \$1,500,000.00 | Active |

2018 – 2020 Capital Improvement Program

OBJECTIVES

The primary objectives of the Sewer System Capital Improvement Program for 2018-2020 is designed to provide uninterrupted wastewater transport and storm drainage services to the residents, businesses and visitors of Boston and to improve water quality in Boston Harbor and its tributary waters. The 2018-2020 CIP has five major programs for the Sewer System: the sewer renewal and replacement program; the increased capacity program; the sewer separation and the Infiltration/Inflow program; and special program.

Projects included in the Sewer System CIP include the repair or replacement of approximately 9 miles of deteriorated or collapsed sanitary sewers and storm drains. Work is included under contracts 18-309-001, 18-309-002, 18-309-003, 18-309-004, 18-309-009, 18-309-010 and CMOM for future contracts (TBD – to be determined).

In addition, all sewers and drains on streets, where water mains are to be replaced, will be inspected prior to replacement. All defective pipes will then be replaced or rehabilitated in the water main replacement contract.

The primary objectives of the 2018-2020 Sewer CIP are:

- ✓ Implement and manage contracts affiliated with the Consent Decree
- ✓ Implement Green Infrastructure Projects
- ✓ Comply with the requirements of the Commission's National Pollutant Discharge Elimination System (NPDES) and Municipal permits
- ✓ Minimize Infiltration and Inflow into the sanitary system, which will increase system capacity and decrease treatment costs
- ✓ Reduce combined sewer overflows by reducing wet weather discharges and minimizing sea water intrusions
- ✓ Provide sufficient hydraulic capacity for current and projected flows
- ✓ Protect the structural integrity of the wastewater collection and storm drainage systems
- ✓ Coordinate sewer system improvements with the related projects of other public agencies

2018-2020 SEWER SYSTEM CAPITAL PROGRAM

The sewer system objectives will be carried out through the continuation of the following program activities: renewal and replacement of sewer pipes, rehabilitation of sewer and drains, separation of combined sewers into sewer and storm drains, improvements that will result in an increase in system capacity, an infiltration/inflow reduction program including the disconnection of downspouts, and a number of special projects necessary to improve the efficiency and effectiveness of the sewer system.

2018 – 2020 Capital Improvement Program

WASTEWATER PROJECTS HIGHLIGHTS

- ✓ Replacement and Rehabilitation of Sewer and Drains Citywide
- ✓ CCTV of Sewers and Storm Drains / CMOM Program
- ✓ North End Replacement and Rehabilitation Phase II & III
- ✓ Replacement of Tidegates
- ✓ Sewer Separation in Roxbury (Contract 1, 2, & 3)
- ✓ Infiltration/Inflow Analysis
- ✓ Downspout Disconnection Program

Three-year total expenditures are \$96.5 million, of which \$41.7 million is anticipated to be spent in 2018.

2018 – 2020 Capital Improvement Program

SEWER RENEWAL AND REPLACEMENT

DESCRIPTION AND JUSTIFICATION

Renewal and replacement projects involve the trenchless rehabilitation or replacement of sewers and storm drains in response to persistent malfunction, structural deterioration, excessive emergency repairs and other operation and maintenance problems.

The Commission identifies sewer and drain lines that require renewal or replacement through television inspections, sewer system evaluation surveys and routine maintenance activities. Renewal and replacement projects are coordinated with the Boston DPW's Roadway Reconstruction Program to ensure that the Commission avoids excavating newly resurfaced street, unless under emergency circumstances.

The objectives of the renewal and replacement program are to: insure the operability of sewers and storm drains, protect the structural integrity of the sewer system, reduce long-term capital and maintenance costs and minimize disruptions of service caused by sewerage back-ups or other related problems.

NEW PROJECTS

CCTV Of Sewers and Drains/CMOM Citywide Contract No. 18-309-009: This project includes the inspection of sewers and drains through the use of closed circuit TV cameras utilizing the SCREAM coding system in order to assess the structural condition of the pipes. Approximately ninety (90) miles of various pipes will be cleaned and inspected throughout the City. Construction is projected to commence in April 2018 and is expected to be completed by March 2019. The three-year budget is \$1,100,000.

CCTV Of Sewers and Storm Drains/CMOM Citywide Contract No. 18-309-010: This project includes the inspection of sewers and drains through the use of closed circuit TV cameras utilizing the SCREAM coding system in order to assess the structural condition of the pipes. Approximately ninety (90) miles of various pipes will be cleaned and inspected throughout the City. Construction is projected to commence in April 2018 and is expected to be completed by March 2019. The three-year budget is \$1,100,000.

Sewer & Drain Replacement & Rehabilitation in Roslindale, Hyde Park and Mattapan Contract No. 18-309-004: This project includes the replacement and rehabilitation of sanitary sewer, storm drain combined sewer pipes in need of structural repair as identified by various Commission inspection programs in Roslindale, Hyde Park & Mattapan. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. The project is scheduled to commence in May 2019 and is projected to be completed by July 2020. The budgeted amount is \$3,285,000.

Future CCTV Of Sewers & Storm Drains/CMOM Citywide Multiple Contracts: This project includes the inspection of sewers and drains through the use of closed circuit TV cameras utilizing SCREAM coding system in order to assess the structural condition of the pipes. Approximately ninety (90) miles of various pipes will be cleaned and inspected throughout the City. Construction will commence in 2019 and 2020 and is projected to be completed by 2019 and 2020. The three-year budget is \$4,400,000.

2018 – 2020 Capital Improvement Program

Sewer & Drain Replacement & Rehabilitation in Fenway Contract No. 18-309-001: This project includes the replacement and rehabilitation of sanitary sewer, storm drain and combined pipes in need of structural repair as identified by various Commission inspection programs in Fenway. B Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. The project is scheduled to commence in May 2019 and is projected to be completed by July 2020. The budgeted amount is \$3,690,000.

Sewer & Drain Replacement & Rehabilitation in Allston & Brighton Contract No. 18-309-002: This project includes the replacement and rehabilitation of sanitary sewer, storm drain and combined sewer pipes in structural repair as identified by various Commission inspection programs in Allston and Brighton. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. This project is scheduled to commence in May 2019 and is projected to be completed by July 2020. The budgeted amount is, \$2,170,000.00

Sewer & Drain Replacement & Rehabilitation in Roslindale, Hyde Park & Mattapan Contract No. 18-309-003: This project includes the replacement and rehabilitation of sanitary sewer, storm drain and combined sewer pipes in need of structural repair as identified by various Commission inspection programs in Roslindale, Hyde Park and Mattapan. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs, including SSO investigations, CMOM contracts, and illegal connection inspection. The project is scheduled to commence in May 2019 and is projected to be completed by July 2020. The budgeted amount is \$3,690,000.

ONGOING PROJECTS

Sewer & Drain Replacement & Rehabilitation in City Proper, Dorchester, Hyde Park, South Boston and West Roxbury Contract No. 17-309-001: This project includes the replacement & rehabilitation of sanitary sewer, storm drain and combined sewer pipes in need of structural repair as identified by various Commission inspection programs in City Proper, Dorchester, Hyde Park, South Boston and West Roxbury. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. This project is scheduled to commence in July 2018 and is projected to be completed by September 2019. The budgeted amount is \$4,100,000.

Sewer & Drain Replacement & Rehabilitation in Dorchester Contract No. 17-309-002: This project includes the replacement and rehabilitation of sanitary sewer, storm drain and combined sewer pipes in need of structural repair as identified by various Commission inspection programs in Dorchester. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. The project is scheduled to commence in May 2018 and is projected to be completed by September 2018. The budgeted amount is \$1,095,000.

2018 – 2020 Capital Improvement Program

Rehabilitation & Inspection of Large Sewer & Drain Conduits in the City Proper & South

Boston Contract No. 17-309-006: This project includes the trenchless structural rehabilitation of large conduits found to be in disrepair during recent inspections in the City Proper & South Boston. This project is scheduled to commence May 2018 and is projected to be completed in August 2018. The three-year budget for this project is \$1,890,000.

Sewer & Drain Inspection for 2017 Citywide Contract No. 17-309-007: This contract includes the inspection of sewer and drain pipes due for future replacement using closed circuit television cameras throughout the City. The project is scheduled to commence in January 2018 and is projected to be completed by July 2018. The budget for this project is \$341,000.

CCTV Of Sewers & Drains/ CMOM Citywide Contract No. 17-309-009: This project includes the inspection of sewers & drain pipes through the use of closed circuit TV cameras utilizing SCREAM coding system in order to assess the structural condition of the pipes. Approximately ninety (90) miles of various pipes will be cleaned and inspected throughout the City. Construction commenced in January 2018 and is projected to be completed by March 2018. The three-year budget is \$250,000.

CCTV Of Sewers & Drains/ CMOM Citywide Contract No. 17-309-010: This project included the inspection of sewers and drains through the use of closed circuit TV cameras utilizing the SCREAM coding system in order to assess the structural condition of the pipes. Approximately ninety (90) miles of various pipes will be cleaned and inspected throughout the City. Construction commenced in January 2018 and is projected to be completed by March 2018. The three-year budget is \$250,000.

Replacement of a Private Sewer in the South End on Alley 521 Contract No. 17-309-012:

This project includes the replacement of a private sewer in the South End on Alley 521. The project is expected to commence in June 2018 and is projected to be completed by September 2018. The three-year budget for this project is \$1,200,000.

Replacement of Combined Sewer in Back Bay: Contract No. 17-309-013: This project includes the installation of sewer and drains in the Back Bay. The project is commenced in October 2017 was completed in November 2017. The three-year budget is \$12,000.

Installation of Sewers & Drains in Roxbury Contract No. 16-309-011: This project includes the installation of sewers and drains in Roxbury. The project commenced in August 2017 and is projected to be completed by December 2018. The three-year budget for this this project is \$146,000.

Sewer R&R in City Proper (North Washington St.) Contract No. 17-308-004: This project includes the installation of sewer & drains in City Proper. Construction is projected to commence April 2018 and be completed by September 2018. The total three-year budget for this project is \$368,000.

2018 – 2020 Capital Improvement Program

Sewer R&R in City Proper (Bowdoin St.) Contract No. 17-308-04A: This project includes the installation of sewer & drains in City Proper. Construction is projected to commence September 2018 and be completed by May 2020. The total three-year budget for this project is \$786,000.

Sewer R&R in the South End Contract No. 17-308-005: This project includes the installation of sewer & drains in the South End. Construction is projected to commence May 2018 and be completed by November 2019. The total three-year budget for this project is \$900,000.

Replacement of Sewer & Drain Pipes in Dorchester Contract No. 17-309-02A: This project includes the replacement of sewer & drain pipes in need of structural repair as identified by various Commission inspection programs in Dorchester. The project is scheduled to commence in April 2019 and is projected to be completed by November 2020. The budgeted amount is \$6,979,000.

Sewer & Drain Replacement & Rehabilitation & Engineering/Design Citywide Contract No. 17-206-002: This project includes the engineering services and the replacement & rehabilitation of sanitary sewer, storm drain and combined sewer pipes in need of structural repair as identified by various Commission inspection programs Citywide. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts and illegal connection inspection. The project is scheduled to commence in July 2018 and is projected to be completed by September 2019. The budgeted amount is \$714,000.

Sewer & Drain Rehabilitation Citywide Contract No. 16-309-001: This project includes trenchless rehabilitation of sewer & drain pipes. Each of the pipes in this contract was inspected and found to be in poor condition, but are able to be rehabilitated through trenchless methods. The pipes selected for inspection were found to be defective through CMOM and other inspection programs as well as those in the area of chronic maintenance problems. Construction commenced in April 2017 and was completed in June 2017. A small budget in the amount of \$15,000 will be established in 2018 to cover closing costs of this contract.

Sewer R&R Portion of Roxbury Separation Contract 1- Contract No. 15-309-011: This project includes the replacement & rehabilitation of sanitary sewer affiliated with sewer separation in Roxbury. Construction commenced in August 2016 and is projected to be completed by July 2018. The three-year budget is \$828,000.

Sewer & Drain Pipe R&R Citywide Contract No. 16-309-002: This project includes the replacement & rehabilitation of sanitary sewer, storm drain and combined pipes throughout the City of Boston. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. Construction commenced in April 2017 and is projected to be completed by October 2018. The three-year budget is \$1,913,000.

2018 – 2020 Capital Improvement Program

North End Sewer Phase III Contract No. 16-309-006: This project includes the replacement & rehabilitation of sanitary sewer, storm drain and combined sewer pipes in need of repair as identified by various Commission inspection programs in the North End. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. The project is scheduled to commence in February 2019 and is projected to be completed by March 2019. The budgeted amount is \$2,530,000.

Sewer & Drain Replacement & Rehabilitation in East Boston Contract No. 16-309-005: This project includes the replacement & rehabilitation of sanitary sewer, storm drain and combined sewer pipes in need of structural repair as identified by various Commission inspection programs in East Boston. Pipes in this contract have been found defective and in need of repair or replacement as determined by cleaning and CCTV inspection under various programs including SSO investigations, CMOM contracts, and illegal connection inspection. The project is scheduled to commence in May 2018 and is projected to be completed by June 2019. The budgeted amount is \$195,000.

Sewer R&R Portion in East Boston Contract No. 16-308-001: This project includes the installation of sewer & drains in East Boston. Construction commenced in September 2017 and is projected to be completed by September 2019. The three-year budget for this project is \$1,612,000.

Sewer R&R Portion in Roxbury Contract No. 16-308-002: This project includes the installation of sewer & drains in Roxbury. Construction is projected to commence in April 2018 and be completed by May 2019. The total three-year budget for this project is \$1,006,000.

Sewer R&R Portion in Dorchester and the South End Contract No. 16-308-005: This project includes the installation of sewer & drains in Dorchester and the South End. Construction is projected to commence in April 2018 and is projected to be completed in October 2019. The total three-year budget for this project is \$800,000.

Sewer R&R Portion in Dorchester and the South End Contract No. 16-308-006: This project includes the installation of sewer & drains in Dorchester and the South End. Construction is projected to commence in April 2018 and is projected to be completed in October 2019. The total three-year budget for this project is \$800,000.

Sewer & Drain Replacement & Rehabilitation in Dorchester, Mattapan and East Boston Contract No. 15-309-001: This project includes the replacement & rehabilitation of sewer & drain pipes in Dorchester, Mattapan and East Boston that have been found through inspection to be in need of repair or replacement. Construction commenced in August 2017 and is projected to be completed by July 2019. The three-year budget is \$3,285,000.

Sewer & Drain Replacement & Rehabilitation in City Proper Contract No. 15-309-007: This project includes the replacement & rehabilitation of sewer & drain pipes in City Proper. Construction commenced in October 2016 and is projected to be completed July 2018. The three-year budget is \$344,000.

2018 – 2020 Capital Improvement Program

Sewer R&R in Fenway/Kenmore Square Contract No. 15-308-001: This project includes the replacement & rehabilitation of sewer & drain pipes in Fenway/Kenmore Square and City Proper. Construction commenced in August 2017 and is projected to be completed by May 2019. The total three-year budget for this project is \$1,866,000.

Sewer R&R in the South End, Roxbury and City Proper Contract No. 15-308-004: This project includes the replacement and rehabilitation of sewer and drain pipes in the South End, Roxbury and City Proper. Construction commenced July 17 with a completion date of August 2018. The total three-year budget for this project is \$2,022,000.

Sewer & Drain Renewal & Replacement for Contract No. 14-309-001: This project includes the replacement of 7,120 linear feet of sewer and drain pipe and the rehabilitation of 8,730 linear feet of sewer and drain pipes, along with spot repairs and illicit connection correction. All pipes in this contract have been inspected using closed circuit TV and have found to be defective where possible trenchless methods of rehabilitation will be used, otherwise damaged pipes will be replaced. Several Neighborhoods are affected by this work. Construction is scheduled to commence in April 2018 and be completed by August 2020. The three-year budget is \$5,340,000.

Sewer and Drain & Replacement in West Roxbury for Contract No. 14-308-003: This project includes the replacement of 2,750 linear feet of sewer and drain pipe and the rehabilitation of 1,355 linear feet of sewer and drain pipes, along with spot repairs and illicit connection correction in West Roxbury. All pipes in this contract have been inspected using closed circuit TV and have found to be defective where possible trenchless methods of rehabilitation will be used, otherwise damaged pipes will be replaced. Construction is scheduled to commence in April 2018 and be completed by October 2020. The three-year budget is \$1,963,000.

Sewer R&R Portion in Allston/Brighton, Dorchester & Jamaica Plain Contract No. 14-308-006: This project includes the replacement of approximately 1,900 linear feet of sewer & drains as well as rehabilitation of approximately 8,700 linear feet of sewer & drains in Allston/Brighton, Dorchester & Jamaica Plain. Construction is scheduled to commence in February 2018 and be completed by October 2018. The three-year budget is \$1,458,000.

INCREASED CAPACITY PROJECTS

DESCRIPTION AND JUSTIFICATION

During the 1980s, the Commission completed the construction of several new major interceptors including the New Boston Main and New East Side Interceptors. They provided increased system capacity, which reduced wet weather combined sewer overflow discharges and virtually eliminated dry weather discharges to Boston Harbor and its tributary waters.

Since their completion, the Commission has continued to make capital investments to increase system capacity in some areas and maximize the existing capacity of the system in other areas.

2018 – 2020 Capital Improvement Program

The Commission's efforts to increase system capacity are designed to ensure sufficient hydraulic flow in all areas of the city, reduce long-term maintenance costs, minimize the frequency and volume of CSO discharges and ensure the continued structural integrity of the wastewater collection system.

In 1994, the EPA issued a policy nationwide on CSOs that requires communities with CSOs to implement nine minimum controls to reduce the frequency and volume of CSO discharges. Maximizing the use of in-system storage, or system capacity, is one of the nine controls. The Commission continues its efforts to increase system capacity. The projects presented in the CIP Increased Capacity Program seek to fulfill that objective.

NEW PROJECTS

No New Projects

ONGOING PROJECTS

Curlew St. Betterment and Sewer Pipe Replacement in West Roxbury: This project includes sewer betterment and replacement of a sewer pipe that has reached its useful life in West Roxbury on Curlew Street. Construction is projected to commence April 2018 and be completed by July 2018. The total budget for this project is \$213,000.

Installation of New Tidegates Contract No. 16-309-004: This project includes the installation of new tidegates for drainage systems not currently protected by a tidegate. This is part of a long-range plan for protection of the Commission's drainage system from tidal inflow from high tides and storm surges for predicted higher tides. Construction is projected to commence in August 2017 with an anticipated completion date in May 2018. The three-year budget for this project is \$586,000.

