

Boston Water and Sewer Commission



2019 - 2018 *Comprehensive Annual Financial Report*

For the Years Ended December 31, 2019 and 2018

Boston, Massachusetts

BOSTON WATER AND SEWER COMMISSION

Boston, Massachusetts

Comprehensive Annual Financial Report
For the Years Ended December 31, 2019 and 2018



BOARD OF COMMISSIONERS

Michael J. Woodall, Chair
Cathleen Douglas Stone, Commissioner

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Executive Director

Prepared by the Finance Division

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Introductory Section

2019 - 2018

**Boston Water and
Sewer Commission**

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August 31, 2019

Board of Commissioners
Boston Water and Sewer Commission

It is our pleasure to submit to you this Comprehensive Annual Financial Report of the Boston Water and Sewer Commission for the years ending December 31, 2019 and 2018. Responsibility for the accuracy of the data and the completeness and fairness of the presentation, including all disclosures, rests with the Commission. To the best of our knowledge and belief, this report is accurate in all material respects and is reported in a manner designed to present fairly the financial position and results of operations of the Commission. All disclosures necessary to enable the reader to gain an understanding of the Commission's financial activities have been included.

The Commission was created by an act of the Massachusetts Legislature that requires an annual audit by independent certified public accountants. The Commission's audit committee has selected the independent audit firm O'Connor and Drew P.C. to perform the audit of the Commission's books for fiscal years ended December 31, 2019 and 2018.

The Management's Discussion and Analysis ("MD&A") follows the independent auditor's report and provides a narrative introduction, overview and analysis to accompany the basic financial statements. This letter of transmittal is intended to complement the MD&A and should be read in conjunction with it.

The Commission is required to assess whether an annual single audit in conformity with the provisions of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance) needs to be performed. In accordance with the Uniform Guidance, a Single Audit was not required because the Commission's federal expenditures were below the \$750,000 threshold.

About the Commission

The Boston Water and Sewer Commission (“the Commission” or “BWSC”) is a public instrumentality, a body politic and corporate and a political subdivision of the Commonwealth, separate and apart from the City. It was established 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”), on July 18, 1977. In accordance with the Enabling Act, the Commission assumed ownership of and responsibility for the wastewater collection and storm water drainage system (collectively known as the sewer system) and the water distribution system. The Department of Public Works of the City previously provided these services.

Upon its creation, the Commission was granted the authority to independently set its rates and charges. These rates and charges must be set at a level and amount sufficient to meet the Commission's financial obligations including, but not limited to, operating expenses, debt service on all outstanding bonds, any reserve requirements specified in bond resolutions and assessments for bulk water supply, water distribution, wastewater treatment and sewerage collection services obtained by the Commission. These rates must comply with all applicable laws and statutes and must be set in a manner to ensure eligibility for any federal and state funding.

The Enabling Act also authorizes the Commission to operate, maintain and construct all necessary improvements to the systems and finance its operations and improvements through revenue collection and the sale of bonds and notes payable solely from the Commission's revenues. The Act further dictates 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.

Management Objectives

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 the systems. The Commission is committed to the following primary goals:

To maintain and improve the water distribution and wastewater collection systems. The Commission is committed to various improvements to the systems, including following an aggressive renewal and replacement program, reducing unaccounted-for water, encouraging conservation and improving the environment. The Commission is also committed to meeting or exceeding the requirements of all federal and state water and wastewater laws, regulations and technical standards.

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 and fairly reflects its costs, properly 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 management team and the Commission is committed to maintaining a strong record in that area.

To maintain a strong financial structure. The Commission has consistently employed conservative financial projections and budgeting assumptions, maintained adequate reserves and achieved a reasonable balance between debt funding and rate funding of capital expenses.



To sustain the effectiveness of investments and to comply with regulations. The Commission is committed to complying with all its regulatory obligations under federal and state laws, including the Safe Drinking Water Act (“SDWA”) and the Clean Water Act (“CWA”) with its National Pollutant Discharge Elimination System (“NPDES”) permitting obligations for both stormwater systems and combined sewer systems. 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 Stormwater Category was created in 2017 to focus on stormwater management. The primary purpose of the Stormwater Category in the 2020-2022 Capital Improvement Program is to engage 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.

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 the approval of the City Council. The primary responsibility of the Board is to ensure the sound economical and efficient operation and maintenance of the systems and 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 for ensuring the participation of women and minority-owned businesses in obtaining goods and 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 Operations 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, and 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 also provides its employees with proactive personnel services. This Division is also 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.

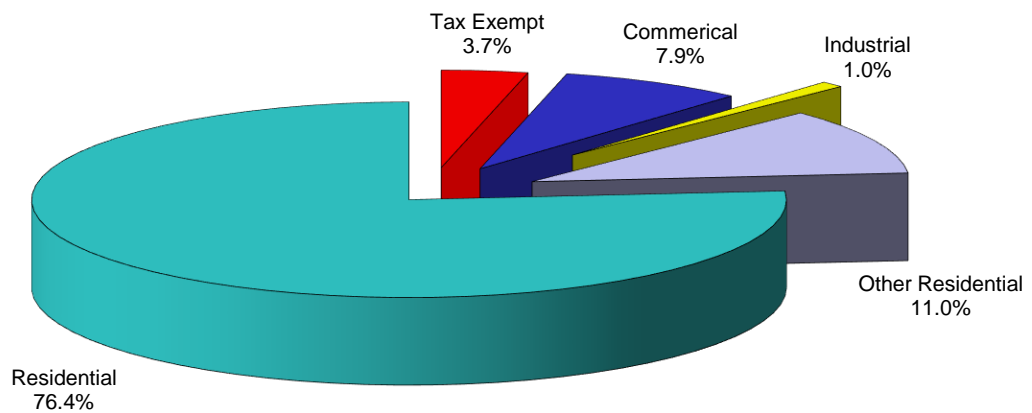
The *Finance Division* provides effective management of the Commission’s revenues and all its resources. The Finance Division accomplishes this goal through its financial budgeting, rate setting, accounting and cash management, billing and adjustments. This Division is also responsible for financing debt, managing investment, providing procurement, investigating, documenting and resolving meter problems and erratic consumption.



Customer Base

2019 Distribution of Customers by Account Type

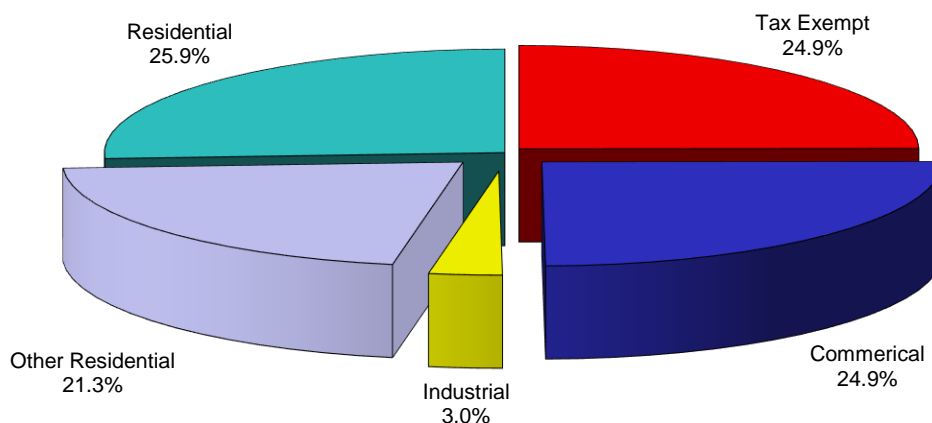
ACCOUNT TYPE BY LAND CODE	NUMBER OF ACCOUNTS	% OF TOTAL ACCOUNTS
Residential	67,172	76.4%
Other Residential	9,649	11.0%
Commercial	6,955	7.9%
Tax Exempt	3,257	3.7%
Industrial	874	1.0%
Total by Consumption	87,907	100.0%



The Commission provides water and sewer services to residential, commercial, industrial, public, private and non-profit institutional properties throughout the city. The above table and graph show the distribution of the Commission's 87,907 accounts in 2019 as followed: 76.4% were one-to-three-family dwellings; other residential dwellings accounted for 11.0%. Commercial customers represented 7.9%; tax-exempt customers accounted for an additional 3.7%; the remaining 1.0% of the customer base was made of the industrial customers. It should be noted that the Boston Housing Authority, which is tax exempt and also the Commission's largest customer, falls into the classification "other residential."

2019 Distribution of Customers by Consumption

ACCOUNT TYPE BY CONSUMPTION	SALES IN CUBIC FEET (000)	% OF TOTAL CONSUMPTION
Residential	660,727	25.9%
Other Residential	542,326	21.3%
Commercial	635,596	24.9%
Tax Exempt	635,134	24.9%
Industrial	75,202	3.0%
Total by Consumption	2,548,985	100.0%



While the graph on the previous page highlights the distribution of the Commission's customer base by account type, the graph above illustrates the distribution of customers by consumption. Although one-to-three-family dwellings have accounted for 76.4% of the total accounts, the actual consumption was much lower, using only 25.9%. Other residential customers accounted for an additional 21.3%. The non-residential segment of the customer base (commercial, industrial and tax-exempt) represented only 12.6% of customer accounts but 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 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 creating 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. As of December 31, 2019, the Commission has received the following ratings from credit agencies:

- "AAA" – S&P Global Ratings
- "Aa1" – Moody's Investor Services

Economic Outlook

The City of Boston is the regional center for financial, governmental, higher educational and medical services for the entire geographical area of New England. The city's population, as estimated by the United States Census Bureau, increased from 679,413 in 2018 to 692,600 in 2019, an increase of 1.9%. Boston is also a well-educated multicultural city with 48.5% of the population at the age of 25 and over having at least a bachelor's degree and 55.5% of the population made up of minority or ethnic groups.

Since the Great Recession in 2008, Boston had strived for a stable recovery with various economic improvements. The city's unemployment rate dropped from 2.4% in December 2018 to 2.0% in December 2019. Boston's December 2019 unemployment rate was relatively healthier than the national unemployment rate of 3.5% in the same period. Both the state of Massachusetts and New England, in December 2019, also had higher unemployment rates than the City of Boston, at 2.8% and 3.0%, respectively.

The world economy and the national economy have been undergoing some fundamental shifts in the last three decades. For example, the industrial and manufacturing sectors in the United States have drastically declined due to the rise in worker productivity assisted by Information Technology and the growing levels of automation and off-shoring jobs to countries with low-wage workers. Boston, on the other hand, with its unique concentration of institutions of higher education, hospitals, research firms and financial services, has persisted through many recent economic changes. With 30+ colleges and universities and 20+ hospitals, Boston had more than four times the national average concentration of private hospital and higher education employment. According to Boston Planning and Development Agency ("BPDA"), Boston labor force increased by more than 18,860 from 2017 to 2018. The most recent data in 2018 show that the labor force participation rate for men was 70.7% while the rate for women was 67.4%. From 2016 to 2017, job growth was positive in all industries except educational services and government. In fact, the largest industry in Boston is health care and social assistance with over 148,000 jobs, sharing 18.3% of the total employment. Professional, scientific, and technical services such as computer systems design, scientific research and development, management consulting, architecture and law make up the second largest share of Boston's employment. These sectors continue to play an important role in helping the state and local economies during times of economic instability and will have major contributions to Boston's growth in the future.

The City of Boston will face similar national short-term challenges posed by immigration policies and international trade deals. Long-term challenges include sustaining growth as the national economy reaches full employment and the Baby Boom generation enters retirement. The 2019 Boston Economy Report by the BPDA reiterates the Congressional Budget Office's projection of deceleration in national economic growth within the next two years, especially with growth of 1.6% in 2020. Boston, however, with its low unemployment rate and stable job growth, will have a relatively healthier economic outlook compared to those of Massachusetts and New England. The BPDA projects that Boston will add between 107,000 and 150,000 jobs by 2026, an estimate of between 1.3% and 1.7% annual job growth.

The optimistic forecast above, however, is challenged by the high demand for housing: the city will need to create more affordable housing to accommodate the growing labor force. Research by the same report from the BPDA show that wages grew by 1.5% from 2010 to 2017. On the other side, median gross rents rose by 3.2%, the price of a single family grew by 4.9% and condo prices increased by 4.4% in the same period. To solve this problem, Mayor Martin J. Walsh changed the target for Boston's housing goal from 53,000 units by 2030 to 69,000 units. Furthermore, Boston approved 11.9 million square feet of development in 2018 to anticipate the creation of 4,219 potential new housing units. 2018 also marked the completion of 3,733 housing units, and currently there are multiple ongoing projects throughout the city to create more affordable housing. Boston, in the long term, will continue to find more effective methods to solve the housing challenge and maintain stable economic growth.

Throughout the year 2019, the Commission continued to move forward by delivering effective service to all its customers. Because of strong management initiatives, a solid financial foundation and the use of cutting-edge technology, the Commission will continue to meet the needs of Boston consumers with reliable wastewater removal and efficient water supply well into the future.

Sources: *United States Quick Facts*, US Census Bureau
Labor Force Statistics, Bureau of Labor Statistics
Boston Economy Report 2019, Boston Planning and Development Agency

Major Initiatives and Achievements

Certificate of Achievement for Excellence in Financial Reporting Award

The Commission's 2018 Comprehensive Annual Financial Report ("CAFR") received the Government Finance Officers Association's ("GFOA") 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. This accomplishment marks the twenty-seventh consecutive year in which the Commission has received this recognition.

Distinguished Budget Presentation Award

For more than 26 consecutive years, the Commission has received the GFOA's Distinguished Budget Presentation Award. This is the highest form of recognition in governmental budgeting. This award recognized that the Current Expense Budget ("CEB") met the GFOA program criteria as a policy document, an operations guide, a financial plan and a communications device.

MassDEP's Public Water System Awards

In 2019, the Commission received the Regional Recognition Award from the Massachusetts Department of Environmental Protection ("MassDEP") for outstanding performance and achievements. The Commission was recognized as a model public water agency that puts forth exemplary efforts in every area of water treatment and distribution including the Lead Service Line Replacement Program.

Commonwealth of Massachusetts Governor's Citation

The Commission, in 2019, 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 in protecting the environment. This award gives formal recognition to organizations with meaningful contributions that distinguish them from their peers. The award also emphasizes consistent and positive achievements by both individuals and teams of employees. It further recognizes those who demonstrate innovation and dedication to their work, as well as concern for the public trust and a commitment to excellence.

Implementation and Integration of UMAX 365

UMAX 365 combines multiple disconnected systems into one comprehensive customer information system, allowing for modernized and streamlined processes and workflows across multiple divisions and departments. The successful implementation of UMAX 365 will ensure accurate data entry, improved billing information tracking and higher productivity for end users. The system also represents one of the various investments made by the Commission in its effort to deliver outstanding customer service to the residents of Boston.

Environmental Protection Agency

In August 2012, the Commission entered in a Consent Decree with the EPA and Conservation Law Foundation. 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. 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 presents progressive information generated by the Commission's ongoing monitoring programs and by various engineering data files, together with information concerning the development needs of the City. This information is then used to compile a list of pipes, conduits, transmission mains and other components to be either renewed, replaced, relocated or added to the systems each year.

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 BPS comprehensive Educational and Facility Master Planning process known as BuildBPS to construct GI/LID pilot projects at five schools throughout the city, all of which are in areas of high phosphorus loading. Washington Irving Middle School project, which was completed in 2017, is the largest of the pilot schools and has the most GI/LID features. This project includes an extensive bioretention feature, side-by-side concrete and vegetated swales and a new turf field ringed with trench drains, stormwater tree pits and a track.

Debt Plan

The Commission issues General Revenue Bonds to finance portions of its Capital Improvement Program (“CIP”). The Commission’s 2020-2022 CIP, which totals \$221.0 million, anticipates that projects totaling \$117.3 million, or 53.1%, will be funded from bond proceeds. The 2020 budget for debt service is \$52.5 million, or approximately 13.2% of the overall expenses. The Commission currently has eleven series of General Revenue Bonds outstanding at the end of 2019:

\$ 12.7 million	1994 Series A
0.7 million	2009 Series A
7.5 million	2009 Series B
5.4 million	2010 Series A
96.5 million	2012 Series A
99.7 million	2014 Series A
72.8 million	2015 Series A
60.2 million	2016 Series A
83.5 million	2016 Series B
78.4 million	2018 Series A

Capital Improvement Program

The overall objectives of the Commission’s 2020-2022 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 for approved discharge. In addition, the 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 the current CIP are intended to accomplish these objectives in the most efficient and cost-effective manner.

A new Stormwater Category was created in 2017 that focuses on stormwater management. The primary purpose of the Stormwater Category in the 2020-2022 CIP 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.

Recently, many major enhancements to the Commission’s water and sewer systems have been undertaken. These include the following:

- City-wide Illegal Connections Investigation Program Phase IV and Phase V
- Cleaning and Inspections of Sewers and Storm Drains
- Design of Constructed Wetlands in Tributary Area
- Implementation of Stormwater/Green Infrastructure Program
- Improvements to Information Technology
- Projects Affiliated with Consent Decree
- Sampling and Metering for Storm Drain Model Recalibration
- Sewer and Drain Replacement Program
- Sewer Separation and System Improvements in South Boston
- Sewer Separation in East Boston
- Sewer Separation in Roxbury
- Upgrades to Union Park Pumping Station and Satellite Stations
- Water Main Replacement Program

The following tables show the funding sources and cash flows for the 2020-2022 periods:

**2020- 2022 Capital Improvement Program
Funding Sources**

<i>Funding Source</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>2020-2022</i>
<i>BWSC Bonds</i>	\$ 57,485,000	\$ 36,815,000	\$ 23,023,000	\$ 117,323,000
<i>Rate Revenue</i>	17,155,000	18,572,000	19,970,000	55,697,000
<i>MWRA Water Assistance</i>	8,725,000	2,178,000	5,701,000	16,604,000
<i>MWRA I/I Assistance</i>	10,419,000	9,402,000	11,538,000	31,359,000
Total	\$ 93,784,000	\$ 66,967,000	\$ 60,232,000	\$ 220,983,000

**2020-2022 Capital Improvement Program
Cash Flows**

<i>Program Source</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>2020-2022</i>
<i>Water</i>	\$ 39,317,000	\$ 23,393,000	\$ 21,747,000	\$ 84,457,000
<i>Sewer</i>	42,672,000	31,809,000	34,150,000	108,631,000
<i>Support</i>	6,695,000	8,665,000	2,610,000	17,970,000
<i>Stormwater</i>	5,100,000	3,100,000	1,725,000	9,925,000
Total	\$ 93,784,000	\$ 66,967,000	\$ 60,232,000	\$ 220,983,000

Note: Although expenditures decrease from 2021 to 2022, it is anticipated that funding for 2022 will be equal to or greater than funding presented in 2021. The decrease in 2022 is primarily due to the CIP being a one-year cash flow, over a three-year period.



As shown in the first table, 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 \$117.3 million, or 53.1% of the total funding requirement. In 2020, bonds will make up \$57.5 million, or 61.3% of the funding required for that year.

Based on the second table, expenditures are divided into four categories: Water Distribution System projects, Sewer System projects, Support projects and Stormwater projects. Water Distribution System projects account for \$84.5 million, or 38.3% of the 2020-2022 CIP. Sewer System projects comprise \$108.6 million, or 49.1%. Support projects total \$18.0 million, or 8.1%. Stormwater projects account for \$9.9 million, or 4.5% of the expenditures.