SEWER SEPARATION

DESCRIPTION AND JUSTIFICATION

The Commission's separation program involves the replacement of combined sanitary and storm sewers with two separate systems, one for sanitary sewage and one for stormwater. The purpose of the separation program is to reduce the frequency and volume of wet weather CSO discharges and ensure the continued compliance with state and federal permits. Combined systems will be separated where it is appropriate and cost effective to do so. Sewer separation work most often involves converting the combined sewer to a separate sanitary sewer and constructing a new storm drain.

In addition to addressing CSO concerns, the Commission is identifying sanitary sewage that is being discharged into the storm drain system. Between 1986 and September 28, 2016, the Commission removed more than 1,736 illegal connections, eliminating the discharge of an estimated 783,037 gallons of wastewater per day to the storm drainage system and receiving waters.

2018 – 2020 Capital Improvement Program

NEW PROJECTS

No New Projects

ONGOING PROJECTS

Reconnection of Sanitary Sewer Laterals and Sewer Separation Contract No. 17-309-003:

Reconnect 100 sanitary sewer laterals to the sanitary sewer system building connections that are found connected to storm drains. This contract will involve reconnection of these laterals to sanitary sewers. This project commenced in October 2017 and is projected to be completed by September 2020. The three-year budget is \$1,557,000.

Sewer Separation in East Boston Phase II Contract No. 17-309-005: This project will include Separation of combined sewers in East Boston. This is phase 2 of 3- phased program. Work will also include replacement or rehabilitation of water and sewer pipes as necessary. Construction is scheduled to commence in May 2018 and is projected to be completed by November 2019. The three-year budget is \$3,405,000.

Sewer Separation Roxbury Phase 3 Contract No. 17-309-011: This project includes the installation of sewers and drains for sewer separation in Roxbury. Construction is scheduled to commence in August 2018 and is projected to be completed by December 2019. The three-year budget is \$5,000,000.

Sewer Separation in East Boston Contract No. 16-309-005: This project includes the separation of combined sewers in a portion of Est Boston. Construction is scheduled to commence in May 2018 and is projected to be completed by June 2019. The three-year budget is \$2,966,000.

Sewer Separation Roxbury Contract 2 Contract No 16-309-011: This project includes the installation of sewers and drains for sewer separation in Roxbury. Construction commenced in August 2017 and is projected to be completed by December 2018. The three-year budget is \$7,624,000.

Sewer Separation in Roxbury Phase 1 Contract No 15-309-011: This project includes the installation of sewers and drains for sewer separation in Roxbury. Construction commenced in August 2017 and is projected to be completed by July 2018. The three-year budget is \$924,000.

City-wide Illegal Connections Investigation Contract No. 16-206-001: This project is a continuation of the Commission's Citywide Illegal Connection Investigation Program. Under this program illicit sanitary sewer connection to storm drains are identified using manhole inspections and sandbagging, water quality sampling, and dye tests of buildings. This program also includes wet and dry weather outfall screening to prioritize drainage sub-catchments for investigation. Though the project duration is four years, the three-year budget is 1,500,000.

Owner Fix of Illegal Connections: Illegal connections are usually corrected by a Commission contractor on public property. There are a few instances where the homeowner must alter the internal plumbing to correct the problem. In these instances, the Commission will reimburse the homeowner for the work and avoid having Commission contractors working on private property.

2018 – 2020 Capital Improvement Program

Illegal connections are a violation of Federal Law and must be promptly corrected. This program was instituted and approved by the Commission to assist homeowners with costly repairs to correct these violations. The Commission reimbursed each homeowner up to \$7,500. The average need is four per year for \$30,000. Capital reserved for this project totals \$45,000 for three years.

INFILTRATION AND INFLOW

DESCRIPTION AND JUSTIFICATION

Infiltration and Inflow (I/I) are extraneous quantities of water, which enter the sanitary sewer system and reduce the capacity of the system to transport sanitary sewage to a treatment plant. Infiltration is groundwater that leaks into the sanitary sewerage system through pipe joints and defects. Inflow refers to stormwater that enters sewers through catch basins, sump pumps, downspouts, basement drains and defective manholes. Inflow can also enter the sewer system through defective tide gates that are subject to tidal inflow.

All sewer systems are subject to some level of I/I. The Commission has performed sewer system evaluation surveys (“SSES”) to determine the quantity of excessive I/I and the cost-effectiveness of removing the excessive I/I from the collection system. The purpose of a SSES is to identify and quantify specific I/I sources and recommend the structural improvements necessary to eliminate them. The Commission has completed several SSESs. The recommendations from the SSESs have been incorporated into annual renewal and replacement and other system rehabilitation construction contracts.

The Commission’s I/I reduction program is funded using the MWRA I/I Local Financial Assistance Program. For all eligible I/I projects, the Commission will perform an analysis of the costs and benefits associated with undertaking the project using each of these funding sources.

NEW PROJECTS

No new projects

ONGOING PROJECTS

Downspout Disconnection: This project includes the disconnection of downspouts connected to the sanitary sewer system or the combined sewer system. Downspouts connected to the sanitary sewer system or the combined sewer system contributes unnecessary flow to the MWRA treatment works. The Commission pays MWRA for each gallon sent to the treatment works. Downspout flows to the sanitary sewer and the combined sewer also contribute to SSOs and CSOs. Eliminating downspout flows to these two systems solves these two problems. Construction is scheduled to commence in April 2020 and is expected to be completed by December 2020. The three-year budget for this project is \$200,000.

SEWER SYSTEM SPECIAL PROJECTS

DESCRIPTION AND JUSTIFICATION

The Sewer System Special Projects category provides funding for a variety of system planning and other studies and for professional services associated with the rehabilitation and operation of the sewer system.

Overall, the objectives of the Sewer System Special Projects are to extend the useful life of the Commission's wastewater facilities, comply with the requirements of the NPDES Permit regulations and plan for future sewer system projects.

NEW PROJECTS

CCTV of Sewers and Storm Drains IDDE: The purpose of this project is to continue testing sewer laterals to determine whether they leak sewage into drains and to inspect sewers and drains using CCTV to evaluate their condition and aid in locating illicit connections. The project is scheduled to commence in January 2018 and is projected to be completed by January 2020. The three-year budget is \$800,000.

Metering and Modeling Station Improvements: The purpose of this project is to identify how the Dorchester Interceptor operates during wet weather. The project will meter and model flows over a three-year period. Flow meters will supplement existing data. The Commission's model will attempt to simulate flows in real time. The modeling and metering efforts will help if the interceptor is too small. The project is scheduled to commence in April 2018 and is projected to be completed by March 2021. The three-year budget is \$1,805,000.

Austin Street Pump Station Improvements: This project includes the upgrade or replacement of essential equipment and components related to the Commission's Pump Stations. The upgrades will commence in January 2018 and is projected to be completed by December 2020. The three-year budget is \$25,000.

Port Norfolk Pump Station Improvements: This project includes the upgrade or replacement of essential equipment and components related to the Commission's Pump Stations. The upgrades will commence in January 2018 and is projected to be completed by December 2020. The three-year budget is \$120,000.

ONGOING PROJECTS

Trilling Way Pump Station Improvements: This project includes the upgrade or replacement of essential equipment and components related to the Commission's Pump Stations. The upgrades will commence in January 2018 and is projected to be completed by December 2020. The three-year budget is \$120,000.

2018 – 2020 Capital Improvement Program

Sampling and Metering for Drain Model Calibration: The purpose of this project is to acquire information about phosphorus levels on three major storm drains, all of which discharge into the Charles River. These three drains convey a significant amount of phosphorus according to the 2012 Drain Model Report. The proposed project will acquire data to be used to calibrate the Drain Model in the future. The proposed program will run over a three-year period. Planning stage is scheduled to commence in March 2018 with a projected completion date of February 2021. The three-year budget is \$174,000.

Metering Flows Tributary to Columbus Park Headworks: This program has two goals: (1) to acquire data from the Commission's interceptors that convey flows into the MWRA's Columbus Park Headworks and (2) to test whether the flow data will be appropriate for the Commission's future Operations Center. The Operations Center will be used by the Operations Department to monitor conditions in the collection system during large storms. It has been thought that actions taken by MWRA effect conditions upstream in the Commission's interceptors. The metering devices will be able to detect the influence of conditions downstream at the MWRA headworks. The planning stage will commence April 2018 and is projected to be completed by March 2021. The three-year budget is \$224,000.

Discharge Notification for CSO's Contract No. 16-206-002: The proposed project will be an extension of an earlier project, CSO Public Notification which was a pilot program. During the pilot program, it became apparent that identifying overflows could be done more effectively by eliminating locations that did not overflow during the pilot. The proposed program will run over a three- year period and replace the two- year pilot program. The purpose of this project is to comply with the Commission's CSO NPDES Permit which requires the Commission to notify the public of discharges from its combined sewer system. Professional metering services will be used to determine when an overflow began and when it ended. A web site will be maintained for the public to access the overflow information. The planning stage of the proposed project commenced in July 2016 and is estimated to be completed in June 2019. The three-year budget is \$130,000.

System Operations Monitoring Center: This project involves the development and implementation of a real-time supervisory control and data acquisition (SCADA) monitoring of critical BWSC and MWRA systems. Construction scheduled to commence in May 2019 and is projected to be completed in February 2020. The three-year budget is \$450,000.

Urban Runoff Water Quality Evaluation Contract No. 15-206-011: This project includes evaluating the quality of urban runoff in Boston and its impact on stormwater discharges from the Commission's drainage system and on receiving waters. Wet weather water quality samples will be collected from various locations, such as roads (gutters), catch basins, parking lots, roof-tops, city parks, open spaces, and swales. The sample results will be compared with wet and dry weather samples collected from storm drain manholes, outfalls, receiving waters and wetlands. Samples will be analyzed for bacteria, metals and nutrients, as well as other parameters. Alternative methods for determining whether bacteria in the environment and storm drains are from human versus non-human sources will be explored. Numerous studies by the Commission in the past have evaluated bacterial concentrations in wet and dry weather discharges and in receiving waters. The bacteria were generally assumed to be from human sources, i.e. due to

2018 – 2020 Capital Improvement Program

illicit connections or combined sewer overflows. Recent outfall and storm drain sampling has indicated that although those sources have largely been eliminated, elevated concentrations of bacteria were present in the flow. Studies by experts in the stormwater field have suggested that non-human sources may contribute significant concentrations of bacteria to dry weather flows and urban wet weather discharges. EPA has asked the Commission to explore methods for determining whether some of the elevated levels of bacteria in its storm drains could be due to non-human sources. The planning stage commenced in November 2015 and is estimated to be completed in January 2018. The three-year budget is \$12,000.

Interactive Training Tool: This project includes the development of an interactive training tool that will support knowledge sharing specific to the operation of the Commission's sewer and drainage systems and relevant components of the MWRA's wastewater collection system. The Planning stage is scheduled to commence in September 2020 and is projected to be completed in December 2021. The three-year budget is \$100,000.

Fort Point Channel Implementation of Recommendations Contract 16-206-004: Despite numerous sewer separation projects in the combined sewer systems tributary to the Fort Point Channel in the last decade, water quality in the Channel continues to be impaired. In 2014, the Commission completed a water quality assessment of the Fort Point Channel and its tributaries and developed recommendations for further investigations aimed water quality improvements. This project will implement the recommendations developed under the 2014 water quality assessment project. The Planning stage commenced in February 2016 and is projected to be completed in May 2018. The three-year budget is \$200,000.

CCTV of Sewers and Drains IDDE Sewer Contract No. 16-309-012: This project entails testing sewer laterals to determine whether they leak sewage into drains and CCTV inspection of sewers and drains evaluate their condition and aid in locating illicit connections. Under the Consent Decree with EPA the Commission must adhere to strict deadlines for completing illicit discharge investigations. Testing of sewer laterals will verify whether the laterals leak sewage to the storm drain system. CCTV of sewers and drains will aid in identifying illicit connections and structural deficiencies in the pipes. The Planning stage commenced in January 2017 and is projected to be completed in January 2018. The three-year budget is \$75,000.

Model Improvements Contract No. 13-206-010: This project will improve the sewer model developed in 2006 and maintain the Drain model. The improvements will include the delineation of tributary areas in select locations along with recalibration. The goal of this project is to improve the sewer model with data collected from other projects. It is anticipated that the improvements will also improve the confidence of those using the model, which was developed before a number of important separation projects were completed. The Planning stage of this project began in January 2015 and is estimated to be completed in June 2018. This is a three-year project with a projected budget of \$68,000.

BWSC Union Park Pump Station Improvements: This project includes the upgrade or replacement of essential equipment and components related to the Commission's Pump Stations. The upgrades will commence in January 2018 and is projected to be completed by December 2020. The three-year budget is \$525,000.

2018 – 2020 Capital Improvement Program

Diving Services: This project includes Professional Diving services to inspect and repair large conduits and other underwater facilities. This is a professional services contract. In many instances it is necessary to inspect and repair Commission facilities, which are underwater and thus inaccessible. This needs to be accomplished through the use of professional qualified divers. The three-year budget is \$100,000.

Sediment Analysis Service Contract No. 17-206-001: This project includes professional services to analyze the composition of sediments to be removed from sewers and drains scheduled for cleaning. This contract also includes recommendations for disposal options. In order to legally dispose of sediments from sewers and drains it is required to collect and analyze sediment samples. The project commenced in January 2017 and is projected to be completed by December 2019. This is a professional services contract for three-years. The three-year budget is \$35,000.

Geotechnical Service Contract No. 15-206-002: This project includes professional geotechnical services related to Commission projects. Services include soil borings and engineering analysis to design pipe and soil support systems. This is a professional services contract. In order to install sewer and drain pipe in deep locations and in certain soils it is required to sample and analyze the soils in order to determine the correct method of support for the pipes and excavations. The three-year budget is \$300,000.

Land Survey Services Contract No. 17-206-002: This project includes surveys for Capital Improvement Projects after construction is completed. This is used to supplement Commission staff with surveys for busier roadways and difficult to access locations. These services are necessary to complete contracts for the Capital Improvement Program. The three-year budget is \$195,000.

Castings & Gratings: Payments to Boston Public Works Department for adjustment of BWSC Water and sewer castings during roadway reconstruction contracts. Construction commenced in January 2017 and a completion date of December 2019. The three-year budget is \$2,250,000.

Survey Services for CIP Projects Contract No. 15-206-009: This project includes total station surveys for Capital Improvement Projects. This is used to augment Commission staff with their surveys. These services are necessary to complete contracts for the Capital Improvement Program. The three-year budget is \$220,000.

SUPPORT PROJECTS

Various Support Projects are included in the 2018-2020 CIP, which the Commission firmly believes will improve the overall efficiency of Commission's functions and enhance its ability to collect revenues and track information. Funds are also allocated for software licenses and upgrades, hardware and peripheral equipment, metering, and vehicles.

2018 – 2020 Capital Improvement Program

OBJECTIVES

The primary objectives of the Support category for 2018-2020 are as follows:

- ✓ Upgrade of Automatic Meter Reading System Data Collectors
- ✓ Upgrade Work Order Management System
- ✓ Replace Customer Information & Billing System
- ✓ Replacement of Commission Vehicles

Support Projects are divided into three sections. These sections are:

- ✓ Metering
- ✓ Information Technology Systems
- ✓ Administrative Equipment

Support Projects for 2018-2020 CIP total \$18.1 million. Monies allocated for 2018 total \$7.9 million.

METERING

DESCRIPTION AND JUSTIFICATION

Metering programs include meter downsizing, which involves the replacement of large meters with smaller meters, where hydraulically feasible. On an annual basis, the Meter Service Department repairs, replaces tests and installs water meters and automatic reading devices and maintains all field components of the Commission's Automatic Meter Reading system. All meters that are removed are tested on and fully equipped test bench, which was purchased in 2009. Meters 3" and larger are field tested, based on size, at intervals of: every year (6" to 10", every other year (4") and every three years (3"), in accordance with American Water Works Association standards. In addition, usage is evaluated utilizing the AMR system and recommendations are made to downsize identified meters to more accurately account for low flow.

Since 2012, the Commission has been working with Aclara Technologies to upgrade the current AMR system, originally installed in 2002, with a second-generation system with greater functionality.

In 2013, a new infrastructure of Data Collection Units ("DCUs") was installed that provides:

- ✓ Backwards capability allowing the new DCUs to obtain reads from old and new Meter Transmitter Units ("MTUs")
- ✓ The transmission of additional data to a new Network Control Computer ("NCC") for analysis and reporting, using enhanced software, and,
- ✓ Potential two-way communication with newer MTUs

2018 – 2020 Capital Improvement Program

In October of 2013, the Commission began deployment of MTUs II, which transmit 5 times more data than previous units and provide the ability for programming at read intervals as short as 15 minutes. As of November 2017, the Commission has installed over 89,665 new MTU II's. (Approximately 99% of all its accounts).

Commission employees are presently replacing the few remaining MTUs and are projected to have all accounts completed by the end of the second quarter 2018.

In 2018, the Commission will be upgrading the cell phone boards and replacing the batteries in sixty-two DCU's located throughout the City.

NEW PROJECTS

No new projects

ONGOING PROJECTS

MTU and DCU Maintenance/Repair/Replacements and Upgrades: This project includes the following: Meter transmission Units (MTU) and Data Collection Units (DCU) software upgrade, Data Collection Units maintenance and MTU Programmer parts or replacements. The MTU AND DCU program is an on-going project to replace or repair MTUs, DCUs and MTU programmer units (2018-2020). Upgrade current DCU's with new boards and batteries (2018). Upgrade the current Aclara database to Aclara Inc Software or Aclara One MDM (2019-2020). The project is ongoing and continuing from January 2018 through 2020 and has a three-year budget of \$1,500,000.

Large Meter Replacement (Water): Meter Replacement Program 3 inch and larger. The three-year budget is \$945,000.

Residential Metering (Water): The residential metering program is an ongoing project to replace approximately 4,000 residential meters sizes 5/5" through 2". The three-year budget is \$1,100,000.

Information Technology

Effective use of the right technologies enables the Commission to provide more efficient and high-quality water and sewer services to the people of Boston. Strategic planning, careful selection of technological tools, and effective use of such tools has enabled the Commission to continue to improve the level of service associated with emergency response, preventive maintenance, infrastructure improvements, and most importantly, quality customer service. Providing staff with appropriate training and utilizing the right mix of hardware and software is something the Commission continues to assess and act upon as new technologies continue to evolve.

2018 – 2020 Capital Improvement Program

BWSC utilizes a five-year Strategic Information Technology Plan as a roadmap for maintaining technical infrastructure and implementing new technologies. Based on technology trends, it is necessary to periodically reevaluate BWSC's computing infrastructure and the technologies currently in use. In 2012 BWSC contracted with a professional services firm to provide assistance in revising its five-year Strategic Information Technology Plan. The latest plan was finalized in 2013 and runs through the end of 2018.

A number of mission critical software applications are utilized to support BWSC's daily operations and provide for emergency response services 24 hours a day, 7 days a week.

BWSC is currently replacing its Automatic Vehicle Location System (AVL). The new AVL system will allow BWSC to track the location of vehicles in its fleet in real-time and automate fleet maintenance schedules.

BWSC is currently in the process of replacing our Customer Information/Billing System. A CIS vendor was selected in 2017 and is expected to complete the system configuration in 2018. Go-live is scheduled for April 2019. The new CIS is based on Microsoft technology.

BWSC is currently upgrading its Human Resource and Financial management systems. The project began in the 3rd quarter of 2017 and is scheduled to be completed by June 2018.

BWSC will be upgrading its web-site in 2018. The new site will be based on the latest technology creating a responsive more interactive site.

BWSC has recently completed an IT Disaster Recovery project and is currently backing-up its IT systems to a remote Disaster Recovery site. If a disaster renders BWSC's data center at its headquarters on Harrison Avenue, unusable BWSC will have the ability to transfer to the remote back-up site within hours.

NEW PROJECTS

New Projects included in Software and Hardware line items are listed below.

ONGOING PROJECTS

Server / Network Hardware & Peripheral Equipment: New Server/Network Hardware is used to upgrade and add to the Commission's Computing Infrastructure, which provides sufficient capacity and performance to support computing activities including: billing, HRIS, payroll, financials, work order system and GIS. The total three-year budget for this project is \$705,000. Monies are budgeted for the following items:

- SCSI Disk/Tape drives & Controllers
- Communications/Networking
- Windows Server Upgrades
- B&W Network Printers

2018 – 2020 Capital Improvement Program

- Disaster Recovery Hardware
- Replace/Upgrade PC's (20,25,25)
- Tablets/IPADS/Phones (35/50/35)
- Peripherals (cables, adapters, cases etc.)

Server/Network Software Licenses and Upgrades: Funding is included for software upgrades and additions to the Commission's Computer Infrastructure. Software and related upgrades to support Commission computing activities include: Billing, HRIS, Payroll, Financials, Work Order Management System, GIS, Document Management and Construction Management System. The total three-year budget for this project is \$7,895,000. Software and upgrades consist of the following:

- Work-order Mgt. System
- CIS Replacement
- Database Software
- Application Development Tools
- Construction Management Software
- Web-Site Upgrade
- Firewall Software
- GIS Software
- PeopleSoft Upgrades
- Information Security
- Disaster Recovery Software & Services
- Microsoft Licensing
- AutoCAD & Design Software/Upgrades

ADMINISTRATIVE EQUIPMENT

DESCRIPTION AND JUSTIFICATION

The projects contained in the administrative equipment category provide funding for improvements to administrative facilities and equipment. The Fleet department manages and coordinates all activities required for the efficient operation and maintenance of the Commission's fleet of vehicles including heavy equipment. In order to minimize fleet total cost of ownership (operating and capital cost) and ensure the ability to provide required customer services using reliable transportation and equipment, vehicles should be replaced at regular intervals, derived from optimal replacement cycle analyses. Vehicle replacement cycles provide the basis for long-term replacement plans for year-to-year replacement earmarking and budgeting. A recent study of the Commission's fleet by a professional management consulting firm has determined that optimum replacement cycles for all classes of vehicles range from 7 to 12 years with a weighted average replacement cycle of 8.8 years for all vehicle. The 2018-2020 CIP has allocated a total of \$5,990,000, which is for vehicles and other administrative equipment. Funds allocated for Administrative Equipment expenditures in 2018 total \$2,855,000.

2018 – 2020 Capital Improvement Program

NEW PROJECTS

No new projects

ONGOING PROJECTS

Commission Vehicle Wash Building Upgrades: Install system upgrades for the Commissions Vehicle Wash Building to improve building functionality. The Vehicle Wash Building was installed in 2001 as part of the original construction of the Commission's Headquarters. The performance of vehicle wash system has become increasingly unreliable in recent years. Equipment and system components are outdated and prone to malfunctioning. Upgrading the wash system with modern components and equipment will ensure long-term reliability of the system for cleaning of the Commission's fleet. Planning for this project is expected to commence in April 2018 and will be followed by the construction which is expected to be completed by December 2018. The three-year budget for this project is \$450,000.

Commission Headquarters – HVAC Equipment: This project includes the replacement of six Make-Up Air Handling Units (MAU's) located on the lower roof at the Commission Headquarters Building with new state-of-the-art equipment as well as the replacement of the rubber membrane (EPDM) lower roof as part of the project. Also, the HVAC system at the Commission's Headquarters Building has been in operation since 2001. A recent energy/assessment of the HVAC System has identified opportunities for energy savings through improved process efficiencies and new state-of-the-art equipment. The audit has recommended replacement of the Make-Up Air Handling Units that provide gas-fired heating to the first-floor garage, Fleet Maintenance, Storeroom and Machine Shop areas. Improving the operational efficiencies of the HVAC System will limit the occurrence of system failures and reduce costs associated with equipment maintenance and energy consumption. The rubber membrane (EPDM) roof where MAU's are located will also be replaced as part of this project. The project is expected to begin in January 2018 and be completed in October 2018. Total cost of this project is projected to be \$3,140,000.

Vehicles/Equipment: The Fleet department manages and coordinates all activities required for the efficient operation and maintenance of the Commission's fleet of vehicles including heavy equipment. In order to minimize fleet total cost of ownership (operating and capital costs) and ensure the ability to provide required customer services using reliable transportation and equipment, vehicles should be replaced at regular intervals derived from optimal replacement cycle analyses. Vehicle replacement cycles provide the basis for long-term replacement plans for year-to-year replacement earmarking and budgeting. A recent study of the Commission's fleet by a professional fleet management consulting firm has determined that optimum replacement cycles for all classes of vehicles range from 7 to 12 years with a weighted average replacement cycle of 8.8 years for all vehicles. Funding is provided for the replacement of various vehicles for utility and operational purposes. The vehicles being replaced have reached their useful life. Three-year monies budgeted for Vehicles total \$2,400,000.

STORMWATER/GREEN INFRASTRUCTURE/LOW IMPACT DEVELOPMENT PROJECTS

DESCRIPTION AND JUSTIFICATION

Funding is provided in the 2018-2020 CIP for the implementation of the Commission's Stormwater Program. This program consists of studies of existing and new drainage infrastructure, best management practices and implementation of programs designed to improve water quality, the environment and manage stormwater resources.

The primary purpose of the Stormwater Program is to participate in the Boston Harbor pollution abatement projects, implement green infrastructure/low impact development to improve the water quality of discharges to the local receiving waters and promote public awareness of stormwater quality issues. The goal is also to study existing conditions and make recommendations for placement of new best management practices designed to promote improved water quality, ensure compliance with state and federal regulations, minimize flooding and manage stormwater throughout the City of Boston.

The Green Infrastructure/Low Impact Development ("GI/LID") category provides funding for ("GI/LID") projects as needed in collaboration with public improvements in the City of Boston.

The Commission is under an obligation to meet the Phosphorus Total Maximum Daily Load ("TMDL") for the Lower Charles River Basin by reducing elevated levels of phosphorus discharged from its stormwater outfalls. The Commission was required by its Consent Decree with the U.S. EPA to develop a stormwater model to identify pollutant loadings (including phosphorus) from land areas that contribute stormwater runoff to the Commission's storm drain system. In addition, the Commission is currently developing a Best Management Practice ("BMP") Recommendations Report in compliance with the terms of the Consent Decree. The BMP Recommendations Report will provide a scheduled plan for implementation of structural BMPs to reduce pollutant loadings discharged to the twenty-seven sub-watersheds of the City of Boston.

The BMP Recommendations Report is intended to provide a plan for the Commission's whole stormwater collection system. According to the interim findings, the cost to implement this plan could be substantial. The purpose of this program is to make available funding to implement GI/LID projects (in collaboration with other city departments and/or private land owners) in the City of Boston as they become available. This program will further the Commission's goal of compliance with the Consent Decree. The three-year total expenditures are \$6.9 million, of which \$3.7 million is anticipated to be spent in 2018.

2018 – 2020 Capital Improvement Program

NEW PROJECTS

Inundation Modeling: The purpose of this project is to utilize the Commission's model as a basis to identify areas of the City that may experience flooding during extreme weather events. The project is scheduled to commence in April 2018 and projected to be completed in April 2019. The three-year budget for this project is \$1,000,000.

Design of BMPS at City Hall: The purpose of this project is to design stormwater BMP's and Green Infrastructure components in the City Hall Plaza area of Boston. The components will have monitoring devices installed to determine the effectiveness of Green Infrastructure. The three-year budget for this project is \$150,000.

ONGOING PROJECTS

Design Services for the Construction of GI at Five Boston Public Schools Contract No. 15-206-012: The stormwater report identified areas in Boston with high Phosphorus loadings. Boston Public Schools in areas with high Phosphorus loadings were identified. Five schools have been and selected for evaluation and construction of Green Infrastructure to treat stormwater runoff. This contract will provide design services. The planning phase of this project commenced in September 2015 and is expected to be completed in December 2018. The three-year budget for the project is \$27,000.

Green Infrastructure & Low Impact Development North Beacon St. Contract No. 15-206-013: As part of Consent Decree, the Commission developed a Stormwater BMP Implementation Plan. This plan developed goals for the Commission to comply with the limits in the TMDL. The North Beacon Street GI Project will identify potential sites and an estimated cost to install. The three-year budget is \$180,000.

Final Design of Constructed Wetland in Stormwater Tributary at Daisy Field: This project is to complete final designs for a vegetated subsurface gravel filter and bioretention feature to treat stormwater runoff in tributary area of Daisy Field. The stormwater runoff in Tributary area 18GSD0233, also known as Daisy Field, is impacting the Muddy River and eventually the Charles River. Conceptual designs, completed by the UNH Stormwater Center, for a subsurface gravel filter and a parking lot perimeter bioretention feature that will improve the quality of stormwater runoff from the tributary area will be moved to final design. In addition, monitoring locations will be included to monitor the operation of the wetland. The design phase is set to commence in January 2018 and is expected to be completed by December 2020. The three-year budget is \$100,000.

Stormwater Fee Feasibility Study Contract No. 15-207-003: This project is designed to study the possibility of implementing a city-wide stormwater fee or stormwater utility to capture costs associated with stormwater infrastructure expenses. The project began in November 2015 and is scheduled to be completed by December 2018. The three-year budget is \$896,000.

2018 – 2020 Capital Improvement Program

BMPs & Green Infrastructure at Beacon St. Park St Contract No. CIP 16-21: The purpose of this project is to install stormwater BMPs and Green Infrastructure components in the Audubon Circle area of Boston. The components will have monitoring devices installed to determine the effectiveness of Green Infrastructure. Construction is scheduled to commence in March 2017 and is projected to be completed by March 2018. The three-year budget is \$75,000.

Construction of Rain Gardens at Boston Public Schools BPS 15133: The stormwater report identified areas in Boston with high phosphorus loadings. Boston Public Schools in areas with high phosphorus loadings were identified. Five schools have been selected for evaluation and construction of Green Infrastructure to treat stormwater runoff. This contract will provide the construction services necessary to construct Green Infrastructure features. The three-year budget for this project is \$515,000.

Construct BMPs & Green Infrastructure at City Hall Plaza: This project is being undertaken as part of the Consent Decree requirements. The purpose of this project is to install stormwater BMPs and Green Infrastructure components in the City Hall Plaza area of Boston to serve as a demonstration project for such installations. The components will have monitoring devices installed to determine their effectiveness got stormwater retention and addressing pollutant discharges. Construction is scheduled to commence in March 2019 and is projected to be completed by December 2019. The three-year budget is \$900,000.

Design Services for the Construction of GI/Stormwater Retention Structures for Low Lying Areas: The Wastewater and Storm Drainage System Facilities Plan included an evaluation of climate change adaptation strategies for changing wet weather conditions. The Plan recommended that the Commission identify areas for temporary surface storage of stormwater and the utilization of BMPs to alleviate the hydraulic stress of potential rainfall volumes and peak intensities of storms that may be experienced in the future. This project will provide design services for the construction of Green Infrastructure/Stormwater Retention Structures in specific topographic areas identified for acting as temporary surface storage for stormwater. The planning stage of this project is scheduled to commence in May 2018 and is projected to be completed by June 2019. The three-year budget is \$500,000.

Green Infrastructure Signage: The purpose of this project is to provide funding for Green Infrastructure signage as needed for Green Infrastructure projects. Construction is scheduled to commence in August 2017 and is projected to be completed by December 2020. The three-year budget is \$50,000.

Green Infrastructure: The purpose of this project is to provide funding for Green Infrastructure projects as needed in collaboration with public improvements in the City of Boston. Construction commenced in January 2017 and is projected to be completed by December 2019. The three-year budget is \$2,500,000.

Long Range Forecast

As part of the annual financial planning process, the Commission develops a five-year forecast of revenues, expenses and required rates. In assembling these projections, the Commission must estimate the level of expenditures required in each of the following years to operate and maintain the systems, provide basic services and meet all its financial obligations. In addition, estimates of water demand, based on recent actual trends, are made to calculate water and sewer rate revenue. Utilizing a computerized financial model, the Commission can develop various scenarios reflecting current and proposed program goals and objectives. Upon final review, the Commission decided to institute a 4.75% rate increase for 2018, and similarly, forecast a 4.75% rate increase for the years 2019 - 2022.

Financial Modeling Results

MWRA Assessment

Since the MWRA Assessment is the largest single expense in the CEB, the annual increase in the assessment has a significant impact on the rate projections of the Commission. Federal mandates require the MWRA to invest heavily in water system improvements. These extensive capital projects along with the operation and maintenance of the regional water distribution and wastewater collection systems have caused the MWRA's funding requirements to increase significantly. Consequently, rate increases are expected to continue while these projects are in progress. Again, in developing future rate projections, the Commission must utilize the most current rate projections, which have been issued by the MWRA. The MWRA projections listed below are based on the MWRA fiscal year, which begins July 1, 2017.

The line chart on the following page shows historical results of the MWRA Assessment for the years 2013 through 2017 and the projections for 2018 through 2022. Based on the above forecast increases, the MWRA Assessment is projected to experience an average compounded annual increase of 3.7% from 2018 to the year 2022. The 2017 actual assessment of \$218.5 million is anticipated to escalate to \$262.1 million by the year 2022. This forecast amount would represent approximately 61.9% of the total expenses of the Commission for that year.

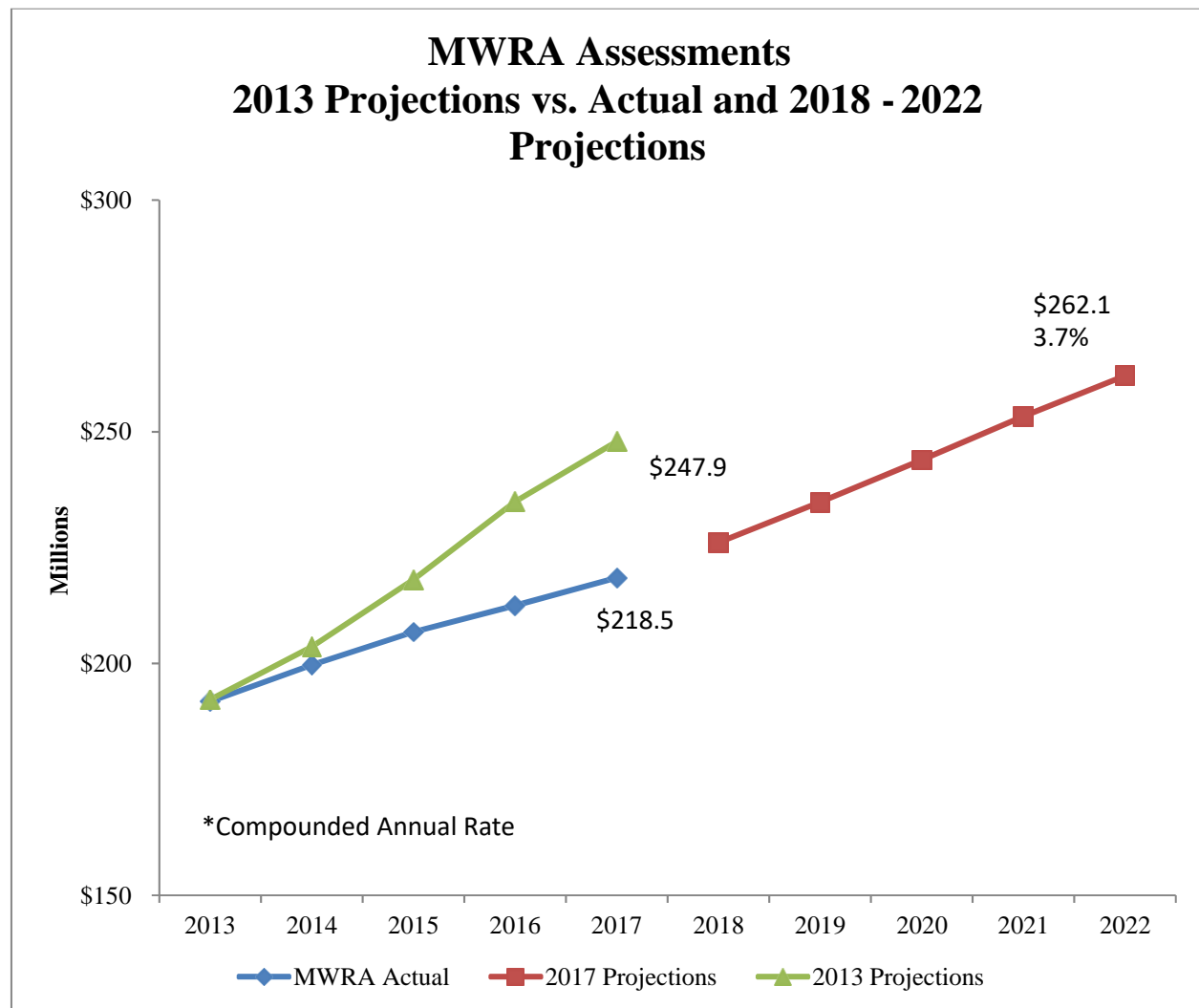
In an effort to minimize the impact of the MWRA Assessment increases, the Commission began an aggressive program to update and improve the water system in 1978. The program included replacing old, ineffective water mains and aggressive leak detection and repair. These efforts, which continue today, combined with the inclining rate structure, have had the net effect of reducing the overall level of water purchased by the Commission from 146.1 MGD in 1977 to 63.0 MGD in 2017. In addition to reducing the level of water purchases from the MWRA, the Commission continues to pursue increasing billable consumption through its ongoing meter replacement and meter downsizing programs. All of these efforts have combined to reduce the level of unbilled water from 48% in 1977 to 10.3% in 2017.