Total capital expenditures of \$93.8 million are outlined for 2020. Water Distribution projects comprise \$39.3 million, or 41.9%. Sewer System projects account for \$42.7 million, or 45.5%. Support projects total \$6.7 million, or 7.1%. Stormwater projects account for \$5.1 million, or 5.4% of the 2020 expenditures.

As in the past, the 2020-2022 CIP programs will fund renewal and replacement (“R&R”) projects 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 2020-2022 CIP outlines R&R expenditures of \$55.7 million, or 25.2% of total expenditures over the three years of the program. In 2020, approximately \$17.2 million, or 18.3%, will be expended out of current rate revenues for CIP projects.

The 2020-2022 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. Over the last ten years, the Commission has completed a total of \$363.5 million in water distribution improvements. These improvements have resulted in the replacement of 106.2 miles of water mains and cement lining of 8.0 miles of water mains. The projects scheduled for initiation in 2020 will result in the replacement of approximately 7.0 miles of water mains. The primary objectives of the 2020-2022 Water Distribution Systems CIP are:

- To ensure a continued supply of high quality, portable 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 to advance the efficient operation of the water system
- To coordinate the scheduling of system improvements with related projects of other public agencies

The 2020-2022 CIP has five major programs for the Sewer System: the sewer renewal and replacement program, the increased capacity program, the sewer separation, the Infiltration/Inflow program and sewer special program. Projects in the Sewer System CIP include the repair or replacement of approximately 7 miles of deteriorated or collapsed sanitary sewers and storm drains along with the television inspection of approximately 90 miles of sewer pipe. Also included are drainage improvements and the replacement of faulty tide-gates. The primary objectives of the 2020-2022 Sewer CIP are:

- Implement and manage contracts affiliated with the Consent Decree
- Implement Green Infrastructure Projects
- Comply with the requirements of the Commission’s NPDES and Municipal permits
- Minimize infiltration/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 related projects of other public agencies

Each year the Commission participates in the MWRA Infiltration/Inflow Program for Infiltration/Inflow and Separation projects. Since 1993, the Commission has received \$94.1 million in MWRA funding for various Infiltration/Inflow and Separation projects. The Commission plans to continue to take advantage of MWRA funding over the 2020-2022 period. \$31.4 million in funding is anticipated to be used for projects that are ongoing along with new projects for the three years 2020-2022.

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 called 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 funding available from the program is \$34.3 million per year with Boston receiving a share of approximately \$5.3 million. The loans will be repaid to the MWRA over a ten-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. Projects costs incurred on or after January 1, 2010 have been considered for eligibility in application under the LWSAP. From 2010 to 2019, the Commission has received \$45.2 million in LWSAP funding. It is anticipated that for the 2020-2022 CIP, \$16.6 million will be funded using the LWSAP Program.

Sources: *2020 Current Expense Budget*, Boston Water and Sewer Commission.
2020–2022 Capital Improvement Program, Boston Water and Sewer Commission.

Financial Information

Administrative Controls

Internal controls are procedures designed to protect assets from loss, theft or misuse, to check the accuracy of accounting data, to promote operational efficiency, to facilitate the preparation of financial statements, to satisfy other reporting requirements and to encourage compliance with managerial policies.

The Commission is responsible for establishing a system of internal controls that provide reasonable assurance that these objectives are met. The concept of reasonable assurance stipulates that (1) the cost of a control should not exceed the benefits likely to be derived and (2) the valuation of cost and benefits requires estimates and judgments by management. Federal and State financial assistance programs require recipients to comply with several laws and regulations. Administrative controls are procedures designed to ensure compliance with these programs. The Commission has established a system of administrative controls to ensure compliance with the requirements of the programs under which it receives financial assistance.

As with other internal controls, this system is subject to periodic review and evaluation by management or by the Commission's independent auditors. Additional enhancements to the Commission's accounting, administrative, and operational controls have taken place and are described below.

Budgeting Systems and Controls

The Commission establishes its annual CEB on a rate basis that is consistent with generally accepted rate-setting practices of the utility industry. The financial statements contained in the financial section of this report, however, are presented on a basis that is consistent with GAAP for regulated utilities.

The Commission identifies operating, fixed and capital costs and prepares an annual CEB and three-year CIP. The Commission's Enabling Act requires that the Commission recover its 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 Safe Drinking Water Act ("SDWA") assessment and Renewal & Replacement projects funded from current revenues, insurance, debt service and additional reserves.

The Commission has developed this integrated financial plan to encompass all its current expenses and capital improvement needs. It also helps provide for the efficient, financially self-sustaining operation of the water and sewer systems and allocates costs to all our customers in a fair and equitable manner.

Long Term Financial Planning

The Enabling Act designated the Commission with the responsibility for the operation and maintenance of the water distribution and the wastewater collection and storm-water drainage systems which serve the City of Boston. Complying with the requirements of the Enabling Act and the General Bond Resolution, the Commission is presenting its CIP totaling \$220.1 million for the three-year period 2020-2022. The CIP is made up of Water, Sewer, Support and Stormwater Programs.

The Commission's Water Program for 2020-2022 accounts for \$84.5 million, or 38.3%, of the total CIP expenditures. The Sewer Program accounts for \$108.6 million, or 49.1%, of the CIP. The Support Program accounts for \$18.0 million, or 8.1%, of the CIP. The Stormwater Program accounts for \$9.9 million, or 4.5% of the CIP.

Monies allocated for the 2020 programs total \$93.8 million. The amount mentioned is distributed as followed: Water \$39.3 million, or 41.9%; Sewer \$42.7 million, or 45.5%; Support \$6.7 million, or 7.1%; Stormwater \$5.1 million, or 5.4% of the 2020 expenditures.

Acknowledgements

The staff of the Finance Division is responsible for the preparation of this Comprehensive Annual Financial Report. We wish to acknowledge the staff's dedicated effort in bringing together information from numerous sources to produce this document.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Henry F. Vitale".

Henry F. Vitale
Executive Director

A handwritten signature in blue ink, appearing to read "Nelson W. Piacenza".

Nelson W. Piacenza
Chief Financial Officer and Treasurer

Board of Commissioners

Michael J. Woodall, Chair

Cathleen Douglas Stone, Commissioner

Senior Management

Henry F. Vitale, Executive Director

Nelson W. Piacenza, Chief Financial Officer and Treasurer

John P. Sullivan, P.E., Chief Engineer

Paul Canavan, Director of Operations

Irene McSweeney, P.E., Chief of Operations

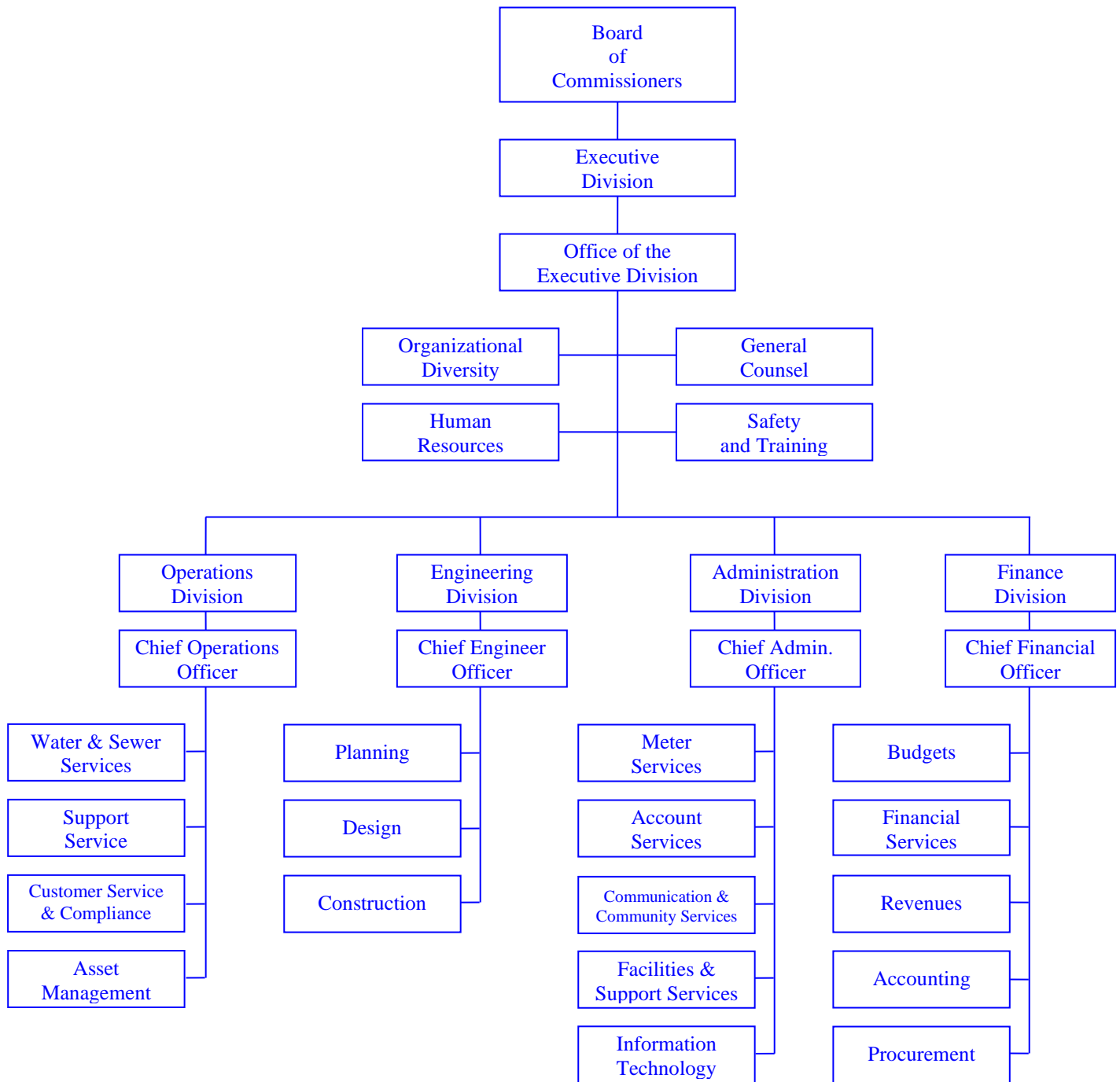
Gerald F. Dwyer, Chief Administrative Officer

Janis Smith, General Counsel

Hussein Dayib, Director of Organizational Diversity

Peter Hunt, Chief Information Officer

Organizational Chart





Government Finance Officers Association

**Certificate of
Achievement
for Excellence
in Financial
Reporting**

Presented to

**Boston Water & Sewer Commission
Massachusetts**

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

December 31, 2018

Christopher P. Morill

Executive Director/CEO

EXHIBIT I
2019 BUDGETED REVENUE AND EXPENSE ANALYSIS
(RATE BASIS)

	2019 ACTUAL	2019 BUDGET	VARIANCE	PERCENT VARIANCE
Revenues:				
Water & Sewer	\$369,425,614	\$374,436,514	(\$5,010,900)	-1.3%
Less:				
Adjustments	10,562,235	10,297,004	(265,231)	-2.6%
Discounts	1,218,447	1,589,493	371,046	23.3%
Bad Debt	378,627	374,437	(4,190)	-1.1%
Subtotal	12,159,309	12,260,934	101,625	0.8%
Net Billed Charges	357,266,305	362,175,580	(4,909,275)	-1.4%
Prior Year Surplus	558,206	517,384	40,822	7.9%
Miscellaneous Revenues:				
Late Charges	679,568	1,497,746	(818,178)	-54.6%
Investment Income	4,609,528	5,298,471	(688,943)	-13.0%
Fire Pipe	4,958,922	4,861,422	97,500	2.0%
Other Income	11,584,275	11,724,841	(140,566)	-1.2%
Total Revenues	379,656,804	386,075,444	(6,418,640)	-1.7%
Direct Operating Expenses:				
Salaries and Wages	43,648,298	43,776,953	128,655	0.3%
Overtime Wages	1,185,585	779,141	(406,444)	-52.2%
Fringe Benefits	8,519,218	8,973,833	454,615	5.1%
Supplies and Materials	2,372,934	2,899,894	526,960	18.2%
Repairs and Maintenance	10,123,538	10,753,449	629,911	5.9%
Utilities	1,617,652	1,825,940	208,288	11.4%
Professional Services	3,336,607	4,414,881	1,078,274	24.4%
Space and Equipment Rentals	331,653	355,550	23,897	6.7%
Other Services	1,773,605	2,100,550	326,945	15.6%
Insurance	717,545	716,657	(888)	-0.1%
Travel and Training	62,912	105,300	42,388	40.3%
Damage Claims	257,515	262,000	4,485	1.7%
Inventory	17,870	23,000	5,130	22.3%
Capital Outlay	86,952	117,000	30,048	25.7%
Total Direct Operating Expenses	74,051,884	77,104,148	3,052,264	4.0%
Indirect Operating Expense:				
MWRA Assessment	235,786,344	236,623,718	837,374	0.4%
Capital Improvement	15,382,251	16,567,000	1,184,749	7.2%
Debt Services	51,784,123	52,931,952	1,147,829	2.2%
Contractual Funding Obligations	1,768,000	2,653,977	885,977	33.4%
SDWA Assessment	194,650	194,650	-	0.0%
Total Indirect Operating Expenses	304,915,367	308,971,297	4,055,930	1.3%
Total Current Expenses	\$378,967,251	\$386,075,445	\$7,108,194	1.8%

EXHIBIT II
REVENUES AND EXPENSES - BUDGETARY BASIS
FOR THE YEARS ENDED DECEMBER 31, 2019 AND 2018
(RATE BASIS)

	<u>2019</u>	<u>2018</u>	<u>CHANGE</u>	<u>PERCENT</u>
Water Revenue	\$155,856,895	\$154,570,890	\$1,286,005	0.8%
Sewer Revenue	213,568,719	211,774,201	\$1,794,518	0.8%
Revenue Adjustments	(12,159,309)	(13,242,212)	\$1,082,903	-8.2%
Prior Period Surplus	558,206	570,607	(\$12,401)	-2.2%
Other Revenue :				
Fire Pipe	4,958,922	4,869,306	\$89,616	1.8%
Late Charge	679,568	1,098,123	(\$418,555)	-38.1%
Investment Income	4,609,528	4,336,497	\$273,031	6.3%
Other Income	11,584,275	7,549,162	\$4,035,113	53.5%
Total Revenue	<u>379,656,804</u>	<u>371,526,574</u>	<u>8,130,230</u>	<u>2.2%</u>
Operating Expenses	74,051,884	76,624,046	\$2,572,162	3.4%
MWRA Assessments	235,786,344	227,082,053	(\$8,704,291)	-3.8%
SDWA Assessments	194,650	203,864	\$9,214	4.5%
Other Nonoperating Expenses :				
Capital Improvements	15,382,251	12,585,360	(\$2,796,891)	-22.2%
Deposit to Reserves	1,768,000	4,474,113	\$2,706,113	60.5%
Debt Service	51,784,122	49,998,932	(\$1,785,190)	-3.6%
Total Expenses	<u>378,967,251</u>	<u>370,968,368</u>	<u>(\$7,998,883)</u>	<u>-2.2%</u>
Current Surplus	<u><u>\$689,553</u></u>	<u><u>\$558,206</u></u>	<u><u>\$131,347</u></u>	<u><u>23.5%</u></u>

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Financial Section

2019 - 2018



INDEPENDENT AUDITORS' REPORT

To the Commissioners of
Boston Water and Sewer Commission
Boston, Massachusetts

Report on the Financial Statements

We have audited the accompanying financial statements of Boston Water and Sewer Commission (the "Commission"), which comprise the statements of net position for the year ended December 31, 2019 and 2018, the related statements of revenues, expenses and change in net position and cash flows for the years then ended, and the related notes to the financial statements, which collectively comprise the Commission's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Boston Water and Sewer Commission as of December 31, 2019 and 2018, and the respective change in net position and cash flows thereof for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that Management's Discussion and Analysis and the required supplementary information as listed in the table of contents be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Government Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic or historic context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries with management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Other Supplementary Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Boston Water and Sewer Commission's basic financial statements. The accompanying supplemental schedule listed in the table of contents is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the financial statements.

Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated August 3, 2020 on our consideration of Boston Water and Sewer Commission's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Boston Water and Sewer Commission's internal control over financial reporting and compliance.



Certified Public Accountants
Braintree, Massachusetts

August 3, 2020

BOSTON WATER AND SEWER COMMISSION

Management's Discussion and Analysis

Required Supplementary Information

December 31, 2019 and 2018

Overview

Upon its creation in 1977, Boston Water and Sewer Commission (the "Commission") assumed the responsibility to provide water distribution, wastewater collection and storm water drainage services in the City of Boston (the "City").

The Commission has realized a rate basis surplus from its operation in each year since its inception. In accordance with the Boston Water and Sewer Reorganization Act of 1977 (the Enabling Act), the Commission applies audited surpluses to reduce its rates in succeeding years.

To accommodate the rate making process, 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 incurred (deferred credits) and (b) costs incurred to be capitalized if future recovery is reasonably assured (deferred charges).

Overview of the Financial Statements

The Commission's financial statements comprise two primary components: 1) the financial statements and 2) the notes to the financial statements. Additionally, the financial statements focus on the Commission as a whole, rather than upon individual funds or activities.

The Financial Statements: The financial statements are designed to provide readers with a broad overview of the Commission finances and are comprised of three basic statements.

The *Statements of Net Position* presents information on all of the Commission's assets, deferred outflows of resources, liabilities, and deferred inflows of resources with the difference reported as *net position*.

The *Statements of Revenues, Expenses and Changes in Net Position* presents information showing how the Commission's net position changed during the most recent fiscal year.

The *Statements of Cash Flows* is reported on the direct method. The direct method of cash flow reporting portrays net cash flows from operations as major classes of operating receipts and disbursements.

The financial statements can be found on pages 28 through 30 of this report.

Notes to the financial statements: The notes provide additional information that is essential to a full understanding of the data provided in the financial statements. The notes provide information regarding both the accounting policies and procedures the Commission has adopted as well as additional detail of certain amounts contained in the financial statements. The notes to the financial statements can be found on pages 31 through 64 of this report.

BOSTON WATER AND SEWER COMMISSION

Management's Discussion and Analysis

Required Supplementary Information

December 31, 2019 and 2018

Condensed financial information for the most recent fiscal years is presented in this section of the report.

Condensed Financial Information

(in thousands)

	2019	2018	2017
Current assets	\$ 323,923	332,759	304,384
Capital assets, net	1,445,700	1,416,709	1,377,447
Total assets	1,769,623	1,749,468	1,681,831
Total deferred outflows	99,774	122,720	47,235
Current liabilities	79,515	61,726	84,338
Noncurrent liabilities	630,154	671,319	548,106
Total liabilities	709,669	733,045	632,444
Total deferred inflows	764,291	747,028	706,348
Net position:			
Net investment in capital assets	856,310	814,481	838,757
Restricted	113,573	111,813	105,601
Unrestricted net deficit	(574,446)	(534,179)	(554,084)
Total net position	\$ 395,437	392,115	390,274

During the year, the Commission saw an increase in total assets and a decrease in total liabilities, resulting in an increase in total net position of \$3.3 million, or 0.9%. In 2018, net position totaled \$392.1 million, an increase of \$1.8 million, or 0.4% from 2017. The Commission's 2019 operations resulted in a rate basis surplus of \$689,553 compared to \$558,206 in 2018.