Long Range Forecast

The past success that the Commission has realized in reducing purchases, maximizing billings and reducing unaccounted-for-water, resulted in a reduced level of rate increases to be passed on to the customer.

Forecasted MWRA Rate Increases

| 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|
| 3.2% | 3.8% | 3.8% | 3.8% | 3.8% |



Long Range Forecast

Forecast Assumptions

Revenue and expense forecast assumptions used in setting the 2018 CEB and rates are detailed below.

| | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---------|---------|---------|---------|---------|
| Fire Pipe Charges (% of Water) | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| Elderly Discount (% of Water) | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Late Payment (% of Billed Chgs.) | 0.40 | 0.40 | 0.40 | 0.40 | 0.40 |
| Adjustments (% of Billed Chgs.) | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 |
| Bad Debt (% of Billed Chgs.) | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| Interest on Fund Balances | 1.75% | 1.75% | 1.75% | 1.75% | 1.75% |
| Increase in Direct Operating Expenses | 3.00% | 3.00% | 3.00% | 3.00% | 3.00% |
| Increase in MWRA Rate Revenue Requirement – MWRA FY | | | | | |
| Water | 3.5% | 3.9% | 3.9% | 4.0% | 4.0% |
| Sewer | 3.0% | 3.8% | 3.8% | 3.8% | 3.8% |
| Estimated MWRA Rate Revenue Requirement – MWRA FY | | | | | |
| Water | 242,416 | 251,828 | 261,565 | 272,011 | 282,845 |
| Sewer | 474,638 | 492,793 | 511,690 | 530,975 | 550,935 |
| BWSC Share of MWRA Expense | | | | | |
| Water | 35.4% | 35.4% | 35.4% | 35.4% | 35.4% |
| Sewer | 28.7% | 28.7% | 28.7% | 28.7% | 28.7% |
| Annual MWRA Assessment to BWSC | | | | | |
| Water | 87,573 | 90,966 | 94,542 | 98,313 | 102,205 |
| Sewer | 138,575 | 143,883 | 149,352 | 154,973 | 159,883 |
| Total | 226,148 | 234,849 | 243,894 | 253,286 | 262,089 |
| | | | | | |
| Stabilization Fund | | | | | |
| Discretionary Deposits | 0 | 0 | 3,124 | 188 | 3,574 |
| Discretionary Withdrawals | 4,150 | 6,303 | 0 | 0 | 0 |

Long Range Forecast

Financial Projections

The table below illustrates the Commission's pro forma financial projections for the years 2018 to 2022. This table details the estimated revenues and expenses for the period and the corresponding rate increases required allowing the Commission to meet all its financial obligations.

Pro Forma Financial Projections (\$000)

| | <i>Unaudited</i> 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------------------------------------|--------------------------|------------------|------------------|------------------|------------------|------------------|
| REVENUES | | | | | | |
| Water | \$145,908 | \$150,673 | \$156,252 | \$162,037 | \$168,885 | \$176,022 |
| Sewer | 199,921 | 206,099 | 213,730 | 221,643 | 231,010 | 240,773 |
| LESS: | | | | | | |
| Adjustments | (9,627) | (8,919) | (9,250) | (9,592) | (9,997) | (10,419) |
| Discounts | (1,220) | (1,507) | (1,563) | (1,620) | (1,689) | (1,760) |
| Bad Debt | (37) | (357) | (369) | (384) | (400) | (417) |
| NET BILLED CHARGES | 334,945 | 345,989 | 358,800 | 372,084 | 387,809 | 404,199 |
| Prior Year Surplus | 689 | 568 | 0 | 0 | 0 | 0 |
| Late Charges | 1,173 | 1,427 | 1,480 | 1,535 | 1,599 | 1,667 |
| Investment Income | 4,691 | 4,691 | 4,691 | 4,861 | 5,067 | 5,281 |
| Fire Pipe | 3,413 | 3,362 | 3,290 | 3,258 | 3,313 | 3,395 |
| Other Income | 8,459 | 12,054 | 14,442 | 8,384 | 8,636 | 8,895 |
| SUBTOTAL | 18,425 | 22,102 | 23,903 | 18,038 | 18,615 | 19,238 |
| TOTAL REVENUE | \$353,370 | \$368,091 | \$382,703 | \$390,122 | \$406,424 | \$423,437 |
| EXPENSES | | | | | | |
| Operating | \$67,905 | \$71,655 | \$73,715 | \$75,836 | \$78,022 | \$80,272 |
| MWRA Assessment | 218,462 | 226,149 | 234,849 | 243,894 | 253,286 | 262,088 |
| Capital Improvement | 14,942 | 17,236 | 19,736 | 12,564 | 16,512 | 17,338 |
| Debt Service | 50,345 | 50,993 | 51,780 | 54,433 | 55,298 | 57,915 |
| Contractual Funding Obligations | 945 | 1,851 | 2,418 | 3,192 | 3,105 | 5,623 |
| SDWA Assessment | 203 | 207 | 205 | 203 | 201 | 201 |
| TOTAL OPERATING EXPENSES | \$352,802 | \$368,091 | \$382,703 | \$390,122 | \$406,424 | \$423,437 |
| NET INCOME | \$568 | 0 | 0 | 0 | 0 | 0 |
| Average Combined Rate (\$/1000gal) | \$17.77 | \$18.61 | \$19.50 | \$20.42 | \$21.39 | \$22.41 |
| Annual Increase (%) | 2.80% | 3.50% | 3.80% | 3.90% | 3.90% | 3.50% |
| Typical Household Bill | \$1,052 | \$1,102 | \$1,154 | \$1,209 | \$1,266 | \$1,326 |

Reserve Fund Levels

Withdrawals from the Stabilization Fund began in 2000, will continue in 2018, and will occur during 2019 to 2022. Deposits will be made to the reserve funds to comply with the Commission's Bond Resolution. A description of the Commission's Reserve Funds and current balances are shown in the Budget Overview section of this document. Boston Water and Sewer Commission rate projections for the year's 2018 - 2022 are outlined on the following page. These rate projections are based on the best data available during the 2018 Financial Planning Process.

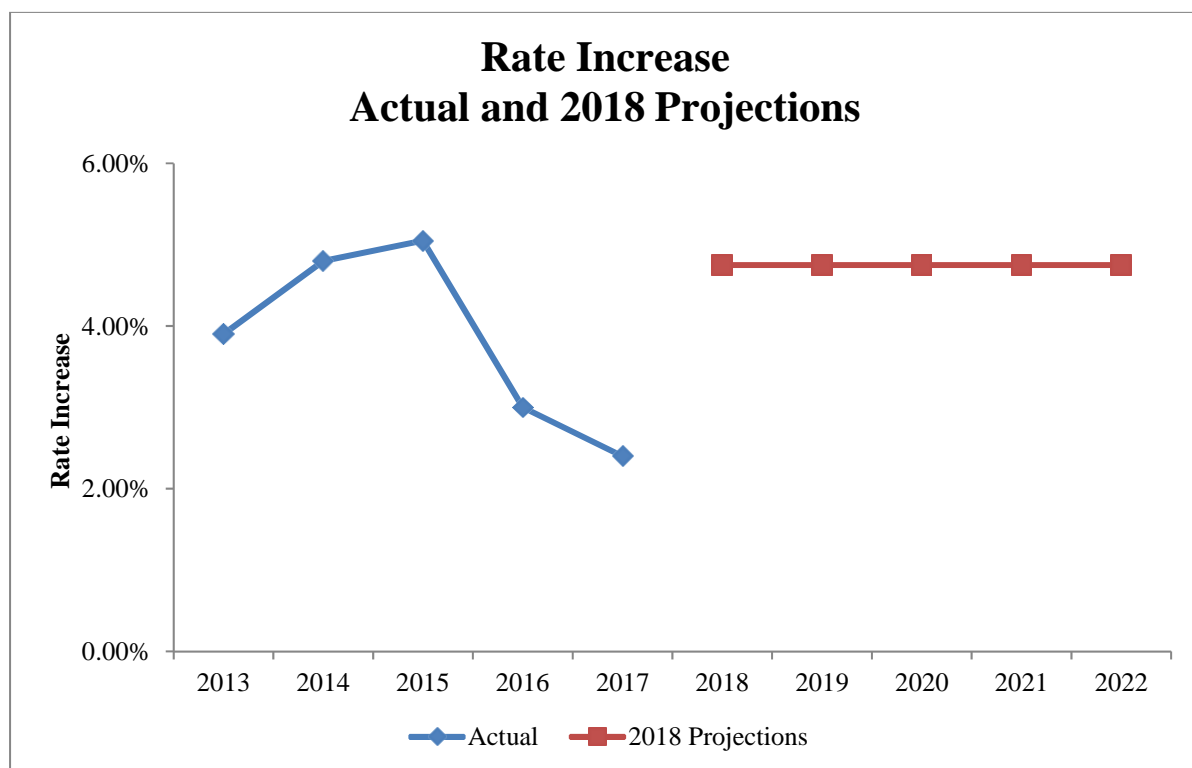
Long Range Forecast

BWSC Rate Increases

| 2018 | 2019 | 2020 | 2021 | 2022 |
|-------|-------|-------|-------|-------|
| 4.75% | 4.75% | 4.75% | 4.75% | 4.75% |

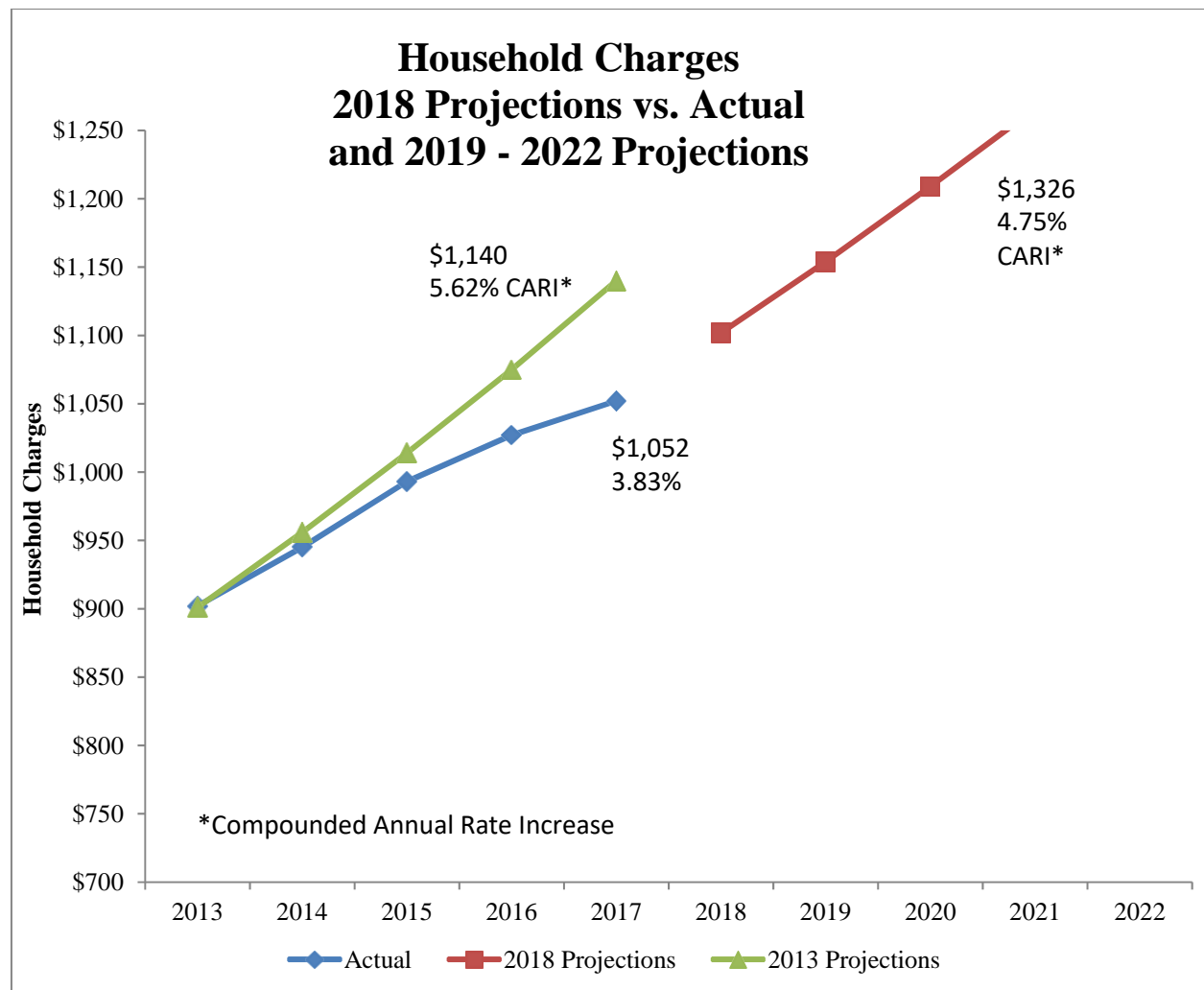
The current increase for 2018 is 4.75% and a 4.75% increase for years 2019 – 2022 as well. The graph below illustrates the actual rate increases occurring during the years 2013 through 2017. The Commission was able to do this by effectively controlling costs and utilizing the Stabilization Fund withdrawals.

These less-than-anticipated increases are the result of considerable reductions in the projected spending for Direct Expenses, Contractual Funding Obligations, and MWRA Assessment costs. The Commission continues to be aggressive in attempting to secure state rate relief funding, various grants and low interest loans and controlling direct expenses. These efforts will contribute to minimizing the level of required future rate increases as shown in the chart below.



Household Charges

The Commission approved a rate increase of 4.75% for 2018 and projects 4.75% increase for years 2019 – 2022 as well. This rate increase translates into an average household dollar cost to increase from \$1,102 in 2018 to \$1,326 in the year 2022. This is depicted below in the graph, which also shows the actual household charges for the years 2013 - 2017 versus projections made during the same period. The variance between the actual and projected household charges is directly attributed to lower than anticipated wholesale water and sewer rate increases experienced between 2013 and 2017.



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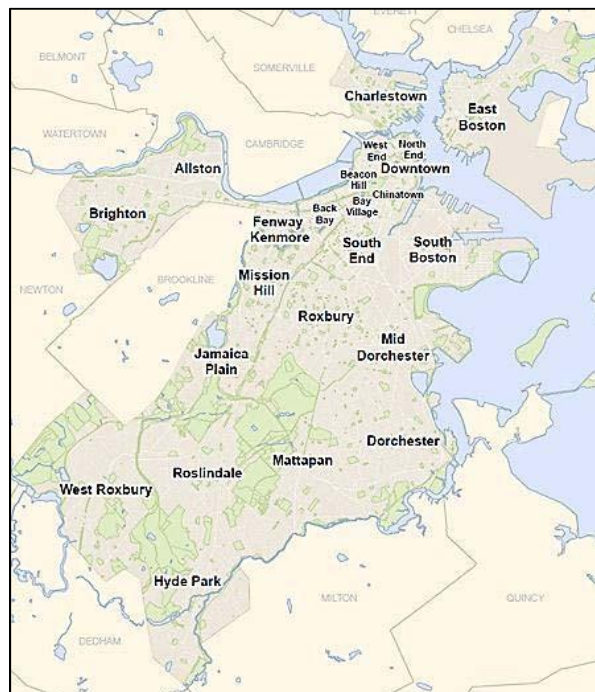
City of Boston Overview

The first settler in what would become Boston was Reverend William Blackstone, an Anglican clergyman, who built a cottage on what is now Beacon Hill in 1625. He was drawn by the considerable accessibility of fresh water and vast open land. Subsequently, Governor John Winthrop of the Massachusetts Bay Company and a group of Puritan Englishmen who followed Reverend William, formally founded Boston in 1630.

The city is named for a port in Lincolnshire, England, which received its name in honor of a Benedictine monk called Botulph (“bot” meaning boat and “ulph” meaning “helper” in Old English). “Bot Ulphs” Town became Bottleston and ultimately Boston. As most of the Puritan settlers came from the Lincolnshire district of England, they honored their English hometown by transporting the name Boston to the New World.

The City of Boston is the economic heart of the Commonwealth of Massachusetts and the entire New England region, a hub for professional, business, governmental, financial, advanced educational, medical, transportation, communicative, technological, cultural and entertainment services. Additionally, research and development, bio-technology, manufacturing and wholesale distribution also significantly contribute to the economy of the City and the surrounding suburbs.

Boston’s population reached 617,594 according to the 2010 U.S Department of Commerce Bureau of the Census, registering a 4.8% gain since the Census of 2000, the third consecutive decade in which the city’s population has grown. The latest estimate of population is 650,281 as of 2015. Below is a simplistic version of a map of Boston.



Population

Neighborhood Population by Race – City Boston 2010

| Neighborhood | White | Black | Hispanic/ Latino | Asian | Native American | Other Single Race | Multi- Racial | Total |
|----------------------|----------------|----------------|---------------------|---------------|--------------------|-------------------------|------------------|----------------|
| Allston/Brighton | 49,464 | 3,431 | 7,440 | 11,543 | 65 | 1,114 | 1,835 | 74,892 |
| Back Bay/Beacon Hill | 22,321 | 832 | 1,426 | 2,333 | 19 | 91 | 454 | 27,476 |
| Central Boston | 21,071 | 1,397 | 1,583 | 6,248 | 40 | 85 | 477 | 30,901 |
| Charlestown | 12,458 | 764 | 1,591 | 1,334 | 18 | 72 | 202 | 16,439 |
| Dorchester, North | 9,849 | 6,498 | 4,723 | 3,752 | 61 | 2,217 | 1,284 | 28,384 |
| Dorchester, South | 15,648 | 24,839 | 7,928 | 6,763 | 151 | 2,407 | 2,213 | 59,949 |
| East Boston | 15,051 | 1,283 | 21,419 | 1,410 | 69 | 658 | 618 | 40,508 |
| Fenway/Kenmore | 26,820 | 2,229 | 3,276 | 7,224 | 57 | 155 | 1,137 | 40,898 |
| Harbor Island | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 640 |
| Hyde Park | 8,965 | 14,949 | 6,449 | 510 | 85 | 265 | 671 | 31,894 |
| Jamaica Plain | 21,402 | 5,368 | 8,764 | 3,138 | 86 | 194 | 945 | 39,897 |
| Mattapan | 1,259 | 26,008 | 5,664 | 355 | 97 | 388 | 845 | 34,616 |
| Roslindale | 15,814 | 6,536 | 8,015 | 1,080 | 84 | 223 | 756 | 32,508 |
| Roxbury | 3,913 | 33,266 | 17,842 | 719 | 259 | 1,895 | 1,896 | 59,790 |
| South Boston | 26,552 | 1,572 | 3,345 | 1,630 | 38 | 150 | 401 | 33,688 |
| South End | 17,153 | 5,938 | 5,745 | 4,830 | 67 | 207 | 729 | 34,669 |
| West Roxbury | 22,302 | 2,959 | 2,573 | 1,969 | 29 | 125 | 488 | 30,445 |
| Total | 290,042 | 137,869 | 107,783 | 54,838 | 1,225 | 10,246 | 14,951 | 617,594 |

Source: U.S. Census Bureau and B.R.A. Prepared by the Boston Redevelopment Authority.

Population growth within the City of Boston is projected to increase in the ensuing years. The table below displays the historical population and the increase for the year 2015.

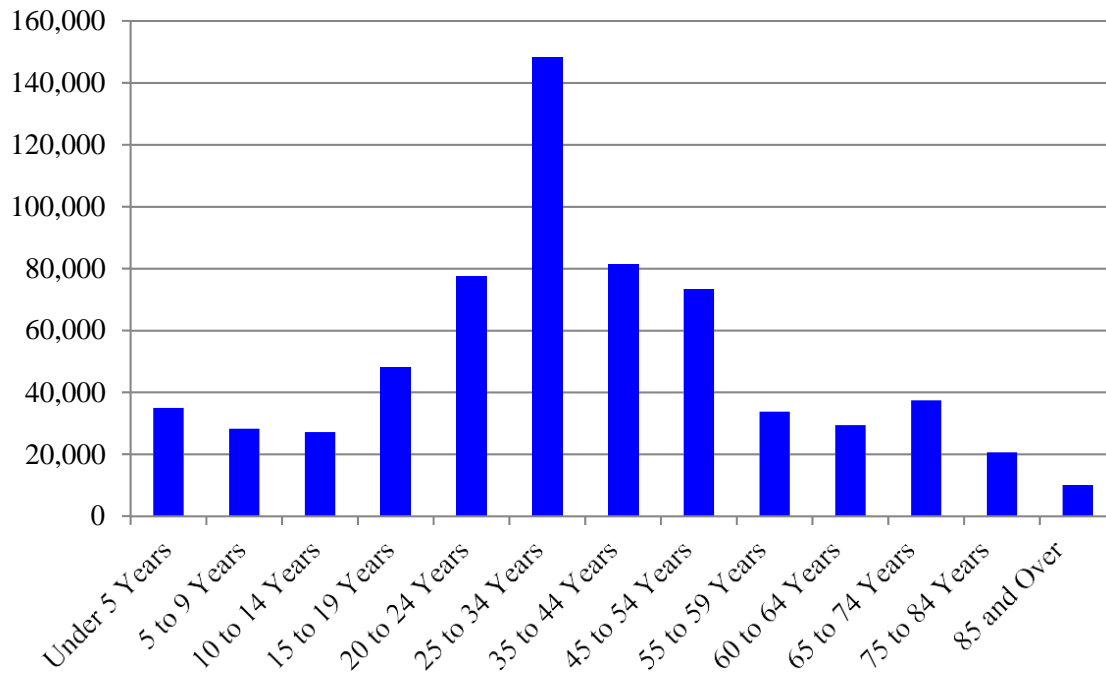
| Population | 1970 | 1980 | 1990 | 2000 | 2010 | 2015 |
|-------------|---------|---------|---------|---------|---------|---------|
| Total | 641,070 | 562,994 | 574,283 | 589,141 | 617,594 | 650,281 |
| Growth Rate | N/A | -12.2% | 2.0% | 2.6% | 4.8% | 5.3% |

Population Breakdown by Age in Boston

| Age | Total | % of Total |
|----------------|----------------|---------------|
| Under 5 Years | 34,943 | 5.44% |
| 5 to 9 Years | 28,240 | 5.72% |
| 10 to 14 Years | 27,132 | 5.53% |
| 15 to 19 Years | 48,099 | 7.41% |
| 20 to 24 Years | 77,392 | 11.9% |
| 25 to 34 Years | 148,153 | 21.18% |
| 35 to 44 Years | 81,554 | 14.67% |
| 45 to 54 Years | 73,407 | 10.79% |
| 55 to 59 Years | 33,786 | 3.86% |
| 60 to 64 Years | 29,418 | 3.1% |
| 65 to 74 Years | 37,420 | 5.8% |
| 75 to 84 Years | 20,648 | 3.68% |
| 85 and Over | 10,089 | 1.44% |
| Total | 650,281 | 100.0% |

*BRA Research Division, 2015.

Population Breakdown by Age



Employment

The World economy as well as the National Economy has had some drastic and fundamental Shifts in the last three decades. In the U.S. as a whole and Boston in particular the industrial and manufacturing sectors of the economy have drastically declined due to such forces as rising gains in worker productivity assisted by Information Technology and growing levels of automation and off-shoring of jobs to low wage nations.

But Greater Boston has with its unique concentration of institutions of higher education that has helped anchor the growing economic sectors of the innovative economy attracting research and venture capital funding, with multiplier effects across other sectors such as health care and financial services. From 2009 through 2010 the Metro Boston economy grew by 4.8% topping all U.S. large metros and since 2002, the Milken Institute has ranked Massachusetts #1 on its Science & Technology State Index, which is conducted every other year. The study also ranked the Boston Metro Area third in the country in overall educational achievement during that same time period. Furthermore, economic growth in Metropolitan Boston is trending up. In 2014, there was a net gain in jobs of 2.3%.

The economy of Boston is more specialized in the financial, business, professional services, medical, and educational sectors than the suburban economy which is more specialized in high technology and the defense industry. According to a 2013 report by the BRA, Boston regained all but 1,000 of the jobs lost between 2008 and 2010. Shown in the table on the following page is the breakdown of Boston Employment by Industry for the years 2013, 2014 and 2015.

Five Largest Public & Private Companies in Massachusetts **Ranked by Revenue**

| Public Company | Industry | 2016 Revenue |
|---|-------------------------------------|---------------------|
| General Electric Co. | Electronics/Lighting | \$123,069,000.00 |
| The TJX Cos. Inc | Retail | \$33,018,000.00 |
| Raytheon Co. | High Technology | \$24,070,000.00 |
| Thermo Fisher Scientific Inc. | High Technology | \$18,270,000.00 |
| Staples Inc. | Retail | \$18,250,000.00 |
| Private Company | Products/Service | 2016 Revenue |
| Massachusetts Mutual Life Insurance Co. | Financial Services/Insurance | \$29,600,000,000 |
| Fidelity Investments | Financial Services | \$15,900,000,000 |
| Demoulas Super Markets Inc. | Supermarket Operator | \$4,800,000,000 |
| The Kraft Group | Sports Entertainment, Manufacturing | \$4,400,000,000 |
| Bose Corp.. | Consumer Electronics | \$3,800,000,000 |

*2017 Book of Lists, Boston Business Journal, Ranked by Revenue

City of Boston Employment by Industry for the Years 2013, 2014, 2015

| Industry | 2013 | 2014 | 2015 | %Change '14-'15 |
|---|-----------------------|-----------------------|-----------------------|--------------------|
| Health Care and Social Assistance | 131,004 | 133,658 | 139,911 | 4.7% |
| Professional and Technical Services | 84,083 | 88,636 | 91,858 | 3.6% |
| Finance and Insurance | 79,316 | 79,990 | 86,971 | 8.7% |
| Government | 76,145 | 76,602 | 76,708 | 0.1% |
| Accommodation and Food Services | 57,465 | 58,887 | 59,910 | 1.7% |
| Educational Services | 54,902 | 56,357 | 57,534 | 2.1% |
| Administrative and Waste Services | 33,814 | 35,338 | 37,274 | 5.5% |
| Retail Trade | 32,186 | 33,087 | 34,142 | 3.2% |
| Other Services, excluding Public Admin. | 31,666 | 32,762 | 32,985 | 0.7% |
| Real Estate, Rental and Leasing | 23,608 | 24,881 | 24,881 | 0.0% |
| Transportation and Warehousing | 20,298 | 21,641 | 26,037 | 20.3% |
| Construction | 16,656 | 17,052 | 17,478 | 2.5% |
| Arts, Entertainment and Recreation | 15,577 | 16,253 | 16,805 | 3.4% |
| Information | 15,529 | 16,051 | 16,861 | 5.0% |
| Wholesale Trade | 9,066 | 9,240 | 9,862 | 6.7% |
| Management of Companies and Enterprises | 7,658 | 7,837 | 8,390 | 7.1% |
| Manufacturing | 8,133 | 7,797 | 7,969 | 2.2% |
| Utilities | 1,519 | 1,871 | 1,894 | 1.2% |
| Natural Resources and Mining | 250 | 336 | 387 | 15.2% |
| Total | <u>698,875</u> | <u>718,499</u> | <u>757,344</u> | <u>5.4%</u> |

Sources: U.S. Bureau of Economic Analysis (BEA), Massachusetts Executive Office of Labor and Workforce Development (EOLWD), BRA Research Division Analysis

Unemployment

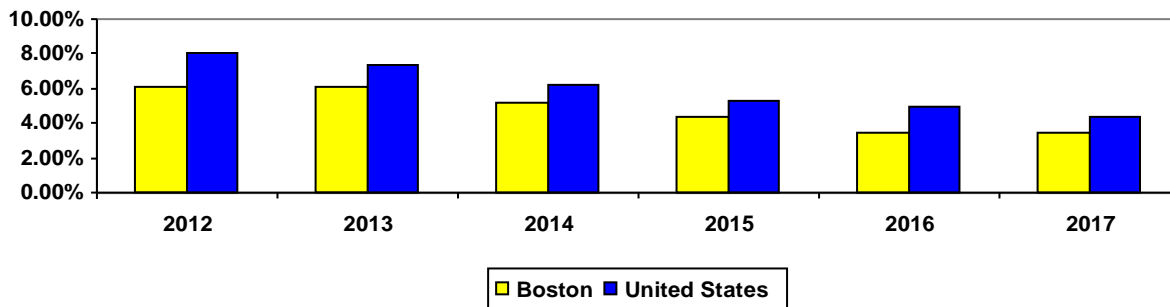
The unemployment rate for the Boston area in 2017 decreased to 2.5%, below that of Massachusetts at 2.8% as well as the national rate of 4.7%, indicating that the recession may be easing. The table and following bar graphs show the unemployment trends of Boston versus the United States, and Massachusetts.

Unemployment Rates

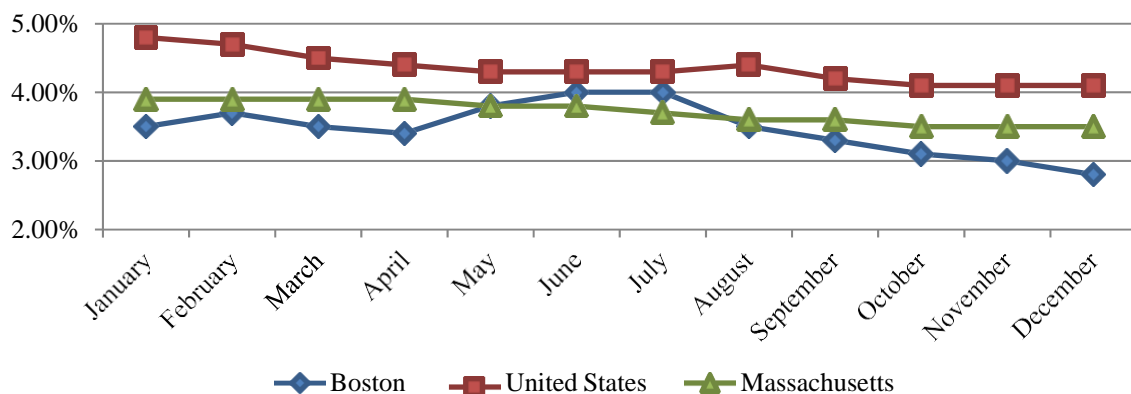
| Unemployment | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|----------------------|------|------|------|------|------|------|
| Boston | 6.1% | 6.1% | 5.2% | 4.4% | 3.4% | 3.5% |
| Massachusetts | 6.7% | 6.7% | 5.7% | 4.8% | 3.9% | 3.7% |
| United States | 8.1% | 7.4% | 6.2% | 5.3% | 4.9% | 4.4% |

Source: Bureau of Labor Statistics for Boston, United States, and Massachusetts. Recent Unemployment Data is subject to revision.

Unemployment Rate for Boston and United States for the Years 2012 - 2017



Unemployment Rate for Boston & Massachusetts in Comparison to the United States 2017



Source: U.S. Bureau of Labor Statistics. *Latest available monthly data.
Most recent data is preliminary and subject to revision

Largest Employers in Boston
(With 1,000+ employees, listed alphabetically)

| | |
|---|-------------------------------------|
| Allen & Gerritsen | John Hancock |
| American Cleaning Co | Liberty Mutual |
| American International Group | Massachusetts Eye and Ear Infirmary |
| ARAMARK | Massachusetts General Hospital |
| Berklee College of Music | MFS Investment Management |
| Beth Israel Deaconess Medical Center | New England Baptist Hospital |
| Blue Cross Blue Shield of Massachusetts | New England Financial/MetLife |
| BNY Mellon | Northeastern University |
| Boston College | NSTAR Electric |
| Boston Globe Media Partners | Partners HealthCare |
| Boston Medical Center | Pearson |
| Boston University | Pioneer Investment Management |
| Brigham and Women's Hospital | Putnam Investments |
| Brown Brothers Harriman & Co | Ropes & Gray |
| Cambridge Associates | Shaw's |
| CBS | Simmons College |
| Children's Hospital, Boston | St. Elizabeth's Medical Center |
| Christian Science Publishing Society | State Street Bank & Trust Co |
| Dana-Farber Cancer Institute | Massachusetts Eye and Ear Infirmary |
| Deloitte | Stop & Shop |
| Dunkin' Donuts | Suffolk University |
| Ernst & Young | Thomson Reuters |
| Faulkner Hospital | Tufts Medical Center |
| Fidelity | Tufts University Graduate Schools |
| Gillette | Verizon Massachusetts |
| Harvard University Graduate Schools | Wellington Management Co |
| Hebrew Rehabilitation Center | Stop & Shop |

Source: BRA Research Division, 2013.

Years of School Completed for Boston Residents Age 25 and Over 1980, 1990, 2010

| | 1980 | 1990 | 2010 |
|-----------------------------|----------------|----------------|----------------|
| Less than High School | 104,339 | 88,875 | 72,953 |
| High School Graduate or GED | 115,787 | 97,233 | 103,989 |
| 1-3 years of college | 43,451 | 69,889 | 82,352 |
| 4 or more years of college | 67,073 | 109,711 | 154,389 |
| Total | 330,650 | 365,708 | 413,683 |

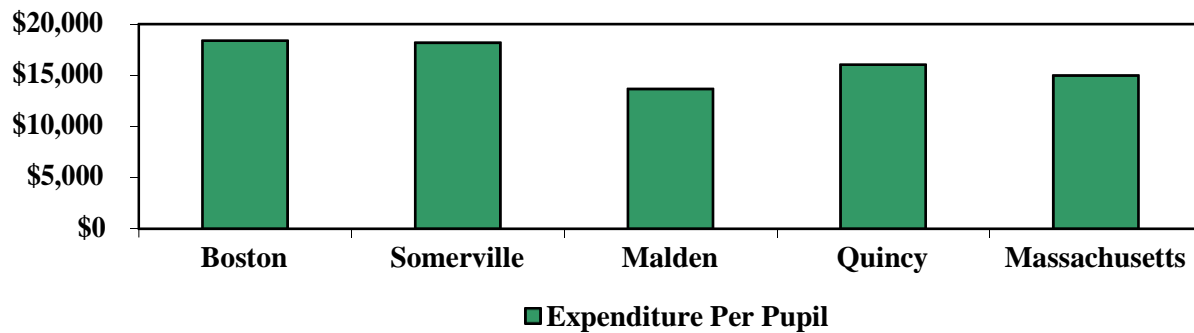
Source: U.S. Dept. of Commerce, Bureau of the Census: 1980, 1990 and 2010.

Expenditures Per Pupil 2017 School Year

| | |
|----------------------|-------------|
| Boston | \$20,302.78 |
| Somerville | \$19,444.40 |
| Malden | \$14,470.74 |
| Quincy | \$16,976.03 |
| Massachusetts | \$15,956 |

Source: Massachusetts Department of Education Website

Expenditures Per Pupil Boston vs. Somerville, Malden, Quincy & Massachusetts



Boston Consumer Price Index, 2013 - 2017

| Category | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------|-------|-------|-------|-------|-------|
| All Items | 251.1 | 255.2 | 256.7 | 260.5 | 260.5 |
| Food | 248.1 | 250.9 | 255.5 | 258.0 | 261.9 |
| Shelter | 284.0 | 292.7 | 302.9 | 312.7 | 323.9 |
| Fuel and Utilities | 245.7 | 261.2 | 249.8 | 249.0 | 289.1 |
| Transportation | 207.4 | 206.2 | 186.7 | 183.1 | 188.9 |
| Medical | 586.6 | 589.2 | 607.0 | 633.7 | 646.5 |

Source: Federal Reserve Bank of Boston

Boston's consumer price index for the period of 2013 - 2017 can be compared to the United States consumer price index for the same goods and services. The table below provides data for such purpose.