Since inception, the Commission has invested in various capital assets, including capital improvement projects, machinery and equipment, buildings, and improvements. These investments, net of accumulated depreciation, totaled \$1.4 billion at December 2019, which is 2.0% higher than in 2018. In 2018, these investments also totaled \$1.4 billion, an increase of \$39.3 million, or 2.9% over the 2017 total investment in capital assets. These increases in capital assets are the result of continuous upgrades of the Commission owned water and sewer infrastructure.

Total operating revenues in 2019 were \$386.6 million, which is 1.8% greater than in 2018. Total operating revenues in 2018 were \$379.9 million, which is 4.6% greater than 2017. Operating revenues consist of water and sewer revenue, late charge revenue, fire pipe revenue and other income. Water and sewer revenue in 2019 and 2018 represented 95.7% and 96.7% of total operating revenues, respectively. The increases in 2019 and 2018 operating revenues were primarily driven by a 2.85% and 4.75% average rate increase, respectively.

BOSTON WATER AND SEWER COMMISSION

Management's Discussion and Analysis

Required Supplementary Information

December 31, 2019 and 2018

Total operating expenses in 2019 were \$350.6 million, which represents an increase of 3.5% from 2018. The increase in 2019 operating expenses was primarily due to a combined additional spending of 3.2%, or \$9.9 million in three-line items (operations, maintenance and Massachusetts Water Resources Authority ("MWRA") assessment). Total operating expenses in 2018 were \$339.0 million, which represents an increase of 5.2% from 2017. This increase in 2018 expenses was driven primarily due to a combined additional spending of 5.0%, or \$15.0 million in three-line items (operations, maintenance and Massachusetts Water Resources Authority ("MWRA") assessment). Operating expenses consist of operations and maintenance, MWRA assessment, depreciation and amortization. The MWRA assessment is the largest expense incurred by the Commission, representing 67.3% and 67.0% in 2019 and 2018, respectively, of total operating expenses.

In both 2019 and 2018, 85% of water provided by MWRA was billable to customers. Since its inception, the Commission has maintained the percentage of billable water at 78% and is continuing to take steps to improve the amount of billable water, including replacement of old and defective meters and implementation of a comprehensive leak detection and repair program.

Condensed Financial Information

(in thousands)

	2019	2018	2017
Operating revenues:			
Water and sewer usage	\$ 370,105	367,443	347,601
Other	16,543	12,418	15,456
Operating expenses	(350,596)	(339,050)	(322,451)
Excess operating revenues	36,052	40,811	40,606
Investment income	5,602	5,491	4,382
Interest expense	(18,707)	(18,439)	(17,696)
Total nonoperating net expense	(13,105)	(12,948)	(13,314)
Excess revenues before capital grants, contributions and transfer requirements	22,947	27,863	27,292
Capital grants and contributions	8,812	5,983	1,797
Excess revenues used to fund reserves and other deferrals	(28,306)	(32,017)	(32,224)
Change in accumulated revenues used to offset future rates	(131)	12	118
Change in net position	3,322	1,841	(3,017)
Net position, beginning of year	392,115	390,274	393,291
Net position, end of year	\$ 395,437	392,115	390,274

BOSTON WATER AND SEWER COMMISSION

Management's Discussion and Analysis

Required Supplementary Information

December 31, 2019 and 2018

Capital Assets

In fiscal year 2019, major Commission project additions totaled \$40.3 million, of which \$18.0 million was financed with bond proceeds. Major project expenditures (in millions) are as follows:

Relay of water mains	\$ 19.4
Rehabilitation/replacement of sewers or storm drains	15.3
Interceptor improvements	0.5
Separation of combined sewers	2.7
Meter replacement	0.6
Stormwater	1.8
	<u>\$ 40.3</u>

The Commission's 2020-2022 capital budget includes projected expenditures of \$221.0 million for infrastructure and capital projects. The major projects are for the rehabilitation of water mains and the replacement/rehabilitation of the sewer system. Some water projects are financed on a pay-as-you go basis combined with interest free loans for water rehabilitation provided by the MWRA. Most of the sewer improvements along with the installation of a new radio frequency meter reading system will be financed through bond proceeds. However, there are sewer improvements that are funded through the utilization of the MWRA loan programs. Please refer to footnote 4 for more detailed capital asset activity.

Debt Plan

The Commission is empowered by the Enabling Act 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 capital improvement projects. The Commission's 2020-2022 capital budget, which totals \$221.0 million, anticipates that projects totaling \$117.3 million, or 53.1% of the Commission's 2020-2022 capital budget, will be funded from bond proceeds. The 2020 budget for debt service is \$52.5 million. Please refer to footnote 5 for more detailed long-term debt information.

BOSTON WATER AND SEWER COMMISSION

Management's Discussion and Analysis

Required Supplementary Information

December 31, 2019 and 2018

The Commission currently has ten series of General Revenue Bonds outstanding at the end of 2019, totaling approximately \$517.2 million as follows (in millions):

1994 Series A	12.7
2009 Series A	0.7
2009 Series B	7.5
2010 Series A	5.4
2012 Series A	96.5
2014 Series A	99.7
2015 Series A	72.8
2016 Series A	60.2
2016 Series B	83.5
2018 Series A	78.4
	\$ 517.2

Debt Service Coverage Requirements

The Commission's bond covenants require 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 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.

Additional Bonds and Refunding Bonds

The Enabling Act permits the issuance of additional bonds for paying the cost of any project, making deposits in various funds established under the Enabling Act, 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.

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 because 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.

BOSTON WATER AND SEWER COMMISSION

Management's Discussion and Analysis

Required Supplementary Information

December 31, 2019 and 2018

Budgets and Rates

The Commission is required by law to be self-sustaining to set its rates at a level sufficient to cover expenses and debt service requirements each year.

In 2006 the Commission modified its inclining block rate structure. The number of rate blocks was reduced from ten to six, thereby making the structure easier to understand for customers while still promoting water conservation and generating sufficient revenue. In 2019 and 2018, the Commission increased its water and sewer rates by an average of 2.85% and 4.75% respectively. The major reasons behind these increases were: (i) the increase in assessment paid to the MWRA, and (ii) the decline in water sales due to general water conservation efforts of individuals and businesses throughout the City.

Effective January 1, 2020, the Commission increased its water and sewer rates by an average of 7.90%.

Credit Ratings

The Commission's revenue bonds are rated "Aa1" by Moody's Investors Service, "AA+" by Standard and Poor's and "AA+" by Fitch Ratings for all bonds issued before 2016.

Contacting the Commission's Financial Management

This report is designed to provide our bondholders, customers and other interested parties with a general overview of the Commission's finances and to demonstrate the Commission's accountability for the revenue it receives. If you have questions about this report or need additional information, contact Boston Water and Sewer Commission Finance Department in writing at 980 Harrison Avenue, Boston, MA 02119, or by telephone 617-989-7000, or on the web at www.bwsc.org.

BOSTON WATER AND SEWER COMMISSION

Statements of Net Position

December 31, 2019 and 2018

	2019	2018
Current assets:		
Cash and cash equivalents	\$ 4,636,257	10,190,861
Restricted cash and investments (Notes 5 and 11)	259,903,906	274,126,177
Accounts receivable, net:		
Customers, less allowances of \$2,465,932 and \$2,730,865		
in 2019 and in 2018, respectively (Note 1)	27,778,831	21,960,323
Unbilled revenues, less allowances of \$1,702,361 in 2019 and 2018	30,737,492	25,840,574
Prepaid expenses	865,970	640,799
Total current assets	323,922,456	332,758,734
Noncurrent assets:		
Capital assets (Note 4):		
Depreciable, net	1,311,941,247	1,300,971,224
Nondepreciable	133,759,235	115,737,613
Total noncurrent assets	1,445,700,482	1,416,708,837
Total Assets	1,769,622,938	1,749,467,571
Deferred charges (Note 2)	99,774,382	122,720,100
Current liabilities:		
Payable from current assets:		
Accounts payable	15,411,556	16,827,302
Other accrued liabilities	9,800,931	10,079,462
Commercial paper notes (Note 6)	20,000,000	—
Current portion of long-term notes (Note 5)	5,837,295	6,215,529
Current portion of revenue bonds (Note 5)	28,464,951	28,604,116
Total current liabilities	79,514,733	61,726,409
Noncurrent liabilities:		
Long-term notes (Note 5)	25,496,783	30,596,053
Revenue bonds, net (Note 5)	522,519,255	550,984,202
Net pension liability (Note 9)	34,808,595	40,448,003
Net OPEB liability (Note 10)	45,642,150	47,844,621
Other long-term liabilities (Note 13)	1,687,510	1,445,682
Total noncurrent liabilities	630,154,293	671,318,561
Total Liabilities	709,669,026	733,044,970
Deferred credits and reserves (Note 3)	764,291,295	747,028,185
Commitments and contingencies (Notes 12 and 14)		
Net position:		
Net investment in capital assets	856,309,985	814,480,511
Restricted for debt service	55,293,433	56,128,652
Restricted for capital assets	212,933	202,791
Restricted for debt covenants	58,066,734	55,480,676
Unrestricted net deficit	(574,446,086)	(534,178,114)
Total Net Position	\$ 395,436,999	392,114,516

See accompanying notes to financial statements.

BOSTON WATER AND SEWER COMMISSION

Statements of Revenues, Expenses and Change in Net Position

Years ended December 31, 2019 and 2018

	<u>2019</u>	<u>2018</u>
Operating revenues:		
Water and sewer usage (Note 1)	\$ 370,105,182	367,443,214
Fire pipe	4,958,922	4,869,306
Other	11,584,275	7,549,162
Total operating revenues	<u>386,648,379</u>	<u>379,861,682</u>
Operating expenses:		
Operations	78,864,974	79,642,724
Maintenance	10,123,538	8,107,578
MWRA assessment (Note 7)	235,786,344	227,082,053
Depreciation and amortization	25,820,917	24,217,483
Total operating expenses	<u>350,595,773</u>	<u>339,049,838</u>
Excess operating revenues	<u>36,052,606</u>	<u>40,811,844</u>
Nonoperating revenue (expense):		
Investment income (loss):	5,602,152	5,490,570
Interest expense	(18,707,311)	(18,439,491)
Total nonoperating net expense	<u>(13,105,159)</u>	<u>(12,948,921)</u>
Excess revenues before capital grants and contributions and transfer requirements	22,947,447	27,862,923
Capital grants and contributions: (Note 1)	8,812,016	5,982,540
Excess revenues before transfer requirements	31,759,463	33,845,463
Excess revenues used to fund reserves and other deferrals (Note 3)	(28,305,633)	(32,017,189)
Change in accumulated revenues used to offset future rates (Note 3)	(131,347)	12,401
Change in net position	3,322,483	1,840,675
Net position, beginning of year	392,114,516	390,273,841
Net position, end of year	<u><u>\$ 395,436,999</u></u>	<u><u>392,114,516</u></u>

See accompanying notes to financial statements.

BOSTON WATER AND SEWER COMMISSION

Statements of Cash Flows

Years Ended December 31, 2019 and 2018

	2019	2018
Cash flows from operating activities:		
Receipts from customers	\$ 375,932,953	381,169,225
Payments to suppliers	(270,472,025)	(255,800,157)
Payments to employees	(53,565,036)	(62,988,901)
Net cash provided by operating activities	51,895,892	62,380,167
Cash flows from investing activities:		
Investment income	5,602,152	5,490,570
Sales of investments	241,355,673	210,210,887
Purchases of investments	(215,917,922)	(241,355,673)
Net cash provided by (applied to) investing activities	31,039,903	(25,654,216)
Cash flows from capital and related financing activities:		
Purchase of capital assets	(54,343,853)	(63,326,093)
Proceeds from long-term notes	738,025	14,487,977
Proceeds from revenue bonds	—	80,772,193
Payment of long-term notes	(6,215,529)	(5,693,737)
Payment of revenue bonds	(23,730,000)	(22,615,000)
Proceeds from commercial paper	20,000,000	—
Payment of commercial paper	—	(25,000,000)
Capital grants and contributions	8,812,016	5,982,540
Payment of interest	(22,535,578)	(23,063,347)
Net cash applied to capital and related financing activities	(77,274,919)	(38,455,467)
Net increase (decrease)	5,660,876	(1,729,516)
Cash and cash equivalents, beginning of year	97,066,815	98,796,331
Cash and cash equivalents, end of year	\$ 102,727,691	97,066,815
Reconciliation of operating income to net cash provided by operating activities:		
Excess operating revenues	\$ 36,052,606	40,811,844
Adjustment to reconcile operating income to net cash:		
Depreciation and amortization	25,820,917	24,217,483
Bad Debts	378,627	1,111,957
Deferred outflows of resources	10,527,656	(19,477,359)
Change in assets and liabilities:		
Accounts receivable, net	(6,197,135)	(1,562,974)
Unbilled revenues	(4,896,918)	1,511,785
Prepaid expenses	(225,171)	(20,285)
Accounts payable	(1,884,455)	354,347
Other accrued liabilities	(80,184)	(46,791)
Other long-term liabilities	241,828	249,948
Net pension activity	(5,639,408)	14,471,466
Net OPEB activity	(2,202,471)	758,746
Net cash provided by operating activities	\$ 51,895,892	62,380,167
Noncash capital and related financing activities:		
Retainage Payable	\$ 486,709	153,235
Bond issuance costs	\$ —	246,774
MWPAT subsidized loan repayments (Note 4)	\$ —	153,236
Cash and cash equivalents are comprised of the following:		
Cash and cash equivalents	\$ 4,636,257	10,190,861
Money market and cash investments in restricted cash and investments	53,410,685	36,335,734
Cash in restricted cash and investments	44,680,749	50,540,220
Total	\$ 102,727,691	97,066,815

See accompanying notes to financial statements.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(1) Organization, Basis of Presentation, and Summary of Significant Accounting Policies

Boston Water and Sewer Commission (the "Commission") has the responsibility to provide water and wastewater services on a fair and equitable basis in the City of Boston (the "City") as required under the Boston Water and Sewer Reorganization Act of 1977 (the "Enabling Act").

Under the Enabling Act, the Commission is subject to regulation with respect to rates, accounting and other matters, where applicable, by the board of commissioners (the "Board"). The Board is appointed by the City's Mayor, subject to confirmation by the City Council. It regulates the rates that the Commission can charge its customers for water and sewer usage. The rates charged to customers are based on the cash requirements to cover the Commission's operations, debt service, and reserve contributions. To comply with the external financial reporting requirements of the Board, the accompanying financial statements are presented on a basis that is consistent with United States of America generally accepted accounting principles ("GAAP") for regulated utilities (i.e., the accrual basis of accounting and the capital maintenance measurement focus).

To accommodate the rate-making process, 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 Board-approved (a) revenues provided for future allowable costs to be deferred until the costs are incurred (deferred credits) and (b) costs incurred to be capitalized if future recovery is reasonably assured (deferred charges). Revenues and expenses appearing in the supplemental schedules of revenues and expenses – rate basis is presented in the same format as utilized in the Commission's operational budgeting and rate-setting process. The revenues and expenses shown on the statements of revenues and expenses are presented on a GAAP basis. Reconciliation between the revenues and expenses of these two operating statements for the year ended December 31, 2019, is provided below:

	<u>Revenues</u>	<u>Expenses</u>
As presented in the statements of revenues and expenses:		
Operating revenues/expenses	\$ 386,648,379	350,595,773
Investment income/interest expense	5,602,152	18,707,311
Total	392,250,531	369,303,084
Reclassifications and deferrals:		
Contributions to reserves	—	1,768,000
GAAP adjustments	(12,159,309)	(12,159,309)
Excess bond payments over depreciation and amortization	—	7,405,896
Interest expense (escrowed funds)	—	—
Investment income (escrowed funds)	(992,624)	—
Capital expenditures	—	15,469,203
Excess revenue used to offset current rates	558,206	—
Other deferrals	—	(2,819,623)
As presented in the supplemental schedule of revenues and expenses - rate basis	\$ <u>379,656,804</u>	<u>378,967,251</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(1) Organization, Basis of Presentation, and Summary of Significant Accounting Policies - Continued

The Enabling Act requires that any net surplus, as defined by the rate-setting process, be either turned over to the City or applied to offset water and sewer rates for the following year. The Commission has applied \$689,553 and \$558,206 for the years ended December 31, 2019 and 2018, respectively, to offset rates in the respective subsequent years.

(a) Revenue Billings

Water and sewerage fees are billed to users of the systems on a monthly-cycle basis. Revenues are accrued for periods between the termination of billings for the various cycles and the end of the year. Some adjustments are made on a post-billing basis that reduce the number of total billings. The total customer bills outstanding as of December 31, 2019 and 2018 were approximately \$30.2 million and \$24.7 million, respectively. These net billing amounts are reduced by an allowance for uncollectible accounts of approximately \$2.5 million and \$2.7 million in 2019 and 2018, respectively, and to arrive at the net accounts receivable. Charges for water and sewer services provided, but unbilled, at year end are estimated based on historical usage. The calculation is reduced by an allowance for the adjustment of approximately \$1.7 million in 2019 and 2018 to arrive at the net accounts receivable.

(b) Investments

Investments are stated at fair value. Fair value is based on quoted market prices.

The Commission categorizes the fair value measurements of its investments based on the hierarchy established by generally accepted accounting principles as prescribed by the GASB. The fair value hierarchy, which has three levels, is based on the valuation inputs used to measure an asset's fair value: Level 1 inputs are quoted prices in active markets for identical assets; Level 2 inputs are significant other observable inputs; Level 3 inputs are significant unobservable inputs. The Commission does not have any investments that are measured using Level 2 or 3 inputs as disclosed in Note 11.

(c) Capital Assets

Capital assets are stated at historical cost. Depreciation is provided on the straight-line method based upon the estimated useful lives of the various classes of assets. Maintenance and repairs are charged to expense as incurred. Major renewals or betterments over \$500 are capitalized and depreciated over their estimated useful lives.

The Commission capitalizes interest costs during construction of assets for its own use. No interest was capitalized in 2019 and 2018.

(d) Compensated Absences

Employees of the Commission accumulate unused sick time (subject to certain limitations) to be used later or a percentage paid in cash upon voluntary resignation and/or retirement from the Commission (subject to Commission policies and/or bargaining agreements). The liability for vacation leave is based on the amount earned but not used; for sick leave, it is based on a percentage of the amount accumulated at the statement of net position dates that would be paid to employees on termination. The liability for each amount is calculated based on the pay or salary rates in effect as of the date of the statement of net position.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(1) Organization, Basis of Presentation, and Summary of Significant Accounting Policies - Continued**(e) Business-Type Activity Accounting**

Business-type activity funds distinguish operating revenues and expenses from non-operating items. Operating revenues and expenses result from providing services relating to ongoing operations. All revenues and expenses not meeting this definition are reported as non-operating revenues and expenses.

(f) Depreciation

The Commission provides for depreciation using the straight-line method. Estimated useful lives used in computing depreciation are as follows:

	<u>Years</u>
Water:	
Works	100
Meters	10
Hydrants	40
Sewerage:	
Works	75
Pumping station	35
Buildings	40
Other	4 to 14

(g) Cash and Cash Equivalents

The Commission considers all highly liquid, short-term cash investments with original maturities of three months or less to be cash equivalents for purposes of the statements of cash flows.