U.S. Consumer Price Index, 2013 - 2017

| Category | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------|-------|-------|-------|-------|-------|
| All Items | 233.1 | 234.8 | 236.5 | 239.2 | 244.1 |
| Food | 237.9 | 246.0 | 247.9 | 248.0 | 247.6 |
| Shelter | 265.9 | 273.6 | 282.4 | 288.1 | 293.7 |
| Fuel and Utilities | 224.4 | 231.2 | 223.5 | 239.2 | 233.9 |
| Transportation | 212.9 | 199.8 | 294.4 | 298.4 | 204.3 |
| Medical | 427.1 | 439.7 | 485.3 | 493.1 | 472.2 |

Source: United States Consumer Index 2017

Per Capita Personal Income Comparison, 1970, 1980, 1990, 2000, 2010, 2015

| Year | United States | Massachusetts | Boston* |
|------|---------------|---------------|----------|
| 1970 | \$4,196 | \$4,575 | \$4,794 |
| 1980 | \$10,150 | \$10,693 | \$11,138 |
| 1990 | \$19,584 | \$23,074 | \$24,669 |
| 2000 | \$30,587 | \$38,430 | \$42,085 |
| 2010 | \$40,144 | \$51,487 | \$55,548 |
| 2015 | \$55,775 | \$70,628 | \$78,800 |

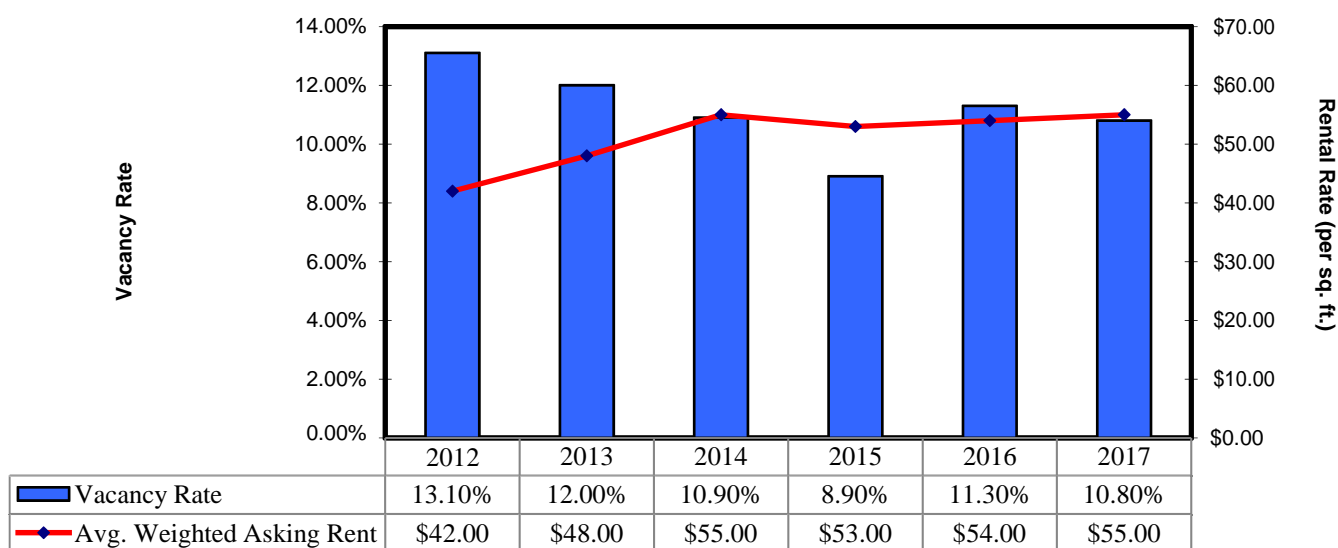
*Boston-Cambridge-Newton, MA-NH (Metropolitan Statistical Area)

Source: Bureau of Economic Analysis

Commercial Market

The Boston Office Market contains over 63.9 million square feet of office space in eight submarkets: The Financial District, Back Bay, Charlestown, Crosstown, Fenway/Kenmore, North Station, Seaport District and South Boston. In 2015 the Boston office space vacancy rate declined to approximately 8.90% from 10.90% in 2014. From 2011 - 2013 the Seaport District had significant leasing activity with two to three the rate relative to its market share. But in 2014, the Financial District regained its dominance in terms of market share. Furthermore, rents appear to be steadily rising, reflecting the declining vacancy rate, as this trend continued in 2017 as well.

Boston Vacancy Rate versus Rental Rate for the Period 2012 - 2017



Weighted asking rent is rent per square foot that factor in vacant sq. ft. of space in each building.
Source; Colliers International, 2017.

Boston's 2015 Highest Assessed Properties

| Property | Owner | Tax Liability | Total Assessed Value |
|----------------------------|------------------------------|---------------|----------------------|
| 800 Boylston St. | BP PruCenter Acquisition LLC | \$26,157,967 | \$886,110,000 |
| 200 Clarendon St | BP Hancock LLC | \$20,110,397 | \$681,246,500 |
| 125 High St. | TST 125 High St. LLC | \$17,343,945 | \$587,532,000 |
| 100 Huntington Ave. | UDIC of Mass. Inc. | \$13,962,960 | \$473,000,000 |
| 100 Federal St. | BP Federal St. LPS | \$13,018,999 | \$441,023,000 |

Source: Boston Assessing Department

Median Sales Price, Single-Family Homes-Boston **For the period 2013 - 2017**

| Year | Median Sales Price | Percent Change |
|------|--------------------|----------------|
| 2013 | \$369,850 | 6.9% |
| 2014 | \$389,800 | 5.4% |
| 2015 | \$403,900 | 3.6% |
| 2016 | \$421,100 | 4.3% |
| 2017 | \$448,500 | 6.5% |

Federal Reserve. (Boston, Cambridge, Quincy Metro Area).

City of Boston Tax Rate 2016 - 2017

| Fiscal Year | Assessed Value | Residential | Commercial |
|-------------|-------------------|-------------|------------|
| 2016 | \$128,047,080,703 | \$11.00 | \$26.81 |
| 2017 | \$143,941,946,439 | \$10.59 | \$25.37 |

Property Tax Facts & Figures, Fiscal Year 2017-Boston Assessing Department
Note: Dollars per \$1,000 valuation.

Monthly Advertised Rent in Boston Neighborhoods for 2016 vs. 2017

| Neighborhood | 2016 | 2017 |
|------------------|----------------|----------------|
| Allston/Brighton | \$2,566 | \$2,599 |
| Back Bay | \$3,261 | \$3,853 |
| Beacon Hill | \$3,261 | \$3,853 |
| Charlestown | \$2,920 | \$3,340 |
| Dorchester | \$2,383* | \$2,228* |
| East Boston | \$2,438 | \$2,542 |
| Fenway/Kenmore | \$2,977 | \$2,820 |
| Jamaica Plain | \$3,216 | \$3,014 |
| Mattapan | \$1,995 | \$1,990 |
| Roslindale | \$2,267 | \$2,302 |
| Roxbury | \$2,610 | \$2,425 |
| South Boston | \$3,271 | \$3,354 |
| South End | \$3,503 | \$3,965 |
| West Roxbury | \$1,896 | \$1,980 |
| Citywide | \$2,754 | \$2,895 |

Jumpshell 2015, Rent Jungle, 2017

* Dorchester rent calculated by average of North Dorchester and South Dorchester rent from Rent Jungle

Tourism

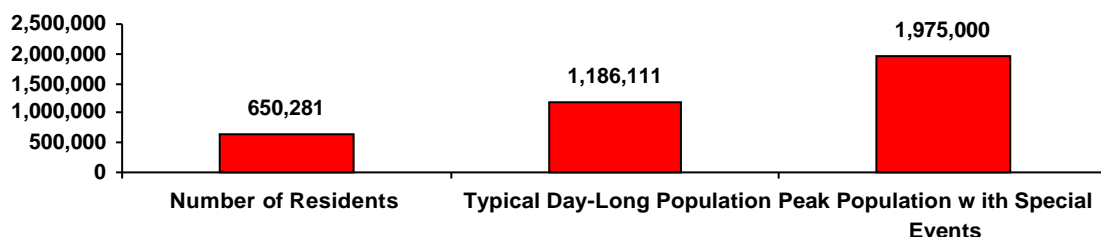
Boston continues to be a city that offers a variety of tourist attractions and is well known as an inviting destination for conventions, concerts, circuses, ice shows, theatrical performances, along with other entertainment and sporting events. In addition to being one of the few major cities that generates more jobs than it has residents, Boston attracts hundreds of thousands of additional visitors who come to shop and visit historic sites. On days when special events are held in Boston, like Sail Boston, or annual events like the Boston Marathon, Fourth of July Esplanade Celebration, or the Head of the Charles Regatta, the city's population can approach two million people. Regularly scheduled and special events can add from 50,000 to 800,000 visitors to Boston on a single day. Boston is also recognized as a great professional sports city and attendance is generally high for each of the three teams regardless of their record. Last season, the Boston Red Sox drew 2,917,678 fans to Fenway Park. At the Bank North Garden, the Boston Bruins drew 720,165 fans and Boston Celtics drew 760,690 fans for each of their seasons. Based upon the average attendance for all three teams and the total number of home dates, sporting events attract 27,108 people to Boston on game days. In 2015, Faneuil Hall Marketplace was ranked the seventh most-visited tourist attraction in the world with approximately eighteen million visitors per year.

Listed in the following table are the most frequent tourist attractions in Boston.

Tourist Attractions – City of Boston

| Tourist Attraction | Description |
|--|---|
| Faneuil Hall Marketplace | Historic Marketplace with stores, restaurants and pubs 2016 Attendance 18,000,000.00 |
| The Freedom Trail | Walking tour of Boston's historical sites |
| Museum of Science | Science education exhibits and exploration museum 2016 Attendance: 1,500,00 |
| The New England Aquarium | Marine exhibition/research facility 2016 Attendance: 1,390,000 |
| Museum of Fine Arts, Boston | New England's largest art museum 2016 Attendance: 1,181,657 |
| Boston Duck Tours | Amphibious sightseeing tour |
| Old North Church | American history museum 2016 Attendance: 578,000 |
| Boston Children's Museum | Children's museum 2016 Attendance: 492,105 |
| Black Heritage Trail Afro-American History | Black history museum and tour |

Boston Statistics and Reports



Most Popular Boston Restaurants*

| | | | |
|----------------------------|---|----------------|----|
| Abe & Louie's | 1 | Menton | 6 |
| Aquitaine | 2 | Sorellina | 7 |
| Davio's Italian Steakhouse | 3 | Neptune Oyster | 8 |
| Mistral | 4 | Grill 23 & Bar | 9 |
| Giacomo's Ristorante | 5 | Mamma Maria | 10 |

*Zagat Survey 2017

Largest Hotels in Boston 2017

| <u>Company</u> | <u>Rooms</u> | <u>Room Rates</u> |
|-------------------------------------|---------------------|--------------------------|
| Sheraton Boston Hotel | 1,220 | \$179 to \$799 |
| Boston Marriott Copley Place | 1,147 | \$129 to \$899 |
| Boston Park Plaza | 1,060 | \$139 to \$659 |
| Westin Copley Place | 803 | \$199 to \$699 |
| Westin Boston Waterfront | 793 | \$199 to \$599 |
| Hilton Boston Logan Airport | 599 | \$159 to \$399 |
| Boston Omni Parker House | 551 | \$169 to \$449 |
| Hyatt Regency Boston | 502 | \$129 to \$699 |
| Renaissance Boston Waterfront Hotel | 471 | \$179 to \$799 |
| Seaport Boston Hotel | 470 | \$169 to \$3,000 |

*Boston Business Journal 2018

Commission Background

The Commission was created on July 18, 1977 pursuant to a “home rule” petition enacted by the Massachusetts Legislature as the Boston Water and Sewer Reorganization Act of 1977, Chapter 436 of the Acts of 1977 (“the Enabling Act”). The Enabling Act created the Commission as “...a public instrumentality, a body politic and corporate, a political subdivision of the Commonwealth, separate and apart from the City...” In August of that year ownership of and responsibility for the water distribution system and the wastewater collection and stormwater drainage system (collectively known as the sewer system) was transferred to the Commission from the City of Boston’s Department of Public Works (“DPW”).

Water Distribution and Sewer Systems

The Commission's water distribution system serves approximately 90,000 active accounts throughout the City of Boston. Service is provided to the City's schools, hospitals, residential population, businesses, and industries and public and private institutions. In addition to the resident population of nearly 650,281, the daytime population of Boston is increased by approximately 375,590 commuting workers, 52,000 shoppers, 44,530 commuting students, 13,940 overnight guests in hotels and homes, 11,600 tourists, 67,480 combined for conventions, trade shows and sporting events, and 31,830 hospital patients and visits.

The Commission currently owns and operates a system for the distribution of potable water to customers throughout the City of Boston. The Commission purchases finished water (fluoridated and disinfected) from the MWRA. The MWRA is the wholesale provider of water to 51 communities in the metropolitan Boston area.

Boston’s early settlers relied on water from cisterns and underground wells, but the quality was poor and the supply inadequate. The first attempt to provide an alternative came from a private company. In 1796, the Aqueduct Corporation began delivering water from Jamaica Pond through a system of wooden pipes.

In 1848, the City of Boston obtained its first municipal water supply from Lake Cochituate via the Cochituate Aqueduct and the Brookline Reservoir. In order to meet the growing needs of Boston and the necessary system expansion, construction began in 1866 on the Chestnut Hill Reservoir and construction of reservoirs on the Sudbury River to feed the Chestnut Hill Reservoir through the Sudbury Aqueduct soon followed. The Metropolitan Water District was formed in 1895 and by 1908 the Wachusett Dam, Reservoir and Aqueduct were completed.

By the early 1900s, it was apparent that the Boston metropolitan area required additional water supplies and a more comprehensive plan to ensure its delivery. The MDC Water Supply Division was created in 1926 as a solution to this problem and was responsible for building many MDC facilities, among them Quabbin Reservoir, the Quabbin Aqueduct and the Hultman Aqueduct.

On July 1, 1985, legislation was enacted which transferred the possession, control and operation of the MDC Water and Sewerage Divisions to the newly created MWRA. However, the MDC remains responsible for the operation and maintenance of the watershed at the Quabbin and Wachusett Reservoirs, the expenses of which are reimbursed to the MDC by the MWRA.

Commission Background

Currently, the MWRA is authorized to provide water supply services to 51 cities, towns, and special purpose entities located in central and eastern Massachusetts. The Commission is the MWRA's largest single customer for both water and sewer services, and MWRA charges represent the largest single component of the Commission's operating expenses. For the Commission's 2018 fiscal year beginning January 1, 2018, the MWRA assessment is projected to be approximately \$226.1 million, or 61.4% of total expenses projected to be approximately \$368.1 million.

The Commission's current water distribution system consists of approximately 1,010 miles of pipes with diameters ranging from 4 to 48 inches; 17,526 valves; 12,681 hydrants; and 16 miles of high-pressure fire pipe.

The system serves approximately 90,000 accounts through five major service networks: Southern Low Service which serves the City proper, South Boston and parts of Roxbury; Northern Low Service which serves Allston, Charlestown and East Boston; Southern High Service which serves Brighton, Dorchester, Hyde Park, Roslindale, parts of Jamaica Plain, parts of Roxbury and parts of West Roxbury; and Southern Extra-High Service which serves portions of Jamaica Plain, West Roxbury and Hyde Park. In addition, a relatively small area in the Orient Heights section of East Boston is served by a single connection to the MWRA Northern High Service System. Approximately 90% of the water consumed in the city is delivered through the Southern Low Service and Southern High Service, with most of the remainder delivered through the Northern Low Service. These service networks are supplied with potable water purchased from the MWRA at 29 metered delivery points. This water is drawn from the Quabbin and Wachusett Reservoirs located in western and central Massachusetts. Supply is conveyed via aqueducts from these reservoirs to the Weston and Norumbega Reservoirs, where it is held for delivery to the Commission's service networks.

A number of services in conjunction with the water distribution system are provided by the BWSC. These include mandatory cross connection inspections, meter installation, meter testing on demand, flow testing to determine adequate service line size, fire flow testing, grease trap inspections, water service shut offs and let on's. The Commission also provides assistance for customers in the form of providing construction plan drawings, providing hydrant meters for access to hydrant water, and also the licensing of individuals to ensure properly qualified contractors. A contestant schedule of water sample testing in conjunction with the MWRA is also maintained to ensure safe and desirable water.

The Commission owns and operates a system for the collection and transport of wastewater and storm drainage in the City of Boston. The original backbone of the sewer system was the Boston Main Drainage System ("BMDS"). The BMDS was constructed from 1877 to 1884 under the direction of a special committee established by the City of Boston for that specific purpose. The original system consisted of five combined interceptors, the Calf Pasture pumping station and the Dorchester Bay Tunnel (neither the pumping station nor the tunnel is now in use). The BMDS interceptors were initially designed to carry a peak dry weather sanitary flow together with an allowance for stormwater.

Commission Background

In 1988, construction of the New Boston Main Interceptor and the New East Side Interceptor was completed, replacing portions of the original system. These interceptors serve the sewer needs of downtown Boston, the South End, Roxbury, Dorchester and South Boston. They increase capacity and virtually eliminate dry weather overflows. The volume of wet weather overflows has been reduced as well.

Other collection facilities provide sewer services to different parts of the City. Charlestown is served by a separated system, except for one small area. East Boston, South Boston and Roxbury are served mainly by combined systems; however, major portions of each area have been or are in the process of being separated. The South End has been partially separated under a program initiated by the City's urban renewal program, and continued by the Commission where feasible and cost effective. Allston/Brighton, Roslindale, West Roxbury, Hyde Park, Mattapan and portions of Dorchester and Jamaica Plain, all of which are located in the southern part of the City, are served by separate systems.

The Commission's Sewer System collects wastewater and stormwater in the City. The Sewer System consists of approximately 1,539 miles of sewers, including 707 miles of sanitary sewers, 669 miles of storm drains and 159 miles of combined sewers. Sanitary sewers range in size from six-inch clay pipes to 20ft by 15 ½ft reinforced concrete interceptors. The overall sewer system includes 147 regulators and 191 tide-gates. Separate sanitary sewers and storm drains serve approximately 35 square miles, or 83 percent of the City. There are 253 stormwater outfalls. Other facilities include nine pumping stations and two gatehouses. All wastewater collected by the Commission facilities is conveyed to the MWRA's Deer Island Treatment plant.

Water Consumption Total 2013-2017 Consumption by Land Use Code (cubic ft.) – Boston Water and Sewer Commission

| Codes | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| A | 263,639,848 | 277,530,230 | 282,128,865 | 286,895,622 | 289,440,668 |
| AH | 7,799,326 | 8,026,394 | 9,202,555 | 8,474,859 | 7,791,037 |
| C | 454,419,684 | 442,922,659 | 459,806,813 | 460,831,362 | 449,953,090 |
| C3 | 19,269,118 | 18,864,831 | 19,414,776 | 19,616,958 | 19,025,570 |
| CC | 13,411,093 | 13,379,960 | 16,193,476 | 16,618,397 | 17,237,544 |
| CD | 9,139,814 | 8,732,110 | 8,782,901 | 7,891,599 | 7,681,732 |
| CL | 11,574,975 | 11,613,588 | 10,942,240 | 10,816,927 | 10,294,885 |
| CM | 169,741,647 | 168,529,752 | 168,689,230 | 169,601,956 | 163,817,390 |
| E | 672,368,186 | 655,149,134 | 689,652,187 | 676,761,195 | 630,782,396 |
| EA | 18,348,435 | 19,654,607 | 18,962,373 | 19,059,448 | 20,443,641 |
| I | 88,458,495 | 77,589,949 | 80,241,259 | 82,454,334 | 73,425,800 |
| R1 | 221,105,033 | 220,520,285 | 223,759,002 | 223,353,485 | 211,072,051 |
| R2 | 222,897,272 | 221,705,397 | 222,087,380 | 221,236,653 | 213,477,068 |
| R3 | 282,749,088 | 279,787,883 | 281,297,362 | 278,799,456 | 269,718,378 |
| R4 | 72,512,893 | 72,486,748 | 73,235,991 | 71,493,853 | 70,157,107 |
| RC | 138,269,877 | 139,732,786 | 148,615,348 | 154,071,707 | 155,930,786 |
| RL | 2,107,034 | 2,250,134 | 2,400,060 | 2,575,409 | 2,757,801 |
| TOTAL | 2,667,811,818 | 2,638,476,447 | 2,715,411,818 | 2,710,553,220 | 2,613,006,944 |

Legend for Codes

| | |
|---|------------------------------------|
| A = Apartment Building-7 Units or More | EA = Clause 121A Exempt |
| AH = Agricultural/Horticultural | I = Industrial |
| C = Commercial | R1 = One Family |
| C3 = Condo 3 Units | R2 = Two Family |
| CC = Commercial Condo | R3 = Three Family |
| CD = Condominium Unit | R4 = Four to Six Units |
| CL = Commercial Land | RC = Residential Commercial |
| CM = Condominium Master | RL = Residential Land |
| E = Exempt | |

Water Consumption Percent by Category

| | ACCTS | %ACCTS | CONS | %CONS |
|---------------------|---------------|---------------|----------------------|---------------|
| RESIDENTIAL | 66,652 | 75.5% | 694,267,497 | 26.6% |
| OTHER RES. | 9,651 | 10.9% | 537,311,932 | 20.6% |
| COMMERCIAL | 7,201 | 8.2% | 648,984,641 | 24.8% |
| TAX EXEMPT | 3,831 | 4.4% | 659,017,074 | 25.2% |
| INDUSTRIAL | 912 | 1.0% | 73,425,800 | 2.8% |
| <u>TOTAL</u> | 88,247 | 100.0% | 2,613,006,944 | 100.0% |

Sources

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- City of Boston Department of Neighborhood Development
- CLR search.com
- Colliers International
- Federal Reserve Bank of Boston - Indicators
- Jumpshell.com
- Massachusetts Department of Education
- Massachusetts Office of Tourism
- Rent Jungle
- United States Bureau of Economic Analysis
- United States Bureau of Labor Statistics Report

The Commission

Overview

| Bargaining Unit | Code | Number of Grades | Number of Position Titles | Number of Budgeted Positions | Weekly Salary Ranges |
|-----------------|------|------------------|---------------------------|------------------------------|-----------------------|
| Executive | EX | 10 | 111 | 134 | \$923.08 - \$4046.01 |
| Local 6 | L | 5 | 41 | 64 | \$1038.47 - \$2307.70 |
| Local 888 | C | 4 | 20 | 59 | \$682.50 - \$1568.94 |
| Council 93 | S | 4 | 14 | 33 | \$800.00 - \$2083.20 |
| Local Lodge 100 | W | 9 | 27 | 212 | \$862.38 - \$1709.26 |

Executive Detail

| Grade | Position Title | Number of Positions | Weekly Minimum | Weekly Maximum |
|------------|--------------------------------|---------------------|----------------|----------------|
| Grade | Job Title | # of positions | Weekly Minimum | Weekly Maximum |
| X02 | | | \$923.08 | \$1,292.31 |
| X02 | Administrative Assistant | 2 | | |
| X03 | | | \$1,061.54 | \$1,486.15 |
| X03 | Asst Mgr Revenue Protection | 1 | | |
| X03 | Asst Network Administrator | 1 | | |
| X03 | Executive Assistant | 9 | | |
| X03 | Facilities Administrator | 2 | | |
| X03 | Finance Administrator | 1 | | |
| X03 | Human Resource Generalist | 2 | | |
| X03 | Mobile Device Administrator | 1 | | |
| X03 | Operations Administrator | 1 | | |
| X03 | Special Project Coord | 1 | | |
| X03 | Sr Investigator Rev Audit/Anal | 1 | | |
| X03 | Sr Investigator/Rev Protect | 1 | | |

The Commission

| | | | | |
|------------|------------------------------------|---|------------|------------|
| X04 | | | \$1,220.77 | \$1,709.08 |
| X04 | Compliance Coordinator | 1 | | |
| X04 | Contract Coord | 1 | | |
| X04 | Educational Programs Coord | 1 | | |
| X04 | Enforcement Compl Mgr | 1 | | |
| X04 | Enforcement Specialist | 1 | | |
| X04 | Env Outrch & Comm Crd | 1 | | |
| X04 | Executive Assistant | 1 | | |
| X04 | Executive Assistant Chief Engineer | 1 | | |
| X04 | Executive Assistant Dir of Ops | 2 | | |
| X04 | Executive Assistant to CFO | 1 | | |
| X04 | Labor Relations Specialist | 1 | | |
| X04 | Manager Materials & Handling | 1 | | |
| X04 | Meter System Tech | 1 | | |
| X04 | Mgr Inventory Control | 1 | | |
| X04 | Operations Mgr | 5 | | |
| X04 | Site Plan Review Engineer | 1 | | |
| X04 | Social Media Administrator | 1 | | |
| X04 | Sr Payroll Admin | 1 | | |
| X04 | Systems Engineer | 1 | | |
| X05 | | | \$1,403.88 | \$1,965.44 |
| X05 | Business System Analyst | 1 | | |
| X05 | Collections Administrator | 1 | | |
| X05 | Enforcement Mgr | 1 | | |
| X05 | Intergov Relations Manager | 1 | | |
| X05 | IT Project Manager | 1 | | |
| X05 | Manager of Employment | 1 | | |
| X05 | Manager Of Facilities/Nights | 1 | | |
| X05 | Manager Of Support Services | 1 | | |
| | | | | |

The Commission

| | | | | |
|------------|--------------------------------|---|------------|------------|
| X05 | Mgr Collections | 1 | | |
| X05 | Mgr Construction | 1 | | |
| X05 | Mgr Customer Service | 1 | | |
| X05 | Mgr Engineering Customer Srvc | 1 | | |
| X05 | Mgr Facilities/Days | 1 | | |
| X05 | Mgr Field Engineering | 1 | | |
| X05 | Mgr of GIS | 1 | | |
| X05 | Mgr Organizational Diversity | 1 | | |
| X05 | Night Manager Fleet/Storeroom | 1 | | |
| X05 | Payroll Mgr | 1 | | |
| X05 | ProjDir Emergency Preparedness | 1 | | |
| X05 | Safety Mgr | 1 | | |
| X05 | Senior Application Specialist | 1 | | |
| X06 | | | \$1,614.47 | \$2,260.25 |
| X06 | Asst General Counsel | 4 | | |
| X06 | Ast Gen Coun/Dir Health&Safety | 1 | | |
| X06 | Budget Mgr | 1 | | |
| X06 | Capital Budget Manager | 1 | | |
| X06 | Disaster Recovery Coordinator | 1 | | |
| X06 | Enterprise Applications Admin | 1 | | |
| X06 | Manager Accounts Payable | 1 | | |
| X06 | Manager of Human Resources | 1 | | |
| X06 | Mgr Billing & Adjustments | 1 | | |
| X06 | Mgr Computer Operations | 1 | | |
| X06 | Mgr Fleet | 1 | | |
| X06 | Project Dir | 3 | | |
| X06 | SSO Manager | 1 | | |
| X06 | Systems Administrator | 2 | | |
| | | | | |

The Commission

| | | | | |
|------------|--------------------------------|---|------------|------------|
| X07 | | | \$1,727.48 | \$2,418.47 |
| X07 | Data Base Administrator | 1 | | |
| X07 | DD Organizational Diversity | 1 | | |
| X07 | Dep Dir Acct Services | 1 | | |
| X07 | Dep Dir Communications | 1 | | |
| X07 | Dep Dir Of Construction | 1 | | |
| X07 | Dep Superintendent Field Ops | 1 | | |
| X07 | Deputy Dir Human Resources | 1 | | |
| X07 | Dir Automatic Meter Reading | 1 | | |
| X07 | Dir Accounting | 1 | | |
| X07 | Dir Application Development | 1 | | |
| X07 | Dir Budget | 1 | | |
| X07 | Dir CAD | 1 | | |
| X07 | Dir Financial Services | 1 | | |
| X07 | Dir GIS | 1 | | |
| X07 | Dir IT Infrastructure | 1 | | |
| X07 | Dir Procurement | 1 | | |
| X07 | Dir Revenues | 1 | | |
| X07 | Director of IT Communications | 1 | | |
| X07 | Director of IT Support | 1 | | |
| X07 | Director of Payroll | 1 | | |
| X07 | Director of Special Projects | 1 | | |
| X07 | Director of Strategic Planning | 1 | | |
| X07 | IT Project Director | 1 | | |
| X07 | Meter Services Mgr | 1 | | |
| X07 | Senior IT Project Manager | 1 | | |
| X07 | Sr Operations Mgr | 1 | | |
| X08 | | | \$1,900.23 | \$2,660.32 |
| X08 | Dep General Counsel | 2 | | |
| | | | | |

The Commission

| | | | | |
|------------|--------------------------------|---|------------|------------|
| X08 | Dir Finance | 1 | | |
| X08 | Dir Human Resources | 1 | | |
| X08 | Dir Meter Services | 1 | | |
| X08 | Superintendent Support Service | 1 | | |
| X08 | Superintendent Water & Sewer | 1 | | |
| X08 | Supt Asset Mgmt/CMOM Director | 1 | | |
| X08 | Supt Enforcement & Compliance | 1 | | |
| X09 | | | \$2,185.26 | \$3,059.37 |
| X09 | Dir Construction | 1 | | |
| X09 | Dir Organizational Diversity | 1 | | |
| X09 | Dir Planning & Sustainability | 1 | | |
| X09 | Director of Engineering | 1 | | |
| X09 | Director Of Operations | 1 | | |
| X10 | | | \$2,513.05 | \$3,518.27 |
| X10 | Chief Administrative Officer | 1 | | |
| X10 | Chief Financial Officer | 1 | | |
| X10 | Chief Information Officer | 1 | | |
| X10 | General Counsel | 1 | | |
| EXC | | | \$2,890.01 | \$4,046.01 |
| EXC | Chief Eng & Operations Officer | 1 | | |
| EXC | Executive Director/Treasurer | 1 | | |

Local 6 Detail

| Grade | Position Title | Number of Positions | Weekly Minimum | Weekly Maximum |
|------------|-----------------------------|---------------------|----------------|----------------|
| L08 | | | \$1,038.47 | \$1,584.19 |
| L08 | Admin Asst/Account Services | 1 | | |
| L08 | Asst Mgr Purchasing | 1 | | |

The Commission

| | | | | |
|------------|---------------------------------|---|------------|------------|
| L08 | Asst Mgr Facilities | 1 | | |
| L08 | CMOM Data Coordinator | 1 | | |
| L08 | Collections Investigator | 2 | | |
| L08 | Comm Project Events Officer | 1 | | |
| L08 | Community Relations Officer | 1 | | |
| L08 | Construction Administrator | 2 | | |
| L08 | Evaluation & Compliance Coord | 1 | | |
| L08 | Financial Analyst | 3 | | |
| L08 | GIS Analyst | 1 | | |
| L08 | Help Desk Administrator | 1 | | |
| L08 | Legal/Claims Investigator | 1 | | |
| L08 | Staff Accountant | 3 | | |
| L08 | Stock Control Operator | 1 | | |
| L09 | | | \$1,153.85 | \$1,680.11 |
| L09 | Asst Mgr of Construction | 1 | | |
| L09 | Asst Mgr Rev Audit & Analysis | 1 | | |
| L09 | Construction Site Engineer | 1 | | |
| L09 | Field Service Engineer | 7 | | |
| L09 | Project Engineer | 1 | | |
| L09 | Support Analyst | 1 | | |
| L10 | | | \$1,346.16 | \$1,798.61 |
| L10 | App Support Analyst/Trainer | 1 | | |
| L10 | Asst Mgr Collections | 1 | | |
| L10 | Asst Mgr Customer Service | 1 | | |
| L10 | Design Engineer I | 5 | | |
| L10 | PrCrd Stormwater Infrastructure | 1 | | |
| L10 | Project Coordinator | 1 | | |
| L10 | Project Engineer I | 3 | | |
| L10 | Project Engineer II Planning | 1 | | |

The Commission

| | | | | |
|------------|-------------------------------|---|------------|------------|
| L10 | Senior Financial Analyst | 2 | | |
| L10 | Senior GIS Coordinator | 1 | | |
| L10 | Senior GIS Programmer/Analyst | 1 | | |
| L10 | Sr Accountant | 1 | | |
| L10 | Sr Programmer/Analyst | 1 | | |
| L10 | Support Analyst II | 1 | | |
| L11 | | | \$1,538.47 | \$2,019.24 |
| L11 | Asst Data Base Administrator | 1 | | |
| L11 | Design Engineer II | 2 | | |
| L11 | Project Engineer II | 1 | | |
| L12 | | | \$1,730.77 | \$2,307.70 |
| L12 | Project Mgr | 3 | | |
| L12 | Senior Design Engineer | 2 | | |
| L12 | Senior Programmer Analyst II | 1 | | |

Local 888 Detail

| Grade | Position Title | Number of Positions | Weekly Minimum | Weekly Maximum |
|------------|--------------------------------|---------------------|----------------|----------------|
| C09 | | | \$682.50 | \$1,200.68 |
| C09 | Account Service Clerk | 5 | | |
| C09 | Account Service Representative | 5 | | |
| C09 | Facilities Rep | 6 | | |
| C09 | Financial Services Rep | 4 | | |
| C10 | | | \$739.47 | \$1,303.42 |
| C10 | CAD Tech | 2 | | |
| C10 | GIS Technician | 1 | | |
| C10 | Jr Engineering Technician | 1 | | |
| C10 | Senior Computer Operator | 2 | | |

The Commission

| | | | | |
|------------|-------------------------------|---|----------|------------|
| C10 | Sr Account Service Clerk | 1 | | |
| C10 | Sr Account Svc Representative | 6 | | |
| C10 | Sr Fin Svc Representative | 6 | | |
| C11 | | | \$781.69 | \$1,405.94 |
| C11 | Buyer | 1 | | |
| C11 | Meter Service Rep | 2 | | |
| C11 | Plans Examiner | 2 | | |
| C11 | Principal AS Representative | 4 | | |
| C11 | Principal FS Representative | 3 | | |
| C11 | Sr CAD Technician | 3 | | |
| C11 | Sr GIS Technician | 2 | | |
| C12 | | | \$859.86 | \$1,568.94 |
| C12 | Principal CAD Technician | 2 | | |
| C12 | Senior Engineer Technician | 1 | | |

Council 93 Detail

| Grade | Position Title | Number of Positions | Weekly Minimum | Weekly Maximum |
|------------|-------------------------------|---------------------|----------------|----------------|
| S05 | | | \$800.00 | \$1568.00 |
| S05 | Supervisor Water & Sewer | 2 | | |
| S06 | | | \$840.00 | \$1646.40 |
| S06 | Supervisor Collections | 1 | | |
| S06 | Supervisor Customer Service | 1 | | |
| S06 | Supervisor Meter Installation | 3 | | |
| S07 | | | \$924.00 | \$1811.20 |
| S07 | Supervisor Adjustments | 1 | | |
| S07 | Supervisor of Construction | 1 | | |
| S07 | Supervisor Water & Sewer | 14 | | |

The Commission

| | | | | |
|------------|---------------------------------|---|------------|------------|
| S07 | Supervisor Hydrant Maint Repair | 1 | | |
| S07 | Work Order Systems Supervisor | 1 | | |
| S08 | | | \$1,062.80 | \$2,083.20 |
| S08 | Field Supv Revenue Auditing | 1 | | |
| S08 | Field Supv/Collections | 1 | | |
| S08 | Financial Supervisor | 3 | | |
| S08 | Meter Services Supervisor | 2 | | |
| S08 | Supervisor Buildings & Grounds | 1 | | |

Local Lodge 100 Detail

| Grade | Position Title | Number of Positions | Weekly Minimum | Weekly Maximum |
|------------|---------------------------------|---------------------|----------------|----------------|
| W04 | | | \$894.66 | \$1,172.69 |
| W04 | Apprentice/Ops Svc Repairperson | 7 | | |
| W04 | Ops Service Repairperson I | 22 | | |
| W05 | | | \$932.46 | \$1,220.53 |
| W05 | Building Maint Tech | 1 | | |
| W05 | Sr Storekeeper | 2 | | |
| W06 | | | \$971.64 | \$1,270.18 |
| W06 | Building Maint Tech II | 2 | | |
| W06 | Maint Mechanic Mason | 1 | | |
| W06 | Meter Tech | 13 | | |
| W06 | Ops Service Repairperson II | 2 | | |
| W06 | Yard Clerk | 9 | | |
| W07 | | | \$1,012.32 | \$1,321.71 |
| W07 | Ops Svc Rep IIA | 37 | | |
| W08 | | | \$1,054.61 | \$1,380.84 |
| W08 | Field Service Tech | 8 | | |

The Commission

| | | | | |
|-------------|--------------------------------|----|------------|------------|
| W08 | Fleet Mechanic | 3 | | |
| W08 | Principal Storekeeper | 2 | | |
| W08 | Spec Heavy Motor Equip Oper I | 9 | | |
| W8F | | | \$1,103.79 | \$1,430.01 |
| W8F | WF Bldg Maint Tech | 1 | | |
| W8F | WF Fleet Mechanic | 1 | | |
| W8F | WF Oper Service Repairperson | 17 | | |
| W09 | | | \$1,154.03 | \$1,512.41 |
| W09 | Enforcement Inspector | 16 | | |
| W09 | Inspector | 26 | | |
| W09 | Regulating Inspector | 1 | | |
| W09 | Spec Heavy Motor Equip Oper II | 13 | | |
| W09 | Sr Field Service Technician | 5 | | |
| W09 | Sr Meter Technician | 3 | | |
| W10 | | | \$1,264.49 | \$1,660.09 |
| W10 | Fleet Mechanic II (Car/Truck) | 1 | | |
| W10 | Licensed Electrician | 3 | | |
| W10 | Maint Mechanic Lic Plumber | 6 | | |
| W10F | | | \$1,313.67 | \$1,709.26 |
| W10F | WF Fleet Mechanic II | 1 | | |

Glossary of Financial and Operating Terms

Accrual Budgeting: An accrual method whereby monthly deposits to all appropriate funds are made in an amount sufficient to equal the total projected level of accrued expenditures for each fund thus enabling the Commission to have sufficient funds available to meet scheduled payments of all financial obligations when due.