(h) Deferred Inflows of Resources and Deferred Outflows of Resources

Deferred inflows and outflows represent the consumption or acquisition of net assets applicable to a future reporting period. These are typically items of an asset or liability nature for which an exchange transaction is not inherent to their realization or liquidation.

(i) Pensions

For purposes of measuring the net pension liability, deferred outflows of resources and deferred inflows of resources related to pensions and pension expense, information about the fiduciary net position of the Boston Retirement System ("BRS"), and the additions to/deductions from the Commission's fiduciary net position have been determined on the same basis as they were reported by the BRS. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with benefit terms. Investments are reported at fair value.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(1) Organization, Basis of Presentation, and Summary of Significant Accounting Policies - Continued

(j) *Other Postemployment Benefits ("OPEB")*

For purposes of measuring the net OPEB liability, deferred outflows of resources and deferred inflows of resources related to OPEB and OPEB expense, information about the fiduciary net position of the Boston Water and Sewer Other Postemployment Benefits ("OPEB") Trust (the "Plan"), and additions to/deductions from Plan's fiduciary net position have been determined on the same basis as they are reported by the Plan. For this purpose, the Plan recognizes benefit payments when due and payable in accordance with the benefit terms. Investments are generally reported at fair value.

(k) *Use of Estimates*

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions about future events. These estimates and assumptions affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, as well as reported amounts of revenues and expenses during the reporting period. Management evaluates the estimates and assumptions on an ongoing basis using historical experience and other factors that management believes to be reasonable under the circumstances. Adjustments to estimates and assumptions are made as facts and circumstances require. As future events and their effects cannot be determined with certainty, actual results may differ from the estimates used in preparing the accompanying financial statements. Significant estimates and assumptions are required as part of estimating an allowance for doubtful accounts, depreciation, amortization, net pension and OPEB liabilities, and the recoverability of long-lived assets

(l) *Contributions in Aid of Construction*

Contributions in aid of construction ("CIAC") are additions and/or upgrades to infrastructure made by customers or developers that have been assigned to the Commission upon completion of the applicable project. Historically, CIAC has not been material to the financial statements and the contribution is not recorded. The Commission accepts the responsibility for the ongoing maintenance of CIAC.

(m) *Capital contributions*

Capital contributions consist of special grants or loan subsidies received from the Massachusetts Water Resource Authority ("MWRA") along with funds received from property owners and developers to assist the Commission in development of its infrastructure.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(1) Organization, Basis of Presentation, and Summary of Significant Accounting Policies - Continued**(n) New Government Accounting Pronouncements**

GASB Statement 83 – *Certain Asset Retirement Obligations (“AROs”)* is effective for periods beginning after June 15, 2019. An ARO is a legally enforceable liability associated with the retirement of a tangible capital asset. This Statement establishes criteria for determining the timing and pattern of recognition of a liability and a corresponding deferred outflow of resources for AROs and requires that recognition occur when the liability is both incurred and reasonably estimable. Management has not completed its review of the requirements of this standard and its applicability.

GASB Statement 87, *Leases* is effective for periods beginning after December 15, 2020. Implementation of this standard will require lessees to recognize on their statement of net position the rights and obligations resulting from leases categorized as operating leases as assets, liabilities, or deferred inflows / outflows of resources. It provides for an election on leases with terms of less than twelve months to be excluded from this Standard. Management is in the process of evaluating this standard and has not yet determined its impact on the financial statements.

GASB Statement 88 – *Certain Disclosures Related to Debt, Including Direct Borrowings and Placements* is effective for years beginning after June 15, 2019. Implementation of this standard will require additional disclosures in the notes to the financial statements, including unused lines of credit; assets pledged as collateral for the debt; and terms specified in debt agreements related to significant events of default with finance-related consequences, significant termination events with finance-related consequences, and significant subjective acceleration clauses. Management has not completed its review of the requirements of this standard and its applicability.

GASB Statement 89 – *Accounting for Interest Costs Incurred before the End of a Construction Period* is effective for reporting periods beginning after December 15, 2019. The objectives of this Statement are (1) to enhance the relevance and comparability of information about capital assets and the cost of borrowing for a reporting period and (2) to simplify accounting for interest cost incurred before the end of a construction period. Management has not completed its review of the requirements of this standard and its applicability.

GASB Statement 92 – *Omnibus 2020* is effective for reporting periods beginning after June 15, 2021. The objective of this Statement is to improve comparability in financial reporting for leases, pensions, OPEB, and asset retirement obligations. Management has not completed its review of the requirements of this standard and its applicability.

GASB Statement 93 – *Replacement of Interbank Offered Rates* is effective for reporting periods beginning after June 15, 2021. The objective of this Statement is to provide government entities relief with replacing or amending financial instruments for the purpose of replacing LIBOR, which is expected to cease to exist in December 2021. Before the implementation of this Standard, hedge accounting terminates if material terms are amended. Management has not completed its review of the requirements of this standard and its applicability.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(1) Organization, Basis of Presentation, and Summary of Significant Accounting Policies - Continued**(n) New Government Accounting Pronouncements - continued**

GASB Statement 96 – *Subscription-Based Information technology Arrangements (SBITA)* is effective for reporting periods beginning after June 15, 2022. The objective of this Statement is to provide accounting and financial reporting guidance for transactions in which a governmental entity contracts with another party for the right to use their software. A right to use asset and a corresponding liability would be recognized for SBITAs. Management has not completed its review of the requirements of this standard and its applicability.

(2) Deferred Outflows of Resources

Deferred outflows of resources represent the consumption of net assets by the Commission that are applicable to future reporting periods. Deferred outflows of resources have a positive effect on net position, like assets. In accordance with GASB 62, pension obligations will be recovered through future rates or matched against credits related to the specific costs in the future.

The following is a summary of deferred outflow of resources as of December 31,

	2019	2018
Cost to be recovered through future revenues:		
Pension obligation	\$ 34,808,595	40,448,003
OPEB obligation	45,642,150	47,844,621
Pension related:		
Differences between projected and actual earnings on pension plan investments	-	10,211,013
Differences between expected and actual experience in the total pension liability	387,456	452,032
Changes in assumptions	3,077,370	3,692,844
Contributions made after the plan measurement date	734,972	1,650,000
OPEB related:		
OPEB related	1,448,552	-
Differences between projected and actual earnings on OPEB plan investments	-	1,600,013
Contributions made after the plan measurement date	747,500	2,650,000
Deferred loss on defeasance	12,927,787	14,171,574
Total:	\$ <u>99,774,382</u>	<u>122,720,100</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(3) Deferred Inflows of Resources

In accordance with GASB 62, certain revenues and expenditures that would otherwise be included in the statements of revenues and expenses, may be applied to future operations.

These items are identified on the statements of revenues and expenses as excess revenues used to fund reserves and other deferrals and are included on the statements of net position in deferred credits and reserves and are as follows for the years ended December 31,

	2019	2018
Contributions to reserves	\$ 1,768,000	4,474,113
Principal payments on long-term debt	29,945,528	28,308,737
Interest paid from escrow funds	—	—
Capital expenditures	15,469,203	12,625,420
Depreciation and amortization	(18,754,445)	(15,591,459)
Investment income on project and escrow funds	4,408,405	(1,814,029)
Other	(4,531,058)	4,014,407
	<u>\$ 28,305,633</u>	<u>32,017,189</u>

The components of deferred credits and reserves for the years ended December 31, have been designated as follows:

	2019	2018
Debt service	\$ 166,197,284	165,182,213
Capital improvements	599,935,510	567,876,295
Pension related	1,010,645	11,561,389
Differences between expected and actual experience - pension	2,235,600	2,794,500
Differences between expected and actual earnings on plan investments- pension	218,581	-
Change of assumptions - OPEB	231,098	-
Differences between expected and actual experience - OPEB	1,217,454	-
OPEB related	-	1,600,013
Working capital	(9,684,431)	(4,784,431)
Self-insurance	2,240,000	2,240,000
	<u>763,601,741</u>	<u>746,469,979</u>
Reduction of future Rates	<u>689,554</u>	<u>558,206</u>
Total	<u>\$ 764,291,295</u>	<u>747,028,185</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(4) Capital Assets

The cost and activities of water and sewer capital assets and their related accumulated depreciation at December 31, is as follows:

	Balance at December 31, 2018	Additions	Disposals	Reclassifications	Balance at December 31, 2019
Capital assets, not being depreciated:					
Land	\$ 5,884,243	—	—	—	5,884,243
Construction in progress	109,853,370	49,096,812	—	(31,075,190)	127,874,992
Total capital assets, not being depreciated	115,737,613	49,096,812	—	(31,075,190)	133,759,235
Capital assets, being depreciated:					
Buildings and improvements	68,112,671	—	—	—	68,112,671
Machinery and equipment	35,133,610	5,658,250	—	303,763	41,095,623
Infrastructure	1,599,882,092	57,500	—	30,771,427	1,630,711,019
Total capital assets, being depreciated	1,703,128,373	5,715,750	—	31,075,190	1,739,919,313
Less: accumulated depreciation for:					
Buildings and improvements	32,189,308	1,626,591	—	—	33,815,899
Machinery and equipment	24,200,408	3,891,172	—	—	28,091,580
Infrastructure	345,767,433	20,303,154	—	—	366,070,587
Total accumulated depreciation	402,157,149	25,820,917	—	—	427,978,066
Total capital assets being depreciated, net	1,300,971,224	(20,105,167)	—	31,075,190	1,311,941,247
Capital assets, net	\$ 1,416,708,837	28,991,645	—	—	1,445,700,482

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(4) Capital Assets - Continued

	Balance at December 31, 2017	Additions	Disposals	Reclassifications	Balance at December 31, 2018
Capital assets, not being depreciated:					
Land	\$ 5,884,243	—	—	—	5,884,243
Construction in progress	111,981,613	59,209,387	—	(61,337,630)	109,853,370
Total capital assets, not being depreciated	117,865,856	59,209,387	—	(61,337,630)	115,737,613
Capital assets, being depreciated:					
Buildings and improvements	68,112,671	—	—	—	68,112,671
Machinery and equipment	30,874,022	4,259,588	—	—	35,133,610
Infrastructure	1,538,534,108	10,354	—	61,337,630	1,599,882,092
Total capital assets, being depreciated	1,637,520,801	4,269,942	—	61,337,630	1,703,128,373
Less: accumulated depreciation for:					
Buildings and improvements	30,562,624	1,626,684	—	—	32,189,308
Machinery and equipment	20,975,036	3,225,372	—	—	24,200,408
Infrastructure	326,402,006	19,365,427	—	—	345,767,433
Total accumulated depreciation	377,939,666	24,217,483	—	—	402,157,149
Total capital assets being depreciated, net	1,259,581,135	(19,947,541)	—	61,337,630	1,300,971,224
Capital assets, net	\$ 1,377,446,991	39,261,846	—	—	1,416,708,837

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(5) Long-Term Obligations

Long term liabilities at December 31, consist of:

	Balance at December 31, 2018	Additions	Reductions	Balance at December 31, 2019	Current Portion
Notes payable:					
Long-term notes	\$ 36,811,582	738,025	(6,215,529)	31,334,078	5,837,295
Revenue bonds	540,965,000	-	(23,730,000)	517,235,000	23,710,000
Revenue bonds premiums	38,623,318	-	(4,874,112)	33,749,206	4,754,951
Total notes payable and bonds	616,399,900	738,025	(34,819,641)	582,318,284	34,302,246
Other long-term liabilities:					
Net pension liability	40,448,003	-	(5,639,408)	34,808,595	-
OPEB liability	47,844,621	-	(2,202,471)	45,642,150	-
Other long-term liabilities	1,445,682	940,332	(698,504)	1,687,510	-
Total other long-term liabilities	89,738,306	940,332	(8,540,383)	82,138,255	-
Total long-term liabilities	706,138,206	1,678,357	(43,360,024)	664,456,539	34,302,246

	Balance at December 31, 2017	Additions	Reductions	Balance at December 31, 2018	Current Portion
Notes payable:					
Long-term notes	\$ 28,017,342	14,487,977	(5,693,737)	36,811,582	6,215,529
Revenue bonds	485,180,000	78,400,000	(22,615,000)	540,965,000	23,730,000
Revenue bonds premiums	40,942,593	2,618,967	(4,938,242)	38,623,318	4,874,116
Total notes payable and bonds	554,139,935	95,506,944	(33,246,979)	616,399,900	34,819,645
Other long-term liabilities:					
Net pension liability	35,472,896	4,975,107	-	40,448,003	-
OPEB liability	47,085,875	758,746	-	47,844,621	-
Other long-term liabilities	1,195,734	736,882	(486,934)	1,445,682	-
Total other long-term liabilities	83,754,505	6,470,735	(486,934)	89,738,306	-
Total long-term liabilities	637,894,440	101,977,679	(33,733,913)	706,138,206	34,819,645

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(5) Long-Term Obligations - Continued

(a) Revenue Bonds

The Commission issues revenue bonds to support various projects. The following is a summary of revenue bond activity for the year ended December 31, (amounts in thousands).

Description	Balance at December 31, 2018	Additions	Reductions	Balance at December 31, 2019	Amounts due within one year
Revenue bonds:					
1993 Series A, bearing interest ranging from 2.2% to 5.25% issued September 17, 1993, maturing 1993 to 2019	\$ 5,155	—	5,155	—	—
1994 Series A, bearing a variable interest rate based on the daily Municipal Market Data scale issued August 20, 1994, maturing 1995 to 2024	14,800	—	2,100	12,700	2,200
2009 Series A, bearing interest ranging from 3.0% to 5.0% issued March 26, 2009, maturing 2010 to 2028	5,085	—	4,400	685	685
2009 Series B, bearing interest ranging from 3.0% to 5.0% issued March 26, 2009, maturing 2009 to 2021	15,840	—	8,340	7,500	3,660
2010 Series A, bearing interest ranging from 2.5% to 5.0% issued January 26, 2010, maturing 2010 to 2031	5,565	—	165	5,400	5,400
2012 Series A, bearing interest ranging from 3.0% to 5.0% issued June 6, 2012, maturing 2015 to 2037	99,445	—	2,970	96,475	9,790
2014 Series A, bearing interest ranging from 3.0% to 5.0% issued July 22, 2014, maturing 2017 to 2044	99,800	—	100	99,700	500
2015 Series A, bearing interest ranging from 3.0% to 5.0% issued August 05, 2015, maturing 2023 to 2028	72,760	—	—	72,760	—
2016 Series A, bearing interest ranging from 3.0% to 5.0% issued September 13, 2016, maturing 2020 to 2031	60,155	—	—	60,155	475
2016 Series B, bearing interest ranging from 3.0% to 5.0% issued September 13, 2016, maturing 2017 to 2046	83,960	—	500	83,460	500
2018 Series A, bearing interest ranging from 3.0% to 5.0% issued May 30, 2018, maturing 2020 to 2048	78,400	—	—	78,400	500
	540,965	—	23,730	517,235	23,710
Less unamortized issue premiums/discounts	38,623	—	4,874	33,749	4,754
Net revenue bonds	\$ 579,588	—	28,604	550,984	28,464

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(5) Long-Term Obligations - Continued

(a) Revenue Bonds - Continued

Description	Balance at December 31, 2017	Additions	Reductions	Balance at December 31, 2018	Amounts due within one year
Revenue bonds:					
1993 Series A, bearing interest ranging from 2.2% to 5.25% issued September 17, 1993, maturing 1993 to 2019	\$ 13,360	—	8,205	5,155	5,155
1994 Series A, bearing a variable interest rate based on the daily Municipal Market Data scale issued August 20, 1994, maturing 1995 to 2024	16,800	—	2,000	14,800	2,100
2009 Series A, bearing interest ranging from 3.0% to 5.0% issued March 26, 2009, maturing 2010 to 2028	9,465	—	4,380	5,085	4,400
2009 Series B, bearing interest ranging from 3.0% to 5.0% issued March 26, 2009, maturing 2009 to 2021	20,475	—	4,635	15,840	8,340
2010 Series A, bearing interest ranging from 2.5% to 5.0% issued January 26, 2010, maturing 2010 to 2031	5,565	—	—	5,565	165
2012 Series A, bearing interest ranging from 3.0% to 5.0% issued June 6, 2012, maturing 2015 to 2037	102,240	—	2,795	99,445	2,970
2014 Series A, bearing interest ranging from 3.0% to 5.0% issued July 22, 2014, maturing 2017 to 2044	99,900	—	100	99,800	100
2015 Series A, bearing interest ranging from 3.0% to 5.0% issued August 05, 2015, maturing 2023 to 2028	72,760	—	—	72,760	—
2016 Series A, bearing interest ranging from 3.0% to 5.0% issued September 13, 2016, maturing 2020 to 2031	60,155	—	—	60,155	—
2016 Series B, bearing interest ranging from 3.0% to 5.0% issued September 13, 2016, maturing 2017 to 2046	84,460	—	500	83,960	500
2018 Series A, bearing interest ranging from 3.0% to 5.0% issued May 30, 2018, maturing 2020 to 2048	—	78,400	—	78,400	—
	485,180	78,400	22,615	540,965	23,730
Less unamortized issue premiums/discounts	40,943	2,619	4,939	38,623	4,874
Net revenue bonds	\$ 526,123	81,019	27,554	579,588	28,604

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(5) Long-Term Obligations - Continued**(a) Revenue Bonds - Continued**

Debt principal and interest maturities for future years as of December 31, 2019, are as follows (amounts in thousands):

	Revenue bonds	
	Principal	Interest
2020	\$ 23,710	21,474
2021	24,790	20,393
2022	24,005	15,408
2023	25,585	18,971
2024	26,400	17,644
2025-2029	123,785	67,869
2030-2034	94,345	45,537
2035-2039	80,275	29,190
2040-2044	68,820	14,547
2045-2049	25,520	2,561
	<u>\$ 517,235</u>	<u>253,595</u>

Amortization expense for losses on bond refunding and amortization income of bond issuance premiums which are recorded as interest for the years ended December 31, 2019 and 2018, totaled \$(3,131,283) and \$(3,250,705), respectively.

The Commission is required to maintain a Senior Debt Service Reserve Fund of an amount at least equal to the sum of the maximum amount of principal, or sinking fund payments, and interest due in the current or immediately succeeding year on the outstanding senior bonds issued as "fixed rate bonds", net of any accrued interest from the sale of any such bonds. As of December 31, 2019, and 2018, approximately \$47.3M and \$47.2M, respectively, has been deposited into the Senior Debt Service Reserve Account. This account is included with restricted cash and investments on the statements of net position.

During 2018, the Commission completed the issuance of \$78,400,000 General Revenue Bonds, 2018 Series A (the "Bonds"). The net proceeds of \$80,772,193 (after issuance costs of \$246,774, plus premium of \$2,618,967) were used to provide permanent financing for certain capital improvements previously financed by outstanding commercial paper; provide funding for other capital improvements; provide for a deposit to the Senior Debt Service Reserve Fund; and to pay the costs associated with the issuance of the Bonds. The Bonds have principal payable annually beginning November 1, 2020, through and including November 1, 2048.

(b) Prior Year Debt Refunding (Defeasements)

In the aggregate, \$253,815,000 and \$273,260,000 remains outstanding at December 31, 2019 and 2018, respectively, on bond issues that were defeased "in-substance" in prior years.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(5) Long Term Obligations - Continued**(c) Restricted Cash and Investments**

The Commission has established both trustee and nontrustee funds with investments, principally short-term securities, which are restricted for payment of specified liabilities, capital projects, or other costs of operations. The components of the trustee and nontrustee investments at December 31, are as follows:

	2019	2018
Trustee:		
U.S. Government agency obligations	\$ 129,438,484	148,501,070
Money market	53,191,104	35,981,961
Repurchase agreements	8,416,250	8,416,250
	<u>191,045,838</u>	<u>192,899,281</u>
Nontrustee:		
U.S. Government agency obligations	1,466,178	2,594,196
Cash	44,693,635	50,540,220
Money market	219,581	353,773
Open-ended mutual funds	22,478,674	27,738,707
	<u>68,858,068</u>	<u>81,226,896</u>
Restricted cash and investments	259,903,906	274,126,177
Less nontrustee cash	<u>(44,693,635)</u>	<u>(50,540,220)</u>
Trustee and nontrustee investments	<u>\$ 215,210,271</u>	<u>223,585,957</u>

(d) Long-Term Notes Payable

The Commission has entered into various interest-free loan agreements with Massachusetts Water Resource Authority (the "MWRA"). Under these agreements, the Commission is required to repay these loans in annual installments as part of the MWRA's Infiltration/Inflow Local Financial Assistance Program (I/I), Pipeline Assistance Program ("PAP"), and System Assistance Program ("SAP"). These programs are designed to assist service area communities with sewer system rehabilitation.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(5) Long Term Obligations - Continued

(d) Long-Term Notes Payable - Continued

The following is a summary of long-term note activities with MWRA and MCWT for the years ended December 31,

Description	Balance at December 31, 2018	Additions	Reductions	Balance at December 31, 2019	Amounts due within one year
MWRA I/I Program Phase VIII, interest free, due May 15, 2022	\$ 824,086	—	206,022	618,064	206,022
MWRA I/I Program Phase IX, interest free, due Aug 15, 2029	1,777,235	738,025	390,520	2,124,740	464,322
MWRA S.A.P. Program, interest free, due Aug 15, 2028	32,459,142	—	4,517,410	27,941,732	4,517,410
MWRA P.A.P. Program, interest free, due August 15, 2020	1,751,119	—	1,101,577	649,542	649,541
Total long-term notes	<u>\$ 36,811,582</u>	<u>738,025</u>	<u>6,215,529</u>	<u>31,334,078</u>	<u>5,837,295</u>
Description	Balance at December 31, 2017	Additions	Reductions	Balance at December 31, 2018	Amounts due within one year
MWRA I/I Program Phase VIII, interest free, due May 15, 2022	\$ 1,367,852	—	543,766	824,086	206,022
MWRA I/I Program Phase IX, interest free, due May 15, 2022	1,773,302	358,593	354,660	1,777,235	390,520
MWRA S.A.P. Program, interest free, due November 15, 2027	21,434,229	14,129,384	3,104,471	32,459,142	4,517,410
MWRA P.A.P. Program, interest free, due August 15, 2020	3,441,959	—	1,690,840	1,751,119	1,101,577
Total long-term notes	<u>\$ 28,017,342</u>	<u>14,487,977</u>	<u>5,693,737</u>	<u>36,811,582</u>	<u>6,215,529</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(5) Long Term Obligations - Continued

(d) Long-Term Notes Payable - Continued

Debt principal for future years as of the year ended December 31, 2019, are as follows (amounts in thousands):

2020	\$	5,837
2021		5,188
2022		4,786
2023		3,732
2024		3,289
2025-2029		8,502
	\$	<u>31,334</u>

(6) Short-Term Obligations

The Commission issues commercial paper notes for financing capital expenditures. The following represents the Commission's commercial paper notes outstanding as of the year ended December 31:

Description	Balance at December 31, 2018	Additions	Reductions	Balance at December 31, 2019
Commercial paper notes, Bank of America program due December 3, 2019 through March 3, 2020	\$ —	20,000,000	—	20,000,000
Total short-term notes	\$ —	20,000,000	—	20,000,000

Description	Balance at December 31, 2017	Additions	Reductions	Balance at December 31, 2018
Commercial paper notes, Bank of America program due September 25, 2017 through January 3, 2018	\$ 25,000,000	—	25,000,000	—
Total short-term notes	\$ 25,000,000	—	25,000,000	—

Subsequent to year end the commercial paper note was extended through September 2020.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(7) Massachusetts Water Resources Authority

The Commission obtains water supply and sewer treatment services from MWRA and is assessed a portion of the MWRA's actual operating and capital expenses. The assessment is based on the MWRA's fiscal year (July 1 to June 30), and payments are due to MWRA in ten equal installments excluding the months of January and July. Details of the MWRA assessments included in the statements of revenue and expenses at December 31, is as follows:

	<u>2019</u>	<u>2018</u>
Assessments based on:		
Water usage	\$ 92,082,863	88,328,954
Wastewater usage	<u>143,703,481</u>	<u>138,753,099</u>
Total	<u>\$ 235,786,344</u>	<u>227,082,053</u>

(8) Transactions with the City of Boston

Departments of the City of Boston were billed approximately \$5.4 million and \$4.2 million during 2019 and 2018, respectively, based on actual consumption.

The City provides services to the Commission, including paving and facilities rental. Operating costs billed to the Commission by the City were approximately \$1,198,000 and \$1,345,000 during the years ended December 31, 2019 and 2018, respectively, and capital costs billed by the City were approximately \$1,500,000 and \$1,700,000 during the years ended December 31, 2019 and 2018, respectively.

(9) Pension Benefits**(a) Description of the Boston Retirement System Plan**

The Commission contributes to the Boston Retirement System ("BRS"), a cost-sharing, multi-employer qualified defined benefit public employee retirement system established under Chapter 32 of the MGL and a member of the Massachusetts Contributory Retirement System (the "System"). Under a cost-sharing plan, pension obligations for employees of all employers are pooled and plan assets are available to pay the benefits of the employees of any participating employer providing pension benefits through the plan, regardless of the status of the employers' payment of its pension obligation to the plan. The System provides retirement, disability, and death benefits to plan members and beneficiaries. Chapter 32 of the MGL assigns authority to establish and amend benefit provisions of the plan.

A complete set of financial statements for BRS for the fiscal year ended December 31, 2018 can be obtained through the BRS, Boston City Hall, Room 816, Boston, MA 02201 or by accessing the website www.cityofboston.gov/retirement/investment.asp.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(9) Pension Benefits - Continued

(b) *Benefit Provisions*

Participation in the System is mandatory for all permanent, full-time, and certain part-time employees immediately upon the commencement of employment. Participants who resign from employment or are receiving workers' compensation benefits, and who are not eligible to receive a retirement allowance, are entitled to request a refund of their total contributions. In addition, those participants that resign voluntarily with less than ten years of service are entitled to receive 3% per year interest; all others receive interest which has accrued on their cumulative deductions at the regular interest rate (0.1% at December 31, 2019 and 2018).

Employees with ten or more years of service, having attained age 55, are entitled to pension benefits; an earlier retirement is allowed upon completion of twenty years of service. The System provides for retirement allowance benefits up to a maximum of 80% of a participant's highest consecutive three-year average annual rate of regular compensation (highest consecutive five-year average for those members who join the System on or after April 2, 2012). Benefit payments are based upon a participant's age, length of creditable service, level of compensation and group classification. Participants become vested after ten years of creditable service. Effective July 1, 1998, Chapter 32 of the MGL assigns authority to establish and amend benefits provisions and grant cost-of-living increases for the plan to the BRS.

If a member in service dies due to causes unrelated to his or her job, the surviving spouse and/or surviving dependent children may receive benefits based on the members length of service, contributions and age, either in a lump sum or in the form of an annuity. In the event there are no spouse and/or dependent children named, other beneficiaries may be entitled to a lump-sum distribution. Participants who become permanently and totally disabled from further duty may be eligible to receive accident or ordinary disability retirement benefits.

Accident disability is provided to members with incapacitation resulting from a work-related injury or hazard. Generally, annual pension benefits are provided based on 72% of the annual rate of regular compensation. Ordinary disability is available to any member whose permanent incapacitation is not work related and has completed ten years of creditable service. Such benefits are provided as if the member had attained the age of 55 (or actual age if over 55) based on the amount of creditable service earned. Limits are placed on how much an employee receiving disability benefits can earn from other sources while collecting a disability retirement pension.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(9) Pension Benefits - Continued**(c) Contributions**

Plan members are required to contribute to the BRS at rates ranging from 5% to 9% of annual covered compensation. The Commission is required to pay into the BRS its share of the remaining system-wide actuarially determined contribution accepted by PERAC plus administration costs, which are apportioned among the employers based on active covered payroll. The contributions of plan members and the Commission are governed by Chapter 32 of the MGL. The Commission's actual contributions to the plan for the years ended December 31, 2019, 2018 and 2017, amounted to \$3,166,395, \$7,507,131, and \$4,129,227, respectively, representing its contractually required contribution for each year along with additional funds to reduce the unfunded liability. Employer contributions, based on actuarially determined amounts, aggregated \$5,951,949, \$4,868,286 and \$4,667,585, or 16.8%, 13.7% and 13.4% of covered payroll in 2019, 2018 and 2017, respectively. At December 31, 2019 and 2018, the Commission has an immaterial net excess contribution to the pension plan which is covered by a payable of \$734,972 at December 31, 2019.

The Commission's funding policies have been established by Chapter 32 of the MGL. The Legislature has the authority to amend these policies. The annuity portion of the Commission's retirement allowance is funded by employees, who contribute a percentage of their regular compensation. Costs of administering the plan are funded out of plan assets. Member contributions vary depending on their date of membership:

<u>Hire Date</u>	<u>Percentage of Compensation</u>
Prior to 1975	5% of regular compensation
1975-1983	7% of regular compensation
1984 to 6/30/1996	8% of regular compensation
7/1/1996 to present	9% of regular compensation

(d) Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources

At December 31, 2019 and 2018, the Commission reported a liability of \$34.8 million and \$40.4 million, respectively, for its proportionate share of the net pension liability related to its participation in BRS. The net pension liability as of December 31, 2019 and 2018, the reporting date, was measured as of December 31, 2019 and 2018, respectively, the measurement date, and the total pension liability used to calculate the net pension liability was determined by an actuarial valuation as of January 1, 2018, rolled forward to December 31, 2019 and 2018, respectively. At December 31, 2019 and 2018 the Commission's proportion was 4.28%.

For the years ended December 31, 2019 and 2018, the Commission recognized pension expense of \$915,028 and pension income of \$150,000, respectively. The Commission follows the accounting standards set forth in GASB 62, and therefore provides for recovery of these pension liability costs as a deferred outflow of resources to be collected over the life of the liability to which it relates. At December 31, 2019 and 2018, the Commission reported deferred outflows of resources and deferred inflows of resources related to pensions as follows:

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(9) Pension Benefits - Continued

(d) *Pension Liabilities, Pension Expense, and Deferred Outflows of Resources and Deferred Inflows of Resources - Continued*

	<u>2019</u>	<u>2018</u>
<u>Deferred Outflows of Resources</u>		
Contributions subsequent to the measurement date	\$ 734,972	1,650,000
Net difference between projected and actual earnings on pension plan investments	-	10,211,013
Net difference between expected and actual experience	387,456	452,032
Changes in assumptions	3,077,370	3,692,844
Total	<u>\$ 4,199,798</u>	<u>16,005,889</u>
<u>Deferred Inflows of Resources</u>		
Net difference between projected and actual earnings on pension plan investments	\$ 218,581	-
Net difference between expected and actual experience	2,235,600	2,794,500
Total	<u>\$ 2,454,181</u>	<u>2,794,500</u>

Contributions of \$734,972 and \$1,650,000 are reported as deferred outflows of resources related to pensions resulting from contributions in calendar years 2019 and 2018, respectively, after the measurement date, and will be recognized as a reduction of the net pension liability for the years ended December 31, 2019 and 2018, respectively.

Other amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized as increases (decreases) in pension expense as follows:

**Years Ended
December 31,**

2020	\$ (17,678)
2021	354,772
2022	1,548,735
2023	(1,619,810)
2024	680,050
2025	64,576
	<u>\$ 1,010,645</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(9) Pension Benefits - Continued**(e) Actuarial Assumptions**

The total pension liability as of December 31, 2019 and 2018, was determined using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3.5%
Salary increases	4.5%
Investment rate of return	7.25%
Post-retirement cost of living adjustment	3% of first \$14,000

Mortality rates for pre-retirees, healthy retirees and disabled retirees were based on pre-retirement of RP-2014 Blue Collar Mortality Table projected generationally using Scale MP-2017 set forward 1 year for females.

The actuarial assumptions used in the valuations involve estimates of the reported amounts and assumptions about probability of occurrence of events far into the future. Amounts determined regarding the net pension liability are subject to continual revision as actual results are compared with past expectations and new projections are made.

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future rates of return are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future rates of return by the target asset allocation percentage.

Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2019, are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	24.00%	6.15%
International developed markets equity	13.00%	6.78%
International emerging markets equity	8.00%	8.65%
Core fixed income	10.00%	1.11%
High-yield fixed income	15.00%	3.51%
Real Estate	8.00%	4.33%
Hedge fund, GTAA, Risk parity	17.00%	3.19%
Private equity	5.00%	9.99%
Total	100.00%	

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(9) Pension Benefits - Continued

(e) Actuarial Assumptions - Continued

Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2018 are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Domestic equity	23.00%	6.16%
International developed markets equity	16.00%	6.69%
International emerging markets equity	8.00%	9.47%
Core fixed income	21.00%	1.89%
High-yield fixed income	15.00%	4.00%
Real Estate	5.00%	4.58%
Hedge fund, GTAA, Risk parity	7.00%	3.68%
Private equity	5.00%	10.00%
Total	100.00%	

(f) Discount Rate

The discount rate used to measure the total pension liability was 7.25% for 2019 and 2018. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rates and employer contributions will be made at the actuarially determined contractually required rates. Based on these assumptions, the net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Net Pension Liability to changes in the Discount Rate

The following tables illustrates the sensitivity of the net pension liability, calculated using the discount rate of 7.25% for the years ended December 31, 2019 and 2018, respectively, as well as what the net pension liability would be if it were calculated using a discount rate that is one-percentage-point lower or one-percentage-point higher than the current rate:

2019		
1.00% Decrease	Current Discount	1.00% Increase
(6.25%)	Rate	(8.25%)
\$52,937,316	\$34,808,595	\$19,435,798

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(9) Pension Benefits - Continued**(f) Discount Rate - Continued**

	2018	
	Current Discount	
1.00% Decrease	Rate	1.00% Increase
<u>(6.25%)</u>	<u>(7.25%)</u>	<u>(8.25%)</u>
\$58,026,268	\$40,448,003	\$25,540,401

(10) Postemployment Benefits other than Pensions (OPEB)**(a) Plan Description**

The Commission sponsors and participates in another Postemployment Benefit ("OPEB") Trust plan, a single-employer defined benefit healthcare plan ("OPEB Plan"), that provides healthcare and insurance benefits to participating retirees and their beneficiaries. The OPEB Plan provides healthcare benefits to current and future retirees, and their dependents/beneficiaries in accordance with Massachusetts General Law Chapter 32B.

The OPEB Plan is administered by the Commission and does not issue stand-alone financial statements.

(b) Benefits Provided

Medical and prescription drug benefits are provided to all eligible retirees not enrolled in Medicare through a variety of plans offered by a variety of third-party insurers. Medical and prescription drug benefits are provided to retirees enrolled in Medicare through supplemental and Medicare Advantage plans offered by Blue Cross Blue Shield of Massachusetts, Harvard Pilgrim HealthCare, and Tufts Health Plan.

Groups 1 and 2 retirees, with at least 10 years or 20 years of creditable service, are eligible at age 55 or any age, respectively. Group 4 retirees with at least 10 years or 20 years of creditable service are eligible at age 45 or any age, respectively. Retirees on accidental disability retirement are eligible at any age, while ordinary disability requires 10 years of creditable service. The surviving spouse is eligible to receive pre and post retirement death benefits, as well as medical and prescription drug coverage.

Employer and employee contribution rates are governed by the respective collective bargaining agreements. The OPEB Plan is currently funded on a pay-as-you-go basis plus periodic advance funding contributions as amounts are available. The employers and plan members share the cost of benefits. As of December 31, 2017, the valuation date for both years ended December 31, 2019 and 2018, the plan members contribute 12.0% to 29.5% of the monthly premium cost, depending on the plan in which they are enrolled. The Commission contributes the balance of the premium cost. For the years ended December 31, 2019 and 2018, the Commission's average contribution rate was 11.82% and 17.77%, respectively, of covered-employee payroll. As of December 31, 2019, and 2018, the Commission has a payable to the OPEB Plan of \$658,749 and \$0, respectively, for legally required contributions.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(10) Postemployment Benefits other than Pensions (OPEB) - Continued

(c) Employees Covered by Benefit Terms

As of the December 31, 2017, the date of the latest actuarial validation, plan participation consisted of:

Actives employees	401
Retirees and beneficiaries	<u>242</u>
Total	<u>643</u>

(d) Net OPEB Liability and Actuarial Assumptions

The Commission's net OPEB liability of \$45,642,150 and \$47,844,621 was measured as of December 31, 2019 and 2018, respectively, and was determined by an actuarial valuation as of December 31, 2017. The total OPEB liability in the most recent actuarial valuation was determined using the following key actuarial assumptions applied to all periods included in the measurement, unless otherwise specified:

Payroll Growth:	3.00%
Salary Increases:	4.00%
Discount Rate:	6.50%
Investment Rate of Return:	6.50%

Health care trend rates for Medicare and non-Medicare are 6.75% decreasing by 0.5% for four years, and then by 0.25% for one year to an ultimate level of 4.5% per year. For Medicare Part B the valuation used a health care trend rate of 4.5% per year. Retiree contributions are expected to increase with health care trend rates.

The mortality rates for pre-retired participants is calculated using RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017 set forward 1 year for females. Mortality rates for retirees and disabled participants is calculated using RP-2014 Blue Collar Annuitant Mortality Table projected generationally with Scale MP-2017 set forward 1 year for females.

The long-term expected rate of return on OPEB plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of OPEB plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation subtracting expected investment expenses and a risk margin.