Attrited: To lose (personnel) by attrition.

Average Household: A residential customer with average water consumption of 180 gallons per day.

Board of Commissioners: The three-member, non-salaried governing board of the Commission, appointed by the Mayor subject to the approval of the City Council. Commissioners serve for a term of four years.

Bond: A certificate of debt issued by a government or corporation guaranteeing periodic payments of interest and return of original investment on specified future dates.

Bond Resolution: A document that contains terms and conditions relating to the issuance and sale of Bonds and sets forth the Commission's legal obligations to bondholders.

Boston Harbor Cleanup Project: An extensive plan of activities, which the MWRA developed and is implementing in response to a federal court order to comply with the provisions of the U.S. Clean Water Act.

BESS (Business and Engineering Support System): The Commission has customized computer programs, which provide the Commission with billing, collection, and service information about its customers.

BWSC: The Boston Water and Sewer Commission.

CEB (Current Expense Budget): A financial plan, which estimates the revenues and expenses, associated with the Commission's operations for a fiscal year.

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

Cleaning and Lining: A process to improve unlined but structurally sound, older cast iron mains. The mains are cleaned and lined with cement, while still in place to improve hydraulic capacity and extend useful life.

Collection System: The pipes, conduits, pumping stations, and appurtenances involved in the collection and transportation of wastewater and stormwater.

Contractual Funding Obligations: The incremental deposits into the various reserve accounts so that the Commission may meet the minimum funding requirements of its General Bond Resolution.

Glossary

Combined Sewer: A sewer designed to receive both sanitary sewage and stormwater.

CMOM (Capacity, Maintenance, Operations, and Management): A Self-assessment study in 2012 that analyzed all aspects of the Commission's sanitary sewer and storm drainage facility operations and maintenance.

CSO (Combined Sewer Overflow): The discharge from combined sewers which collect both sanitary sewage and stormwater runoff for wastewater treatment. During rainstorms, the system becomes overloaded and the excess is discharged directly into neighboring waterways from CSO outlets. In the City of Boston, there are 37 permitted combined sewer overflow outlets.

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

Debt Coverage Requirement: The Commission is required to set rates and charges at levels sufficient so that total net revenues equal at least 125% of the Bond Debt Service Requirement during such Fiscal Year with respect to all Bonds Outstanding as of the first day of such Fiscal Year.

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

Direct Expenses: Expenses directly associated with providing water and sewer services, or of a division, department or operating unit.

Division: A major organizational unit within the Commission, encompassing the activities and resources for providing a major service or function. A Division is further divided into departments, units, and programs.

Drain: A pipe or conduit, which conveys wastewater or stormwater.

Enabling Act: Chapter 436 of the Acts of 1977, the legislation, which established the Commission and defined its purpose and responsibilities as of August 5, 1977.

EPA (Environmental Protection Agency): The federal government agency responsible for promulgation and enforcement of environmental regulations and investigation and prosecution of infractions of non-compliance with regulations.

Expenditures: Actual payment for goods and services received.

Financial Statement: A set of summary documents which pertain to financial information that consist of the following: Balance Sheet, Statement of Operation, Statement of Equity, Statement of Cash Flows, Notes of Financial Statements and, in the Commission's case, Supplements, Schedules of Revenues and Expenses - Rate Basis.

Fiscal Year: A twelve-month period for which an organization plans the use of its resources. The Commission's fiscal year is January 1 through December 31.

Glossary

Fund: An account established under the Commissions General Bond Resolution into which deposits and withdrawals for specific purposes are made or held.

Full-Time Equivalent (FTE): Full-time Employee, who works 40 hours per week and is benefited, coded as 1.0 FTE.

General Revenue Bonds: Bonds, which are obligations of the issuer on which revenues received from operations, are pledged for the payment of the principal and interest thereon.

Goal: general statements of a desired state, condition, or situation to be achieved, which may be stated from a short or long-term perspective.

Hydrant: A device connected to a public water main for the purpose of providing water for firefighting or other authorized purposes.

Independent Auditor: External public accounting firm hired to audit the annual financial statements and express an opinion on those statements as to conformity with generally accepted accounting principles.

Indirect Expenses: Those costs including expenditures and accrued costs, which are not directly associated with providing services or performing activities.

Infiltration/Inflow: Infiltration is groundwater that leaks into the sewerage system through pipe joints and defects. Inflow refers to water that enters sewers from improperly connected catch basins, sump pumps, and land and basement drains and defective manholes. Inflow also enters through improperly closed or defective harbor CSO tidegates when the tide is high.

Interceptors: The large pipes or culverts that convey wastewater from the localized collection system to the treatment plant. The Commission's largest interceptors are 20 foot by 15-1/2 foot concrete box culverts.

Investment Income: Income derived by investing certain fund balances in interest-yielding securities in compliance with the provisions of the Commission's General Bond Resolution and Investment Policy.

Inventory: A product either purchased as a replacement part or as new equipment, costing more than \$100.00 and having a useful life greater than three years.

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

MBE/WBE: Minority Business Enterprise/Women Business Enterprise.

Meter: An instrument for measuring the flow of water.

Meter Pit: An underground vault enclosing a meter.

MGD: Million gallons per day.

Glossary

MH: Manholes.

Mission: A description of the fundamental purpose and major activities of a division, department, or other operational unit.

MWRA (Massachusetts Water Resources Authority): An agency created by the enactment of Chapter 372 of the Acts of 1984. The MWRA is responsible for providing potable water and wastewater collection, transport, delivery, and treatment services to 60 user communities in Eastern Massachusetts.

MWRA Assessment Fund: A fund which receives monthly deposits equal to one twelfth of the annual MWRA Assessment of the Commission which is used to pay the Commission's wholesale water and sewer liability.

NPDES (National Pollutant Discharge Elimination System) Permit: A permit issued by EPA in conjunction with DEP to govern discharges into waterways.

Objective: (1) A statement defining the result-oriented activities necessary to achieve a stated goal, quantify work output or measure the quality of service; (2) a statement describing continuing targets, long and short term to achieve improvements in efficiency or productivity or establish long range plans.

OPEB: Other Post-Employment Benefits Liability (GASB 43 and GASB 45)

Operating Account: An account in the Operating and Maintenance Fund which is used as a depository for funds to meet the ensuing months operating liabilities.

Operating Reserve Fund: A fund established by the Commission's General Bond Resolution to provide a reserve for operating contingencies. The Operating Reserve Fund is required by the Commission's bond resolution to be funded at not less than one-sixth of its annual operating expenses including the assessments from the MWRA.

Potable Water: Water fit for human consumption in conformance with the regulations of the Environmental Protection Agency and the Massachusetts Department of Environmental Protection.

Program: (1) A sub-unit of a department which is organized as a separate administrative or functional unit; (2) an organized group of activities and the resources to carry them out, aimed at achieving related goals.

Public Water Main: The piping and associated valves, hydrants, and appurtenances installed in a public way, Commission-owned easement or private way open to public travel, for the purpose of supplying water to one or more customers or for public fire protection.

Rate Revenue: Income received during a specific period from user charges for providing water and sewer services.

Glossary

Rate Revenue Requirement: The amount of revenue necessary to equal total expenses, plus revenue adjustments, less other revenues.

Reserves: Funds not appropriated for payment of expenditures or that are designated for specific use.

Residential Meter: A meter two inches in size or smaller used to measure the flow of water to predominantly residential properties.

Sanitary Sewage: Liquid and water-carried human and domestic wastes from buildings, exclusive of ground, storm and surface water.

Sanitary Sewers: In a separated system, pipes that carry only domestic or commercial sanitary sewage as opposed to rainwater runoff.

Sewer: A pipe or conduit that carries wastewater, either sanitary sewage or storm or surface water runoff, or both.

Sewer System: The combined Wastewater System and Storm Drainage System.

SHEMO: Special Heavy Equipment Machine Operator.

Stabilization Fund: A fund established by the Commission's Bond Resolution to mitigate the impact of extraordinary costs. The Resolution requires minimum funding of the Stabilization Fund in an amount equal to 4% of the aggregate principal amount of the Commission's outstanding variable rate bonds.

State Revolving Fund (SRF): See Water Pollution Abatement Trust.

Storm Drain: A pipe or conduit designed to carry stormwater or surface water runoff.

Storm Drainage System: Storm drains, tidegates, flow regulators, catch basins, stormwater pumping stations and appurtenant facilities.

Storm Sewers: Storm drains or storm drainage system.

Stormwater: Any water resulting from rainfall or other precipitation that runs off surfaces during or after a storm.

Strategic Goal: The long-range plans and direction of each division, department or program of the Commission.

Tactical Goal: A one-time improvement and/or enhancement to a technical or service oriented process.

Unaccounted for Water: Difference between amount of water purchased from the MWRA and the amount of water sold. The difference is caused by system losses, leakage, unbilled public usage, and water used during construction projects.

Glossary

Variance: The dollar and/or percentage difference between two sets of figures.

Wastewater: The spent water of a community, which may be a combination of the liquid and water-carried domestic or industrial wastes from buildings, together with any groundwater and stormwater that may be present.

Wastewater System: The totality of the devices, equipment or works used in transportation, pumping, storage, treatment, recycling, or reclamation of wastewater or in the disposal of the effluent.

Water Demand: A projection of aggregate water usage for the City of Boston, which is expressed in million gallons per day.

Water Pollution Abatement Trust: A funding mechanism created to administer the Water Pollution Abatement Revolving Fund (State Revolving Fund) established by the Commonwealth of Massachusetts to provide funding for water pollution abatement projects in Massachusetts, incorporating federal and state loans to local governmental units.

Water Service Pipe: The connection, piping and associated valves and appurtenances that extend from a public water main to a building or property for the purpose of supplying water.

Weir: A dam built to raise, regulate, or divert water.

Index

A

| | |
|---|-----|
| Adjustments to Rate Revenue | 44 |
| Administration Division..... | 183 |
| Budget Summary | 184 |
| Division Organization | 184 |
| Mission..... | 184 |
| Personnel Changes | 185 |
| Personnel Summary | 185 |
| Account Services..... | 191 |
| Communications & Community Services | 196 |
| Facilities & Support Services... | 199 |
| Information Technology | 202 |
| Meter Services | 188 |
| Office of Chief Administrative Officer ... | 186 |

B

| | |
|---|----|
| Budget Allocations..... | 20 |
| Budget Comparison by Line Items | 55 |
| Budget Message | 1 |
| Budget Overview | 35 |
| 2017 Financial Position..... | 35 |
| 2017 Revenues and Expense | 35 |
| 2018 Budget Summary..... | 39 |
| Budget Process Schedule | 12 |
| Budget Revenues Sources..... | 41 |
| Budget Summary | 39 |
| Budget Variance Monitoring And Analysis..... | 20 |
| Budgeting & Accounting Basis..... | 38 |

C

| | |
|--------------------------------------|-----|
| Capital Improvement Program (CIP)... | 231 |
|--------------------------------------|-----|

| | |
|--|-----|
| CIP Cash Flow..... | 235 |
| CIP Funding Sources..... | 235 |
| Administrative Equipment | 277 |
| Funding Sources and Financial Impact | 244 |
| Project Highlights | 236 |
| Projects Associated with the Consent Decree & Water Quality Improvements | 237 |
| Information Technology Systems .. | 276 |
| Management Objectives and Accomplishments | 231 |
| Metering | 275 |

| | |
|--------------------------------|----|
| Capital Budget Amendments..... | 24 |
|--------------------------------|----|

| | |
|------------------------------------|----|
| Capital Budget Reallocations | 24 |
|------------------------------------|----|

Capital Improvement Program

| | |
|---|----|
| Budget Development | 9 |
| Capital Program Monitoring and Reporting | 24 |
| Capital Project Funding | 23 |
| Development | 22 |

| | |
|---------------------------------------|----|
| Capital Improvement Program Process.. | 22 |
|---------------------------------------|----|

| | |
|---------------------------------------|----|
| Additional Bonds & Refunding Bonds .. | 27 |
| Debt Plan | 25 |
| Debt Serv Coverage Calculation | 26 |
| Debt Serv Coverage Requirements .. | 26 |
| Five-Year Debt Serv Requirements . | 27 |

| | |
|--------------------------------|-----|
| Commission Budget Summary..... | 101 |
|--------------------------------|-----|

| | |
|--------------------------------|-----|
| Commission Goals for 2018..... | 103 |
|--------------------------------|-----|

| | |
|-----------------------------------|----|
| Commission Results for 2017 | 99 |
|-----------------------------------|----|

| | |
|-------------------------------|----|
| Commission Organization | 95 |
|-------------------------------|----|

| | |
|---------------------------------------|----|
| Commission-Wide Organization Chart .. | 96 |
|---------------------------------------|----|

| | |
|-----------------------------------|-----|
| Commission Personnel Summary..... | 102 |
|-----------------------------------|-----|

| | |
|-------------------------------------|----|
| Current Expense Budget Process..... | 19 |
|-------------------------------------|----|

Index

| | | | |
|-------------------------------------|-----|--|-----|
| Customer Base | 97 | Travel/Training/Seminars..... | 69 |
| | | Utilities | 62 |
| | | Wages and Salaries..... | 56 |
| D | | | |
| Debt Plan..... | 25 | Direct Expense Budget Comparison | 52 |
| Demographics | 291 | Direct Expense and CEB Development . | 10 |
| City of Boston Overview | 291 | E | |
| Boston Consumer Price Index | 299 | Engineering Division..... | 167 |
| Water Consumption Total..... | 307 | Budget Summary | 168 |
| Water Distribution and Sewer | | Division Organization | 168 |
| Systems | 304 | Mission | 168 |
| Commercial Market | 300 | Personnel Changes | 169 |
| Commission Background..... | 304 | Personnel Summary | 169 |
| Consumer Spending | 299 | Construction | 180 |
| Education | 298 | Design..... | 175 |
| Employment..... | 294 | Office of Chief Engineer | 170 |
| Housing Market | 301 | Planning..... | 172 |
| Industry | 297 | | |
| Largest Private Employers in Boston | | Executive Division | 104 |
| | 297 | Budget Summary | 105 |
| Per Capita Personal Income | | Division Organization | 105 |
| Comparison | 299 | Mission | 105 |
| Population | 292 | Personnel Changes | 106 |
| Sources | 308 | Personnel Summary | 106 |
| Tourism | 302 | General Counsel | 112 |
| Unemployment..... | 296 | Human Resources..... | 117 |
| U.S. Consumer Price Index..... | 299 | Office of Executive Director | 107 |
| | | Organization Diversity | 109 |
| Direct Expense Budget | 53 | Safety and Training | 120 |
| 2018 Direct Expense Budget by | | | |
| Division..... | 54 | F | |
| 2018 vs. 2017 Budget Comparison | | Finance Division..... | 206 |
| By Line Items..... | 55 | Budget Summary | 207 |
| Capital Outlay | 68 | Division Organization | 207 |
| Damage Claims | 70 | Mission | 207 |
| Insurance | 66 | Personnel Changes | 208 |
| Inventory | 67 | Personnel Summary | 208 |
| Labor Related Costs/Benefits | 59 | Accounting | 223 |
| Other Services | 65 | Budgets..... | 212 |
| Overtime | 58 | Financial Services..... | 215 |
| Professional Services | 63 | Office of Chief Financial | |
| Repair and Maintenance | 61 | Officer | 209 |
| Space and Equipment Rentals..... | 64 | | |
| Supplies and Materials | 60 | | |

Boston Water and Sewer Commission – 2018 Budget 327

Index

| | | | |
|--------------------------------------|-----|---------------------------------------|-----|
| Fire Pipe Fees..... | 49 | Personnel Summary..... | 309 |
| Investment Income..... | 48 | Overview | 309 |
| Late Charge Fees..... | 47 | Council 93 | 316 |
| Other Income | 50 | Executive | 309 |
| MWRA..... | 242 | Local 6..... | 314 |
| MWRA Assessment Fund..... | 90 | Local 100..... | 317 |
| MWRA Five Year Rate Forecast | 6 | Local 888..... | 315 |
| Q | | Prior Year Net Operating Surplus..... | 46 |
| Operations Division | 123 | Program Based Budgeting..... | 9 |
| Budget Summary | 124 | Program Goals and Budgets | 95 |
| Division Organization..... | 124 | R | |
| Mission..... | 124 | Rate Increase | 288 |
| Personnel Changes | 125 | Rate Revenue..... | 43 |
| Personnel Summary | 125 | Rate Setting Process | 11 |
| Asset Management & CMOM.. | 156 | Renewal and Replacement Fund | 91 |
| CCTV/Cleaning | 164 | Requirements and Future Impacts | 37 |
| Customer Serv & Compliance .. | 147 | Revenue and Expense..... | 35 |
| Day Operations | 129 | Revenue Fund..... | 84 |
| Enforcement..... | 150 | Revenue Sources | 41 |
| Fleet Services | 139 | S | |
| Leak Detection/Dye Testing | 131 | Senior Debt Service Fund..... | 86 |
| Material Handling Facility | 144 | Senior Debt Service Reserve Fund..... | 87 |
| Night Operations | 130 | Sewer Renewal & Replacement | 261 |
| Office of Operation Services.... | 126 | Sewer Separation | 268 |
| Special Structures..... | 162 | Sewer System | 256 |
| SSO ERT..... | 159 | Sewer System Capital Program | 260 |
| Storeroom..... | 142 | | |
| Support Services | 137 | | |
| Work Order/Customer Service | 154 | | |
| Water & Sewer Services | 128 | | |
| Operating and Maintenance Fund | 85 | | |
| Operating Reserve Fund | 88 | | |
| P | | | |
| Plans, Policies, and Procedures..... | 9 | | |
| 2018 Budget Process Schedule | 12 | | |
| Policies..... | 13 | | |

Index

| | |
|--|-----|
| Sewer System Expenditures..... | 240 |
| Sewer System Special Projects | 271 |
| Stabilization Fund | 93 |
| Stormwater/Green Infrastructure/Low Impact Development Projects | 280 |
| Stormwater Project Expenditures..... | 242 |
| Support Projects | 274 |
| Support Projects Expenditures | 241 |

T

| | |
|----------------------|----|
| Total Expenses | 51 |
|----------------------|----|

W

| | |
|--|-----|
| Water Distribution System..... | 245 |
| Water Distribution System Capital Program | 246 |
| Water Distribution System Expenditures | 240 |

| | |
|---|-----|
| Water Distribution System Special Projects | 253 |
| Water Main Replacement Program | 247 |
| Water Main Replacement Program Summary | 248 |
| Water Replacement | 249 |
| Water System..... | 249 |

Y

| | |
|-----------------------------------|----|
| Year End Financial Position | 35 |
|-----------------------------------|----|

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Boston Water and Sewer Commission

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