BOSTON WATER AND SEWER COMMISSION

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December 31, 2019 and 2018

(10) Postemployment Benefits other than Pensions (OPEB) - Continued

(d) Net OPEB Liability and Actuarial Assumptions - Continued

The target allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:

Asset Class	2019	
	Allocation	Long-Term Expected Real Rate of Return
Domestic equity	30.00%	6.15%
International developed markets equity	21.00%	6.78%
International emerging markets equity	9.00%	8.65%
Core fixed income	20.00%	1.11%
Hedge fund, GTAA, risk parity	20.00%	3.19%
Total	100.00%	

Asset Class	2018	
	Allocation	Long-Term Expected Real Rate of Return
Domestic equity	24.80%	6.16%
International developed markets equity	17.32%	6.69%
International emerging markets equity	4.68%	9.47%
Core fixed income	31.20%	1.89%
Hedge fund, GTAA, risk parity	22.00%	3.68%
Total	100.00%	

The discount rate used to measure the total OPEB liability was 6.50% as of December 31, 2019 and 2018. The OPEB plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on OPEB plan investment was applied to all periods of projected benefit payments to determine the total OPEB liability.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(10) Postemployment Benefits other than Pensions (OPEB) - Continued**(d) Net OPEB Liability and Actuarial Assumptions - Continued**

The components of the net OPEB liability for the Plan as of December 31, 2019:

Total OPEB Liability	\$ 74,480,894
Fiduciary net position	(28,838,744)
Commission's net OPEB liability	<u>\$ 45,642,150</u>

Fiduciary net position as a percentage of the total OPEB liability	38.72%
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The components of the net OPEB liability for the Plan as of December 31, 2018:

Total OPEB Liability	\$ 70,747,343
Fiduciary net position	(22,902,722)
Commission's net OPEB liability	<u>\$ 47,844,621</u>

Fiduciary net position as a percentage of the total OPEB liability	32.37%
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(e) Change in the Net OPEB Liability

	<u>Total OPEB Liability</u>	<u>Plan Fiduciary Net Position</u>	<u>Net OPEB Liability</u>
Balances at December 31, 2018	\$ 70,747,343	\$ 22,902,722	\$ 47,844,621
Changes for the year:			
Service cost	2,134,311	-	2,134,311
Interest	4,646,844	-	4,646,844
Contributions - employer	-	4,200,341	(4,200,341)
Net investment income	-	4,519,177	(4,519,177)
Assumptions	(264,108)	-	-
Benefit payments	<u>(2,783,496)</u>	<u>(2,783,496)</u>	<u>-</u>
Net changes	<u>3,733,551</u>	<u>5,936,022</u>	<u>(2,202,471)</u>
Balances at December 31, 2019	<u>74,480,894</u>	<u>28,838,744</u>	<u>45,642,150</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(10) Postemployment Benefits other than Pensions (OPEB) - Continued

(e) *Change in the Net OPEB Liability - Continued*

	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability
Balances at December 31, 2017	\$ 66,763,531	\$ 19,677,656	\$ 47,085,875
Changes for the year:			
Service cost	2,069,043	-	2,134,311
Interest	4,394,786	-	4,646,844
Contributions - employer	-	6,301,842	(4,200,341)
Net investment income	-	(596,759)	(4,519,177)
Benefit payments	(2,480,017)	(2,480,017)	-
Net changes	3,983,812	3,225,066	758,746
Balances at December 31, 2018	70,747,343	22,902,722	47,844,621

(f) *Sensitivity Analysis*

The following presents the Commission's net OPEB liability as well as what the Commission's net OPEB liability would be if it were calculated using a discount rate that is 1% lower or 1% higher than the current discount rate as well as if the healthcare cost trend rates are 1% lower or higher than the current healthcare cost trend rates (the health care rate is disclosed on page 54):

2019			
Discount Rate			
	<u>1.00% Decrease (5.5%)</u>	<u>Current Rate (6.5%)</u>	<u>1.00% Increase (7.5%)</u>
Net OPEB Liability	\$56,336,917	\$45,642,150	\$37,016,522
Health Care Rate			
	<u>1.00% Decrease</u>	<u>Trend Rate</u>	<u>1.00% Increase</u>
Net OPEB Liability	\$35,180,139	\$45,642,150	\$58,919,702
2018			
Discount Rate			
	<u>1.00% Decrease (5.5%)</u>	<u>Current Rate (6.5%)</u>	<u>1.00% Increase (7.5%)</u>
Net OPEB Liability	\$57,966,744	\$47,844,621	\$39,530,440
Health Care Rate			
	<u>1.00% Decrease</u>	<u>Trend Rate</u>	<u>1.00% Increase</u>
Net OPEB Liability	\$38,224,648	\$47,844,621	\$59,837,268

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(10) Postemployment Benefits other than Pensions (OPEB) - Continued

(g) *OPEB Expense and Deferred Outflows or Resources and Deferred Inflows of Resources Related to OPEB*

For the years ended December 31, 2019 and 2018, the Commission recognized OPEB expense of \$1,902,500 and OPEB income \$2,650,000, respectively. The Commission follows the accounting standards set forth in GASB 62, and therefore provides for recovery of these OPEB liability costs as a deferred outflow of resources to be collected over the life of the liability to which it relates. At December 31, 2019 and 2018, the Commission reported deferred outflows of resources and deferred inflows of resources related to OPEB as follows:

	<u>2019</u>	<u>2018</u>
<u>Deferred Outflows of Resources</u>		
Contributions subsequent to measurement date	\$ 747,500	2,650,000
Difference between projected and actual earnings on OPEB plan investments	-	1,600,013
Total	<u>\$ 747,500</u>	<u>4,250,013</u>
<u>Deferred Inflows of Resources</u>		
Change in assumptions	\$ 231,098	-
Net difference between projected and actual experience	1,217,454	-
Total	<u>\$ 1,448,552</u>	<u>-</u>

The Commission's 2019 and 2018 contributions of \$747,500 and \$2,650,000, respectively, reported as deferred outflows of resources related to OPEB resulting from Commission contributions subsequent to the measurement date will be recognized as a reduction of the net OPEB liability in the following year. Other amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized in OPEB expense as follows:

<u>Years Ending December 31,</u>	
2020	\$ (237,377)
2021	(237,377)
2022	(237,376)
2023	(637,380)
2024	(33,014)
Thereafter	(66,028)
Total	<u>\$ (1,448,552)</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(11) Deposit and Investment Risks**(a) Custodial Credit Risk**

Custodial credit risk is the risk that in the event of bank failure, the Commission's deposits may not be returned. Certain of the Commission's deposits are fully insured by FDIC insurance or collateralized with securities held by the Commission or the Commission's agent in the Commission's name. The Commission does not have a formal policy for managing custodial credit risk of deposits. As of December 31, 2019, and 2018, the cash balances of uninsured and uncollateralized deposits totaled \$53,410,685 and \$36,335,734, respectively. All the Commission's investments are held by a third party in the name of the Commission.

(b) Investment Policy

Investment of Commission funds is governed by federal and state laws 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 to its customers, while any investment losses would negatively affect the Commission's general rates and charges. Consequently, the Commission adheres to an investment policy that will maintain a fully invested, diversified portfolio with the objective of achieving the highest yield that is attainable in conjunction with a very low risk of loss of capital. The basic criteria that will be used in making investment decisions includes 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.

Current permitted investments under the General Revenue Bond Resolution include:

1. Any bond or other obligation to which principal and interest are unconditionally guaranteed by the United States of America.
2. Any bond or other obligation of any state, agency or local government unit of any state which are:
 - A. Noncallable.
 - B. Fully collateralized by funds consisting of cash, bonds or obligations of one of the above.
3. Public Housing bonds secured by the United States of America, certain notes issued by public agencies or municipalities fully secured by the United States of America or obligations issued by State or public agencies or municipalities carrying the highest bond rating.
4. Obligations of any state to which the full faith and credit of the state is pledged and are within the two highest bond ratings.
5. Prime Commercial Paper rated A – 1 or P – 1.
6. Shares of money market funds that are open ended and rated A or better, or money market funds of banks meeting specific criteria.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(11) Deposit and Investment Risk - Continued**(b) Investment Policy - Continued**

7. Certificates of Deposit issued by banks insured by the FDIC, which are fully secured by obligations described in 1 or 2 above.
8. Repurchase Agreements fully collateralized by obligations described in 1 or 2 above.
9. Futures contracts traded on an exchange for investments described in 1, 2, 3, and 4 above.
10. Investments in commercial paper cannot exceed \$15 million per issuance.

Further, all investments of the Commission are held in the Commission's name by a third party.

(c) Interest Rate Risk

The Commission's guidelines do not specifically address limits on maturities as a means of managing its exposure to fair value losses arising from changing interest rates. The following is a listing of the Commission's fixed income investments and related maturity schedule (in years) as of December 31:

Investment type	2019				
	Fair value	Less than 1	1 – 5	6 – 10	More than 10
U.S. Government agencies	\$ 130,904,662	83,312,031	7,876,168	15,991,903	23,724,560
Guaranteed investment contract	8,416,250	—	—	8,416,250	—
Money market	53,410,685	53,410,685	—	—	—
Open ended mutual funds	22,478,674	22,478,674	—	—	—
	<u>\$ 215,210,271</u>	<u>159,201,390</u>	<u>7,876,168</u>	<u>24,408,153</u>	<u>23,724,560</u>

Investment type	2018				
	Fair value	Less than 1	1 – 5	6 – 10	More than 10
U.S. Government agencies	\$ 151,095,266	26,026,191	50,944,403	38,581,141	35,543,531
Guaranteed investment contract	8,416,250	—	—	8,416,250	—
Money market	36,335,734	36,335,734	—	—	—
Open ended mutual funds	27,738,707	27,738,707	—	—	—
	<u>\$ 223,585,957</u>	<u>90,100,632</u>	<u>50,944,403</u>	<u>46,997,391</u>	<u>35,543,531</u>

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(11) Deposit and Investment Risk - Continued

(d) Credit Risk

The Commission follows its investment policy listed above in regard to the credit worthiness of its investments. The Commission's fixed income investments as of December 31, 2019 and 2018 were rated by Standard and Poor's rating scale and/or an equivalent national rating organization, and the ratings are presented below using the Standard and Poor's rating scale:

Investment type	2019			
	Fair value	AAA	AA	Not rated
U.S. Government agencies	\$ 130,904,662	107,180,102	—	23,724,560
Guaranteed investment contract	8,416,250	—	—	8,416,250
Money market	53,410,685	—	53,410,685	—
Open ended mutual funds	22,478,674	22,478,674	—	—
	<u>\$ 215,210,271</u>	<u>129,658,776</u>	<u>53,410,685</u>	<u>32,140,810</u>

Investment type	2018			
	Fair value	AAA	AA	Not rated
U.S. Government agencies	\$ 151,095,266	131,479,943	—	19,615,323
Guaranteed investment contract	8,416,250	—	—	8,416,250
Money market	36,335,734	—	36,335,734	—
Open ended mutual funds	27,738,707	27,738,707	—	—
	<u>\$ 223,585,957</u>	<u>159,218,650</u>	<u>36,335,734</u>	<u>28,031,573</u>

As of December 31, 2019, and 2018, the Commission had \$23,724,560 and \$19,615,323, respectively, of unrated investments that are explicitly guaranteed by the U.S. Government.

The Commission's investment policy does not offer specific limitations in regard to the concentration of risk, except that a single investment in commercial securities cannot be more than \$15 million. The Commission has individual investments that at fair value exceed 5% of the total investments balance at December 31, 2019 and 2018. Individually these investments in money market funds range between \$11 million and \$20 million for 2019 and \$11 million and \$19 million for 2018. In the aggregate, they approximate \$63 million and \$55 million for the years ended December 31, 2019 and 2018, respectively.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(12) Commitments

The Commission has an ongoing Capital Improvement Program. In connection therewith, the Commission has entered into various contracts for the design and construction of its infrastructure. Commitments under these contracts aggregate approximately \$55.9 million as of December 31, 2019.

The Commission has committed to capital improvement projects of approximately \$160.8 million for 2020 through 2021, which are primarily related to enhance the operation of the water and sewer system, including reducing pollution to Boston Harbor and neighboring waterways. Of this amount, approximately \$125.0 million represents extension and improvement projects and \$35.8 million represents renewal and replacement projects. The extension and improvement projects will be 25% funded by federal, state and Massachusetts Water Resources Authority grants and loans. The remainder will be funded from the Commission's operating revenues and borrowings, as needed.

(13) Risk Management and Other Insurance

The Commission is completely self-insured for unemployment benefits. The Commission's worker's compensation is self-insured with a self-insured retention of \$750,000 per accident, supplemented with excess coverage at statutory limits purchased through an outside carrier. For general liability the Commission's self-insured retention is \$1 million per occurrence and is supplemented by \$10 million of excess coverage. Under the sections of the Model Water and Sewer act, the Commission's maximum tort liability is \$100,000 per claimant.

The Commission maintains other insurance coverage as follows:

Policy type	Coverage
Automobile Liability	Combined single limit of \$1 million/accident, supplemented with excess coverage of \$10 million.
Property	Aggregate limit of \$250 million blanket building and contents per occurrence with a \$25,000 deductible each occurrence on most perils.
Public Officials	Coverage of \$5 million each act, \$6 million aggregate; \$500,000 self-insurance retention each claim.
Employment Practices	Coverage of \$5 million annual aggregate via layered policies; \$500,000 self-insurance retention each claim.
Fiduciary	\$5 million annual aggregate; with \$10,000 deductible each claim.
Crime	Employee dishonesty coverage of \$5 million, with \$25,000 deductible each loss.
Cyber Risk	\$4 million annual aggregate with \$50,000 deductible each claim.

A single insurance claim has exceeded coverage by a material amount in the past three years.

Liabilities for self-insured claims are reported if it is probable that a loss has been incurred and the amount can be reasonably estimated. The Commission has established a liability reserve based on historical trends along with attorney's and independent insurance reserve appraiser's estimate of pending matters and lawsuits in which the Commission is involved.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(13) Risk Management and Other Insurance - Continued

Changes for the years ended December 31, are as follows:

	<u>2019</u>	<u>2018</u>
Beginning balance of reserves	\$ 1,445,682	1,195,734
Payment of claims attributable to events of both current and prior years:		
Workers' compensation	-	-
General liability	940,332	736,882
Incurring claims	<u>(698,504)</u>	<u>(486,934)</u>
Ending balance of reserves	\$ <u>1,687,510</u>	<u>1,445,682</u>

(14) Contingencies**(a) Legal**

The Commission is involved in ordinary and routine litigation and other matters related to its operations and the establishment of rates. Management believes that the resolution of these matters will not materially affect the financial position of the Commission.

The Commission has received federal and state grants for specific purposes that are subject to review and audit by the grantor agencies. Such audits could lead to requests for reimbursement to the grantor agency for expenditures disallowed under terms of the grant. The Commission believes such disallowances, if any, will not be significant.

(b) Pollution Remediation Obligations

GASB Statement No. 49, *Accounting and Financial Reporting by Employers for Pollution Remediation Obligations*, requires governments to reasonably determine potential polluted sites and provide guidance to recognize Pollution Remediation Obligations ("PRO") components as liability. The Commission evaluated their pollution remediation events and determined that the PRO liability as of December 31, 2019, as well as, the PRO payments made during 2019 and 2018 were not material to the Commission's financial statements.

(c) Environmental Protection Agency

During 2012, the Commission entered into a consent decree with the Conservation Law Foundation, Inc. ("CLF") and the United States Environmental Protection Agency in settlement of a suit originally brought by the CLF alleging violations of the Commission's National Pollution Discharge Elimination System Permit. The consent decree required the Commission to pay approximately \$374,000 of penalties and reimbursed legal fees and established goals. Failure to meet these goals will subject the Commission to penalties calculated on a daily basis until the goal is achieved. The decree also calls for other payments if the Commission does not meet specific expenditure levels. For 2019, the Commission believes they have achieved the goals set forth in the decree. In accordance with GASB 49, the achievement of these goals is a part of the Commission's ongoing operations and is not accrued as a PRO.

BOSTON WATER AND SEWER COMMISSION

Notes to Financial Statements

December 31, 2019 and 2018

(15) Subsequent Event

In March 2020, the Governor of Massachusetts declared a state of emergency and ordered all non-essential governmental agencies to temporarily cease due to the COVID-19 outbreak. The operations of the Commission were deemed essential and water services were continued to be offered to customers. Management expects that their operations will be affected by the crisis. Management also anticipates the volatile nature of the stock market and interest rates may have a potential impact on investment earnings of both the Commission as well as the pension and OPEB trusts. However, management cannot reasonably estimate the duration or the financial impact of the crises. Management expects that their operations will be negatively affected by the crisis, as many organizations that used the Commissions services temporarily closed.

REQUIRED SUPPLEMENTARY INFORMATION

BOSTON WATER AND SEWER COMMISSION
Schedule of Proportionate Share of the Net Pension Liability
Boston Retirement System

Valuation date	December 31, 2019	December 31, 2018	December 31, 2017	December 31, 2016	December 31, 2015
Measurement date	January 1, 2018	January 1, 2018	January 1, 2016	January 1, 2016	January 1, 2014
	December 31, 2019	December 31, 2018	December 31, 2017	December 31, 2016	December 31, 2015
Commission's proportion of the net pension liability	4.28%	4.28%	4.20%	4.20%	2.60%
Commission's proportionate share of the net pension liability	\$ 34,808,595	40,448,003	25,976,537	26,503,599	38,931,280
Commission's covered payroll	\$ 35,533,839	35,472,896	34,743,437	33,407,151	31,361,504
Commission's proportionate share of the net pension asset as a percentage of its covered-employee payroll	97.96%	114.03%	74.77%	79.34%	124.14%
Plan fiduciary net position as a percentage of the total pension liability	77.87%	72.89%	81.49%	79.44%	69.20%

Notes:

This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, information is presented for those years in which information is available.

See accompanying notes to the required supplemental information.

BOSTON WATER AND SEWER COMMISSION

Schedule of Pension Contributions

Boston Retirement System

For the Years Ended December 31,

	2019	2018	2017	2016	2015
Contractually required contribution	\$ 5,951,949	4,868,286	4,667,585	4,918,577	3,994,268
Contributions in relation to the contractually required contribution	3,166,395	7,507,131	4,129,227	11,057,791	7,907,306
Contribution deficiency (excess)	\$ 2,785,554	(2,638,845)	538,358	(6,139,214)	(3,913,038)
Commission's covered payroll	\$ 35,533,839	35,472,896	34,743,437	33,407,151	31,361,504
Contribution as a percentage of covered-employee payroll	8.9%	21.2%	11.9%	33.1%	25.2%

Notes:

Employers participating in the Boston Retirement System are required by MA General Laws, Section 32, to contribute an actuarially determined contribution rate each year.

This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, information is presented for those years in which information is available.

See accompanying notes to the required supplemental information.

BOSTON WATER AND SEWER COMMISSION

Notes to Required Supplementary
Information - Boston Retirement System
December 31, 2019 & 2018

Note 1 - **Change in Assumptions**

Fiscal year December 31, 2019

None

Fiscal year December 31, 2018

None

Fiscal year December 31, 2017

The investment return assumption was reduced from 7.50% to 7.25%.

Fiscal year December 31, 2016

None

Fiscal year December 31, 2015

None

BOSTON WATER AND SEWER COMMISSION

Schedule of the Changes in Total OPEB Liability and Related Ratios

Other Postemployment Benefit ("OPEB") Trust

For the Years Ended December 31, 2019 & 2018

		<u>2019</u>	<u>2018</u>
Total OPEB Liability:			
Service cost	\$	2,134,311	2,069,043
Interest		4,646,844	4,394,786
Change in assumptions		(264,108)	—
Benefit payments		<u>(2,783,496)</u>	<u>(2,480,017)</u>
Net Change in total OPEB liability		3,733,551	3,983,812
Total OPEB liability, beginning of the year		<u>70,747,343</u>	<u>66,763,531</u>
Total OPEB liability, end of the year	\$	<u>74,480,894</u>	<u>70,747,343</u>
Plan fiduciary net position:			
Contributions - employer	\$	4,200,341	6,301,842
Net investment income		4,519,177	(596,759)
Benefit payments		<u>(2,783,496)</u>	<u>(2,480,017)</u>
Net change in plan fiduciary net position		5,936,022	3,225,066
Plan fiduciary net position, beginning of year		<u>22,902,722</u>	<u>19,677,656</u>
Plan fiduciary net position, end of year	\$	<u>28,838,744</u>	<u>22,902,722</u>
Net OPEB liability, end of year	\$	<u><u>45,642,150</u></u>	<u><u>47,844,621</u></u>
Plan fiduciary net position as a percentage of the total OPEB liability		38.72%	32.37%
Covered payroll	\$	35,533,839	35,472,896
Net OPEB liability as a percentage of covered payroll		128.45%	134.88%

Notes:

This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, information is presented for those years in which information is available.

This schedule is presented using the optional format of combining the required scheduled in paragraphs 57a and 57b of GASB 75.

BOSTON WATER AND SEWER COMMISSION

Schedule of OPEB Contributions

Other Postemployment Benefit ("OPEB") Trust

For the Years Ended December 31, 2019 and 2018

	<u>2019</u>	<u>2018</u>
Actuarially determined contribution	\$ 4,859,090	4,688,044
Contribution in relation to the actuarially determined contribution	<u>4,200,341</u>	<u>6,301,842</u>
Contribution deficiency (excess)	<u>\$ 658,749</u>	<u>(1,613,798)</u>
 Covered payroll	 \$ 35,533,839	 35,472,896
 Contributions as a percentage of covered payroll	 11.82%	 17.77%

Notes:

This schedule is presented to illustrate the requirement to show information for 10 years. However, until a full 10-year trend is compiled, information is presented for those years in which information is available.

The actuarial methods and assumptions used to calculate the total OPEB liability are described in Note 11 to the financial statements.

BOSTON WATER AND SEWER COMMISSION

Notes to Required Supplementary Information – Other
Postemployment Benefit (“OPEB”) Trust

December 31, 2019 & 2018

Note 1 - **Change in Assumptions**

Fiscal year December 31, 2019

The excise tax on high cost health plans was repealed effective December 20, 2019 and as such was removed from the valuation.

Fiscal year December 31, 2018

None

SUPPLEMENTAL SCHEDULES

Schedule 1

BOSTON WATER AND SEWER COMMISSION
Supplemental Schedules of Revenues and Expenses – Rate Basis
For the Years Ended December 31,

	<u>2019</u>	<u>2018</u>
Revenues:		
Water revenue	\$ 155,856,895	154,570,890
Sewer revenue	<u>213,568,719</u>	<u>211,774,201</u>
Subtotal	<u>369,425,614</u>	<u>366,345,091</u>
Less:		
Adjustments	10,562,235	10,879,886
Discounts	1,218,447	1,250,369
Bad debt	<u>378,627</u>	<u>1,111,957</u>
Subtotal	<u>12,159,309</u>	<u>13,242,212</u>
Net billed charges	357,266,305	353,102,879
Prior year surplus	558,206	570,607
Miscellaneous revenues:		
Late charge revenue	679,568	1,098,123
Investment income	4,609,528	4,336,497
Fire pipe revenue	4,958,922	4,869,306
Other income	<u>11,584,275</u>	<u>7,549,162</u>
Total revenues	<u>379,656,804</u>	<u>371,526,574</u>
Direct operating expenses:		
Salaries and wages	43,648,298	49,686,397
Overtime wages	1,185,585	911,159
Fringe benefits	8,519,218	8,100,581
Supplies and materials	2,372,934	2,111,561
Repairs and maintenance	10,123,538	8,107,578
Utilities	1,617,652	1,430,558
Professional services	3,336,607	3,304,198
Space and equipment rentals	331,653	236,964
Other services	1,773,605	1,822,935
Insurance	717,545	491,401
Travel and training	62,912	79,542
Damage claims	257,515	286,008
Inventory	17,870	15,104
Capital outlay	<u>86,952</u>	<u>40,060</u>
Total direct operating expenses	<u>74,051,884</u>	<u>76,624,046</u>
Nonoperating expenses:		
MWRA assessment	235,786,344	227,082,053
Capital improvements	15,382,251	12,585,360
Principal payments	29,945,528	28,308,737
Interest expense	21,838,594	21,690,195
Deposits to reserve funds	1,768,000	4,474,113
SDWA assessment	<u>194,650</u>	<u>203,864</u>
Total nonoperating expenses	<u>304,915,367</u>	<u>294,344,322</u>
Total current expenses	<u>378,967,251</u>	<u>370,968,368</u>
Current year rate surplus	\$ <u>689,553</u>	<u>558,206</u>

This supplemental schedule presents the Commission's revenues and expenses on the basis that is presented in the Commission's budget and rate-setting documents. See Note 1 in the notes to the basic financial statements for the differences between this supplemental schedule and GAAP.

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Statistical Section

2019 - 2018

This part of the Commission's comprehensive annual financial report presents detailed information as a context for understanding what the information in the financial statements, note disclosures, and required supplementary information says about the Commission's overall financial health.

Contents

Financial Trends

These schedules contain trend information to help the reader understand how the Commission's financial performance and well-being have changed over time. These schedules are found on pages 76-78.

Net Position by Component – Last Ten Fiscal Years
Changes in Net Position – Last Ten Fiscal Years
Revenues and Expenses (Rate basis) – Last Ten Fiscal Years

Revenue Capacity

These schedules contain information to help the reader assess the factors affecting the Commission's ability to generate revenue. These schedules are found on pages 79-82.

Largest Users – Last Ten Fiscal Years
Water Purchased vs. Water Billed – Last Ten Fiscal Years
Billings and Collections – Last Ten Fiscal Years
Water and Sewer Rates Structure – Current and Nine Years ago

Debt Capacity

These schedules present information to help the reader assess the affordability of the Commission's current levels of outstanding debt and the Commission's ability to issue additional debt in the future. These schedules are found on pages 83 and 84.

Commission per Capita Debt – Last Ten Fiscal Years
Revenue Bond Coverage – Last Ten Fiscal Years

Demographic and Economic Information

These schedules offer demographic and economic indicators to help the reader understand the environment within which the Commission's financial activities take place. These schedules are found on pages 85-89.

Population, Income and Employment – Last Ten Fiscal Years
Demographic and Economic Statistics – Last Ten Fiscal Years
Distribution of Customers by Account Type – Current and Nine Years Ago
Largest Private Employers – Current and Nine Years Ago
Economy, Household Income, Occupation – Year-end 2017 Summary

Operating and Capital Information

These schedules contain service and infrastructure data to help the reader understand how the information in the Commission's financial relates to the services the Commission provides and the activities it performs. These schedules are on pages 90-93.

Divisional Breakdown of BWSC Employees – Last Ten Fiscal Years
Water and Sewer Distribution System – Current and Nine Years ago
Insurance Coverage – Current and Nine Years ago
Retirement System – Funding Process

Table 1
Net Position by Component
Last Ten Fiscal Years Summary

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
								*		
Net investment in capital assets:	\$856,309,985	\$814,480,511	\$838,757,300	\$755,338,577	\$764,282,627	\$724,198,689	\$800,137,309	\$717,850,640	\$704,696,145	\$644,153,249
Restricted for debt service:	55,293,433	56,128,652	51,837,518	51,558,245	48,538,724	47,887,684	44,301,549	43,969,633	41,540,947	43,599,905
Restricted for capital assets:	212,933	202,791	200,300	199,829	200,044	0	100,002	157,941	118,327	107,847
Restricted for debt covenants:	58,066,734	55,480,676	53,562,754	52,023,329	51,422,141	49,531,618	48,752,536	50,927,908	49,641,373	48,661,896
Unrestricted:	(574,446,086)	(534,178,114)	(554,084,031)	(465,829,076)	(473,792,441)	(448,829,430)	(517,415,068)	(450,206,031)	(454,992,268)	(399,584,043)
Total net position:	<u>\$395,436,999</u>	<u>\$392,114,516</u>	<u>\$390,273,841</u>	<u>\$393,290,904</u>	<u>\$390,651,095</u>	<u>\$372,788,561</u>	<u>\$375,876,328</u>	<u>\$362,700,091</u>	<u>\$341,004,524</u>	<u>\$336,938,854</u>

*Restated 2012 and prior Financial Statements due to the implementation of GASB Statement No. 65.

Source: Commission's Financial Statements.

Table 2
Changes in Net Position
Last Ten Fiscal Years Summary

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
<i>Operating Revenues:</i>				*		*				
Water usage	\$ 156,155,905	\$ 155,054,064	\$ 146,633,599	\$ 150,953,857	\$ 149,992,577	\$ 140,533,568	\$ 135,062,312	\$ 130,192,168	\$ 122,406,596	\$ 122,265,092
Sewer usage	213,949,277	212,389,150	200,967,245	198,994,058	188,228,285	176,689,383	171,115,529	163,206,107	153,214,217	152,829,067
Fire pipe	4,958,922	4,869,306	4,701,840	4,601,031	4,486,066	4,330,652	4,185,692	4,107,752	3,990,578	3,934,823
Other income	11,584,275	7,549,162	10,754,546	7,093,016	6,294,690	5,666,579	5,426,141	5,556,810	10,276,765	7,866,256
<i>Total Operating Revenues:</i>	386,648,379	379,861,682	363,057,230	361,641,962	349,001,618	327,220,182	315,789,674	303,062,837	289,888,156	286,895,238
<i>Operating & Maintenance Expenses:</i>										
Operations	78,864,974	79,642,724	59,240,716	59,660,238	60,370,827	57,189,385	56,462,155	57,403,354	53,946,929	64,075,096
Maintenance	10,123,538	8,107,578	6,686,471	6,203,654	5,157,692	5,441,001	5,167,230	5,056,953	4,643,428	5,284,662
MWRA assessment (Water)	92,082,863	88,328,954	77,916,969	74,518,413	72,529,779	69,114,613	66,979,588	66,818,991	65,889,100	64,750,699
MWRA assessment (Sewer)	143,703,481	138,753,099	128,922,533	125,154,614	119,256,452	115,763,908	112,534,606	109,134,450	105,758,794	100,912,502
<i>Total Operating Expenses:</i>	324,774,856	314,832,355	272,766,689	265,536,919	257,314,750	247,508,907	241,143,579	238,413,748	230,238,251	235,022,959
Operating income before depreciation:	61,873,523	65,029,327	90,290,541	96,105,043	91,686,868	79,711,275	74,646,095	64,649,089	59,649,905	51,872,279
Depreciation & amortization	25,820,917	24,217,483	19,875,281	23,011,425	16,680,991	17,336,678	17,982,946	17,564,424	17,907,873	19,236,821
<i>Excess Operating Revenues:</i>	36,052,606	40,811,844	70,415,260	73,093,618	75,005,877	62,374,597	56,663,149	47,084,665	41,742,032	32,635,458
<i>Non-Operating Revenues (Expenses):</i>										
Interest income	5,602,152	5,490,570	2,933,609	5,214,405	(331,584)	4,010,532	7,118,613	9,093,897	3,866,347	9,041,352
Interest expense	(18,707,311)	(18,439,491)	(19,769,119)	(18,696,723)	(18,047,035)	(17,676,856)	(17,303,081)	(17,792,962)	(14,935,105)	(14,914,395)
<i>Total Nonoperating Expenses:</i>	(13,105,159)	(12,948,921)	(16,835,510)	(13,482,318)	(18,378,619)	(13,666,324)	(10,184,468)	(8,699,065)	(11,068,758)	(5,873,043)
<i>Excess revenues before capital grants & contributions & transfer requirements:</i>	22,947,447	27,862,923	39,524,138	59,611,300	56,627,258	48,708,273	46,478,681	38,385,600	30,673,274	26,762,415
Capital grants and contributions	8,812,016	5,982,540	30,549,566	3,354,552	19,498,395	27,682,938	9,785,856	14,322,098	27,185,487	29,249,966
<i>Excess revenues before transfer requirements:</i>	31,759,463	33,845,463	70,073,704	62,965,852	76,125,653	76,391,211	56,264,537	52,707,698	57,858,761	56,012,381
Excess revenues used										
to fund reserves & other deferrals	(28,305,633)	(32,017,189)	(52,078,807)	(31,453,661)	(29,709,699)	(30,438,552)	(26,271,375)	(27,859,444)	(19,100,788)	(24,208,767)
Change in accumulated revenues										
used to offset future rates	(13,1347)	12,401	(132,363)	(177,678)	(27,773)	(99,742)	(25,974)	90,431	(88,179)	20,606
<i>Change in Net Position:</i>	\$ 3,322,483	\$ 1,840,675	\$ 17,862,534	\$ 31,334,513	\$ 46,388,181	\$ 45,852,917	\$ 29,967,188	\$ 24,938,685	\$ 38,669,794	\$ 31,824,220

* Restated 2014 Financial Statements due to the implementation of GASB Statement No. 68.

* Restated 2012 and prior Financial Statements due to the implementation of GASB Statement No. 65.

Table 3
Revenues and Expenses (Rate Basis)
Last Ten Fiscal Years Summary

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Revenues:										
Water Revenue	\$ 155,856,895	\$ 154,570,890	\$ 146,125,562	\$ 150,391,977	\$ 149,355,846	\$ 139,922,776	\$ 135,062,312	\$ 130,192,168	\$ 122,406,596	\$ 122,265,092
Sewer Revenue	213,568,719	211,774,201	200,297,529	198,249,241	187,450,059	175,943,859	171,115,529	163,206,107	153,214,217	152,829,067
Subtotal	369,425,614	366,345,091	346,423,091	348,641,218	336,805,905	315,866,635	306,177,841	293,398,275	275,620,813	275,094,159
Less:										
Adjustments	(10,562,235)	(10,879,886)	(9,767,045)	(7,915,384)	(8,366,706)	(7,349,075)	(8,342,424)	(7,666,138)	(6,669,240)	(7,819,941)
Discounts	(1,218,447)	(1,250,369)	(1,213,001)	(1,270,584)	(1,238,639)	(912,695)	(908,846)	(915,322)	(890,903)	(896,700)
Bad Debt	(378,628)	(1,111,957)	(36,131)	(358,043)	(223,168)	(484,363)	(58,617)	(85,777)	(72,431)	(103,283)
Subtotal	(12,159,310)	(13,242,212)	(11,016,177)	(9,544,011)	(9,828,513)	(8,746,133)	(9,309,887)	(8,667,237)	(7,632,574)	(8,819,924)
Net Billed Charges	357,266,304	353,102,879	335,406,914	339,097,207	326,977,392	307,120,502	296,867,954	284,731,038	267,988,239	266,274,235
Prior Year Surplus	558,206	570,607	689,086	521,427	389,062	211,384	183,611	83,871	57,897	148,328
Miscellaneous Revenues:										
Late Charges Revenue	679,568	1,098,123	1,177,752	1,306,697	1,414,957	1,357,316	1,266,534	1,272,253	1,228,499	1,190,879
Investment Income	4,609,528	4,336,497	3,507,142	3,732,740	2,824,294	2,820,493	2,993,410	3,873,877	4,034,159	3,999,886
Fire Pipe Revenue	4,958,922	4,869,306	4,701,840	4,601,031	4,486,066	4,330,652	4,185,692	4,107,752	3,990,578	3,934,823
Other Income	11,584,275	7,549,162	10,754,546	7,093,016	6,294,690	5,666,579	5,426,141	5,556,810	10,276,765	7,866,259
Total Revenues	379,656,804	371,526,574	356,237,280	356,352,119	342,386,461	321,506,926	310,923,342	299,625,601	287,576,137	283,414,410
Direct Operating Expenses										
Salaries and Wages	43,648,298	49,686,397	44,951,979	53,952,461	46,923,242	35,778,748	34,379,928	32,324,690	31,900,473	32,671,883
Overtime	1,185,585	911,159	863,588	752,156	789,500	778,642	815,128	710,291	737,763	640,770
Fringe Benefits	8,519,218	8,100,581	8,234,524	8,405,801	7,710,203	7,261,123	7,077,635	7,260,028	7,761,174	7,023,565
Supplies and Materials	2,372,934	2,111,561	2,082,549	2,252,917	2,295,723	2,526,486	2,286,065	2,413,099	2,423,659	2,244,451
Repairs and Maintenance	10,123,538	8,107,578	7,662,450	7,289,132	6,686,471	6,203,654	5,157,692	5,441,001	5,167,230	5,056,953
Utilities	1,617,652	1,430,558	1,305,207	1,164,922	1,093,997	1,207,616	1,207,108	974,913	1,189,571	1,246,230
Professional Services	3,336,607	3,304,198	3,141,403	3,634,430	2,724,914	3,348,408	2,649,969	2,769,362	2,661,520	2,542,343
Space and Equipment Rentals	331,653	236,964	303,229	271,702	251,778	235,693	663,354	37,985	48,066	112,712
Other Service	1,773,605	1,822,935	1,829,979	1,639,759	1,560,244	1,506,245	1,294,110	1,233,922	1,142,055	1,160,609
Insurance	717,545	491,401	508,943	509,104	533,935	629,990	764,915	756,934	761,796	787,771
Inventory	62,912	15,104	67,629	70,721	10,778	50,864	30,082	22,235	19,065	22,033
Capital Outlay	257,515	40,060	84,415	4,850	76,327	66,283	180,699	70,624	222,279	91,873
Travel and Training	17,870	79,542	21,183	21,871	73,004	16,759	15,207	18,622	19,935	17,597
Damage Claims	86,952	286,008	59,986	75,494	61,729	57,684	64,941	113,681	94,158	159,811
Total Direct Operating Expenses	74,051,884	76,624,046	71,117,064	80,045,320	70,791,845	59,668,195	56,586,833	54,147,387	54,148,744	53,778,601
Indirect Operating Expenses:										
MWRA Assessment	235,786,344	227,082,053	218,461,866	212,475,077	206,839,502	199,673,027	191,786,231	184,878,521	179,514,194	175,953,441
Capital Improvement	15,382,251	12,585,360	14,593,495	12,490,025	8,939,628	8,057,958	11,110,952	16,056,935	10,425,758	10,016,939
Debt Service	51,784,122	49,998,932	50,346,545	48,144,158	48,105,732	46,875,435	45,815,575	43,814,254	42,598,897	43,088,633
Contractual Funding Obligations	1,768,000	4,474,113	945,000	2,313,000	6,990,000	6,643,000	5,211,606	340,000	598,598	308,000
SDWA Assessment	194,650	203,864	202,703	195,452	198,327	200,249	200,761	204,893	206,075	210,897
Total Indirect Operating Expenses	304,915,367	294,344,322	284,549,609	275,617,712	271,073,189	261,449,669	254,125,125	245,294,603	233,343,522	229,577,910
Total Current Expenses	378,967,251	370,968,368	355,666,673	355,663,032	341,865,034	321,117,864	310,711,958	299,441,990	287,492,266	283,356,511
Current Year Rate Surplus	\$ 689,553	\$ 558,206	\$ 570,607	\$ 689,086	\$ 521,427	\$ 389,062	\$ 211,384	\$ 183,611	\$ 57,897	\$ 57,899

Table 4
Largest Users
Last Ten Fiscal Years Summary

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Boston Housing Authority	\$13,916,690	\$14,003,864	\$13,695,722	\$13,103,520	\$12,401,671	\$11,425,569	\$11,025,244	\$10,318,374	\$10,123,840	\$11,083,979
Massachusetts Port Authority	7,323,360	6,700,563	6,166,613	6,081,386	6,485,058	5,137,581	4,967,750	4,608,693	4,643,237	5,161,245
Boston University	6,642,531	5,510,319	5,217,745	5,279,716	5,058,751	4,874,395	4,519,170	4,418,085	4,232,416	4,270,123
Medical Area Total Energy Corp.	5,625,036	5,259,107	4,790,849	4,829,379	4,764,461	4,329,129	4,088,165	4,088,165	3,940,249	3,636,983
Partners Healthcare	5,238,058	4,819,019	4,361,704	4,596,488	4,148,734	3,605,193	3,931,585	4,273,370	3,735,918	3,664,935
City of Boston	4,686,210	4,228,502	4,017,547	4,305,719	4,186,332	3,665,894	5,309,393	6,056,004	5,285,350	5,864,008
Northeastern University	3,412,721	2,868,355	2,777,146	2,730,145	2,609,630	2,571,407	2,531,937	2,506,052	2,337,021	2,272,624
Harvard University	3,293,948	3,512,632	3,299,332	3,887,734	4,007,555	3,632,434	3,451,161	3,321,715	3,049,096	1,640,488
Boston Medical Center Corp.	2,943,962	4,054,598	3,494,684	3,434,645	3,147,780	2,977,920	3,371,101	3,594,812	2,717,789	2,475,064
Veolia Boston Energy Corp	2,856,705	3,374,043	2,761,587	3,033,636	2,911,497	2,552,840	3,295,210	2,610,143	2,570,724	2,605,999
Boston Properties LP (PRU)	2,793,157	2,962,946	2,542,794	2,176,143	2,410,207	2,430,536	2,383,931	2,264,170	2,046,149	1,485,152
Brigham and Women's Hospital	2,409,372	2,204,619	1,964,995	1,964,754	1,975,281	1,848,262	1,857,475	1,927,653	1,591,990	1,389,569
Equity Office Properties Inc.	2,017,821	2,017,821	1,990,081	2,119,004	2,066,848	1,857,822	1,859,958	1,920,047	*	*
Harbor Point	1,665,956	1,626,480	1,633,149	1,626,169	1,535,910	1,458,262	1,397,938	1,321,189	1,186,874	1,165,306
Commonwealth of Mass	1,473,840	*	*	*	*	*	*	*	*	*
Beth Israel Hospital	1,367,702	1,368,967	1,301,944	1,397,939	1,265,430	1,099,090	*	1,015,048	1,229,007	968,102
Boston College	1,293,360	*	*	*	*	*	*	*	*	*
Children's Hospital	1,265,198	*	*	*	*	*	*	*	*	*
Church of Christ Science	1,043,558	*	*	*	*	*	*	*	*	*
MBTA	1,029,950	1,168,661	*	1,167,103	1,638,301	1,484,949	1,292,046	955,978	1,077,078	1,129,612
NE Medical Center	1,022,925	*	*	*	*	*	*	*	*	*
Total	\$73,322,058	\$65,680,496	\$60,015,893	\$61,733,480	\$60,613,446	\$54,951,283	\$55,282,064	\$55,199,498	\$49,766,738	\$48,813,189
% of Total Operating Revenue	19.35%	18.82%	19.01%	20.37%	20.91%	19.15%	20.24%	20.48%	19.00%	19.94%

Source: Commission's Billing Systems (BESS and UMAX)

* Not included in the top 20

Table 5
Water Purchased vs. Water Billed
Last Ten Fiscal Years Summary

Year	Water Purchased (1)	Water Billed (2)	% Accounted For
2019	62.1	52.8	85.0%
2018	63.6	54.1	85.0%
2017	62.7	53.5	85.3%
2016	65.5	55.1	84.1%
2015	65.0	55.0	84.6%
2014	63.0	53.9	85.6%
2013	63.9	54.6	85.4%
2012	64.3	54.7	85.0%
2011	64.7	54.9	84.9%
2010	66.0	56.3	85.3%

(1) Water purchased from MWRA in millions of gallons per day (MGD).

(2) Water billed represents billed charges, in MGD, which does not include leakage, unbilled public usage and water used for construction projects.

Source: Commission Billing Systems (BESS and UMAX)

Table 6
Billings and Collections
Last Ten Fiscal Years Summary

Year	Billings	Collections	Collection Rate
2019	\$363,438,556	\$359,814,912	99.00%
2018	\$365,274,182	\$369,315,028	101.11%
2017	344,332,199	351,842,461	102.18%
2016	346,621,818	353,629,472	102.02%
2015	336,644,218	341,217,331	101.36%
2014	311,346,280	316,242,452	101.57%
2013	300,523,152	293,290,316	97.59%
2012	271,843,871	276,144,828	101.58%
2011	271,792,931	273,104,981	100.48%
2010	255,088,718	262,841,918	103.04%

Source: Commission's Billing System (BESS and UMAX)

Table 7
Water and Sewer Rates Structure
Current Year and Nine Years Ago

2019

Consumption (Cu. Ft./Day)	Water Rate		Sewer Rate	
	Per 1,000 Cubic Feet	Per 1,000 Gallons	Per 1,000 Cubic Feet	Per 1,000 Gallons
First 19	\$53.33	\$7.130	\$74.64	\$9.979
Next 20	55.84	7.465	76.94	10.286
Next 50	58.14	7.773	78.49	10.494
Next 260	61.82	8.265	82.81	11.071
Next 950	64.50	8.623	87.39	11.683
Over 1299	66.75	8.924	90.40	12.086

2010

Consumption (Cu. Ft./Day)	Water Rate		Sewer Rate	
	Per 1,000 Cubic Feet	Per 1,000 Gallons	Per 1,000 Cubic Feet	Per 1,000 Gallons
First 19	\$39.17	\$5.236	\$50.72	\$6.781
Next 20	41.00	5.482	52.28	6.989
Next 50	42.70	5.709	53.33	7.130
Next 260	45.40	6.070	56.27	7.523
Next 950	47.38	6.334	59.38	7.937
Over 1299	49.05	6.557	61.43	8.213

The average one family customer using 180 gallons per day (“GPD”) in 2019 will be charged \$96.22 per 31-day month or \$1,132.85 annually. A multi-unit residence using 600 GPD will be charged \$332.32 per 31-day month or approximately \$3,912.10 annually. A small commercial property using 4,000 GPD will be charged \$2,409.92 per 31-day month or approximately \$28,374.76 annually.

Source: Commission’s Rate Document.

Table 8
Commission per Capita Debt
Last Ten Fiscal Years Summary

Year	General Revenue Bonds (\$000's)**	Long-Term Notes (\$000's)**	Commercial Paper (\$000's)**	Total Debt (\$000's)	Population*	Per Capita Debt (\$)	Total Personal *** Income (\$000's)	Debt per Personal Income
2019	517,235	31,334	20,000	568,569	692,600	821	N/A	N/A
2018	540,965	36,812	0	577,777	694,583	832	29,179,432	1.98%
2017	485,180	28,017	25,000	538,197	685,094	786	27,188,640	1.98%
2016	506,775	29,387	0	536,162	673,184	796	25,101,685	2.14%
2015	447,460	34,290	25,000	506,750	667,137	760	23,835,471	2.13%
2014	492,506	40,078	0	532,584	655,884	812	22,805,087	2.34%
2013	411,464	44,358	35,000	490,822	644,710	761	22,009,755	2.23%
2012	431,632	49,437	0	481,069	637,516	755	20,964,076	2.29%
2011	374,246	42,937	40,000	457,183	624,969	732	20,670,225	2.21%
2010	391,839	46,940	10,000	448,779	617,594	727	21,103,187	2.13%

* Source U.S. Census Bureau, Population Division, Population Estimates Program, 2018 (preliminary estimate subject to revision)

** Source: Commission documents and the City's Official statement for population data and Bureau of Census

*** Source: U.S. Census Bureau Income Survey

Table 9
Revenue Bond Coverage
Last Ten Fiscal Years Summary (\$000)

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Cash Receipts*	371,821	373,194	358,235	358,026	345,972	321,348	313,317	295,979	286,737	277,037
Operating Transfers**	(308,932)	(306,966)	(302,400)	(305,857)	(278,726)	(263,488)	(257,281)	(247,076)	(241,202)	(234,246)
Net Revenues	62,889	66,228	55,835	52,169	67,246	57,860	56,036	48,903	45,535	42,791
Debt Service										
Senior Debts Service	45,766	42,779	42,646	38,961	38,141	35,509	35,421	32,959	32,880	31,263
Total Debt Service	45,766	42,779	42,646	38,961	38,141	35,509	35,421	32,959	32,880	31,263
Debt Coverage										
Senior Coverage	137%	155%	131%	134%	176%	163%	158%	148%	138%	137%
Total Coverage	137%	155%	131%	134%	176%	163%	158%	148%	138%	137%

* Cash receipts are defined as all revenues received and deposited into the Revenue Fund.

** Pursuant to Bond Resolutions, amounts withdrawn from the Revenue fund in the period and deposited into any other fund, except the Debt Service Reserve Fund, the Renewal and Replacement Fund, the Stabilization Fund, the General Revenue Fund, or any Temporary Project Fund. Withdrawals include payments for the City G.O. Debt Service and MWRA Assessment.

Table 10
Population, Income and Employment
Last Ten Fiscal Years Summary

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
United States										
Total Personal Income (\$000)	\$18,599,062,400	\$17,813,035,000	\$16,820,250,000	\$15,912,777,000	\$15,463,981,000	\$14,708,582,165	\$14,151,427,000	\$13,401,868,693	\$12,949,905,000	\$12,353,777,000
Per Capita Income (\$)	\$75,504	\$64,327	\$51,731	\$49,204	\$48,190	\$46,129	\$44,765	\$42,693	\$41,560	\$39,937
Population	328,239,523	326,687,501	325,147,121	323,405,935	320,896,618	318,857,056	316,128,839	313,914,040	311,591,917	309,330,219
Employment	N/A	200,746,000	196,132,200	193,668,400	190,195,400	185,798,800	182,278,200	179,603,300	175,834,700	173,737,400
New England										
Total Personal Income (\$000)	\$1,049,299	\$1,008,436	\$927,575,829	\$903,272,776	\$886,594,738	\$831,543,055	\$801,066,757	\$763,754,701	\$743,087,880	\$705,912,532
Per Capita Income (\$)	\$70,683	\$68,003	\$64,334	\$61,207	\$60,271	\$56,642	\$54,797	\$52,446	\$51,274	\$48,840
Population	14,845,063	14,829,322	14,853,290	14,757,573	14,710,229	14,680,722	14,618,806	14,562,704	14,492,360	14,453,587
Employment	N/A	10,032,617	9,886,800	9,795,354	9,571,509	9,378,271	9,217,266	9,125,273	9,002,996	8,935,730
Massachusetts										
Total Personal Income (\$000)	\$516,714	\$483,657,400	\$463,930,700	\$437,551,353	\$425,352,524	\$399,204,457	\$383,152,205	\$363,459,345	\$352,242,665	\$336,319,665
Per Capita Income (\$)	\$74,967	\$70,073	\$67,596	\$64,122	\$62,697	\$59,182	\$57,248	\$54,687	\$53,471	\$51,304
Population	6,892,503	6,902,149	6,863,246	6,823,721	6,784,240	6,745,408	6,692,824	6,646,144	6,587,536	6,555,466
Employment	N/A	4,872,851	4,777,678	4,720,200	4,542,723	4,428,064	4,322,176	4,250,566	4,168,887	4,130,436
Metropolitan Boston(1)										
Total Personal Income (\$000)	N/A	383,664,542	358,021,100	336,362,967	327,531,997	308,732,928	289,275,938	284,366,840	\$265,794,170	\$252,728,576
Per Capita Income (\$)	N/A	78,694	74,024	70,157	68,712	65,142	61,754	61,258	\$57,893	\$55,431
Population	N/A	4,875,390	4,836,531	4,794,447	4,766,755	4,739,385	4,684,299	4,642,095	4,591,112	4,559,372
Employment	N/A	3,689,664	3,610,562	3,562,104	3,493,027	3,344,480	3,239,069	3,173,395	3,124,251	3,091,611

(1) Includes five full counties in Massachusetts (Essex, Middlesex, Norfolk, Plymouth and Suffolk) and two counties in New Hampshire (Rockingham and Strafford), which together comprise the Boston-Cambridge-Quincy MA-NH Metropolitan Statistical Area.

Source: Bureau of Economic Analysis, March 2020

Bureau of the Census, population figures for Massachusetts and Metropolitan Boston.

Table 11
Demographic and Economic Statistics
Last Ten Fiscal Years Summary

Fiscal Year	Population	Total Personal Income (in thousand)	Per Capita Personal Income	Unemployment Rate
2019	692,600	N/A	N/A	2.1%
2018	694,583	29,179,432	42,010	2.5%
2017	685,094	27,188,640	39,686	3.4%
2016	673,184	25,101,685	37,288	4.1%
2015	667,137	23,835,471	35,728	4.6%
2014	656,051	22,810,893	34,770	5.2%
2013	644,710	22,009,755	34,139	6.8%
2012	637,516	20,964,076	32,884	6.5%
2011	624,969	20,670,225	33,074	7.0%
2010	621,383	21,103,187	33,962	7.9%

N/A = Information not available for this fiscal year.

Sources:

Population:

2018-2019 - U.S. Census Bureau, Population Division, Population Estimates Program, 2018 (preliminary estimate subject to revision)

2011-2013 & 2007-2009 - U.S. Census Bureau, 1 year American Community Survey estimates, BP&DA Research Division Analysis

2010- U.S. Census Bureau, 2010 Decennial Census, BP&DA Research Division Analysis

Income: U.S. Census Bureau, 1-year American Community Survey estimates, BP&DA Research Division Analysis

Converted to 2013 dollars using the Consumer Price Index

Unemployment: Bureau of Labor Statistics, BP&DA Research Division Analysis

Recent unemployment numbers are preliminary and subject to revision

Table 12
Distribution of Customers by Account Type
Current Year and Nine Years ago

2019		
Account Type by Land Code	Number of Accounts	% of Total Accounts
Residential	67,172	76.4%
Residential (other)	9,649	11.0%
Commercial	6,955	7.9%
Tax Exempt	3,257	3.7%
Industrial	874	1.0%
Total By Land Code	87,907	100.0%
2010		
Account Type by Land Code	Number of Accounts	% of Total Accounts
Residential	66,525	76.2%
Residential (other)	9,226	10.6%
Commercial	6,829	7.8%
Tax Exempt	3,739	4.3%
Industrial	1,006	1.2%
Total By Land Code	87,325	100.0%

Source: Commission's billing system.

Table 13
Largest Private Employers
Current and Nine Years Ago

Employer	Year End 2019			Year End 2010		
	Employees	Rank	Percentage of Total City Employment	Employees	Rank	Percentage of Total City Employment
Massachusetts General Hospital	16,648	1	2.00%	16,146	1	2.52%
Brigham and Women's Hospital	12,252	2	1.50%	11,225	2	1.75%
Boston University	10,182	3	1.30%	3,832	9	0.60%
Children's Hospital, Boston	9,057	4	1.10%	9,087	4	1.42%
Beth Israel Deaconess Medical Center	7,887	5	1.00%	-		%
State Street Bank & Trust Co.	7,500	6	0.90%	10,861	3	1.69%
Boston Medical Center Corporation	5,806	7	0.70%	4,000	8	0.62%
Northeastern University	5,768	8	0.70%	0	0	0.00%
Harvard University Graduate Schools	5,680	9	0.70%	4,417	7	0.69%
Wayfair	5,500	10	0.70%	8,000	5	1.25%
New England Medical Center				5,508	6	0.86%
Harvard University				3,654	10	0.57%
Total	86,280		10.60%	76,730		11.97%

Note 1: Boston employment estimate represents both payroll and non-payroll jobs for 2017.

Note 2: No new survey was made available in 2019. The figures shown are from 2017.

Source: Bureau of Economic Analysis; American Hospital Association; National Center for Education Statistics; BP&DA Research Division Analysis. Estimates reflect most recent available data.

Table 14
Economy, Household Income, Occupation
Year-end 2017* Summary

ECONOMY	Boston, MA	United States
Unemployment Rate	3.10%	3.90%
Recent Job Growth	4.30%	1.59%
Future Job Growth	42.50%	33.50%
Sales Taxes	6.25%	7.30%
Income Taxes	5.10%	4.60%
Income per Capita	\$39,686	\$31,177
Household Income	\$62,021	\$57,652
Family Meridian Income	\$69,616	\$70,850
HOUSEHOLD INCOME (ESTIMATED)		
Income less than 15K	17.20%	11.00%
Income between 15K and 25K	8.90%	9.30%
Income between 25K and 35K	6.40%	9.10%
Income between 35K and 50K	8.90%	12.60%
Income between 50K and 75K	12.90%	17.60%
Income between 75K and 100K	11.00%	13.00%
Income between 100K and 150K	15.50%	14.60%
Income between 150K and 200K	8.50%	11.00%
Income over 200K	11.00%	6.90%
POPULATION BY OCCUPATION		
Agriculture, forestry, fishing, hunting	0.10%	1.30%
Construction	3.31%	6.20%
Manufacturing	4.40%	10.40%
Wholesale trade	1.40%	2.70%
Retail trade	8.40%	11.60%
Transportation and warehousing	2.70%	4.10%
Utilities	0.40%	0.90%
Information	2.40%	2.10%
Finance and insurance	7.20%	4.70%
Real estate, rental, leasing	2.00%	1.90%
Professional, scientific, technical services	11.70%	6.70%
Management companies	0.10%	0.10%
Administrative, support, waste mgt. svcs.	4.50%	4.30%
Educational services	13.40%	9.30%
Health care and social assistance	18.40%	13.80%
Arts, entertainment, recreation	2.10%	2.20%
Accommodation, food services	8.50%	7.40%
Other services	4.60%	4.90%
Public administration	4.40%	4.80%

Source: Boston Economy Sperling Views, 2017 & Data USA

*Data unavailable for 2018 & 2019

Table 15
Divisional Breakdown of BWSC Employees
Last Ten Fiscal Years Summary

	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Executive	36	36	35	34	32	32	52	52	53	54
Executive Director	4	5	4	4	3	3	4	4	4	5
Organizational Diversity	3	2	7	7	6	3	3	3	3	3
Labor Relations	0	0	3	3	4	11	4	4	4	4
General Counsel	14	15	14	13	12	15	12	12	12	11
Human Resources	8	8	7	7	7	-	-	-	-	-
MIS	-	-	-	-	-	-	29	29	30	31
Safety and Training	7	6	-	-	-	-	-	-	-	-
Operations	206	205	206	204	209	211	206	210	214	219
Chief Operations Officer	4	-	-	-	-	-	6	6	6	6
Director of Operations	0	3	3	4	4	-	-	-	-	-
Operations Services	-	-	-	-	-	4	-	-	-	-
Water & Sewer Services	117	115	117	114	117	113	125	127	134	140
Work Order, Compliance & C. S.	32	32	32	33	33	35	10	10	10	11
Asset Management	32	34	34	34	35	36	-	-	-	-
Facilities & Support Services	21	21	20	19	20	23	25	26	25	22
Fleet	-	-	-	-	-	-	10	11	10	10
Storeroom	-	-	-	-	-	-	8	8	9	12
Enforcement	-	-	-	-	-	-	22	22	20	18
Engineering	83	84	85	85	83	84	95	89	91	91
Chief Engineer	4	4	6	5	5	5	4	4	4	4
Design	31	32	32	32	32	30	16	16	16	16
Planning	7	8	8	8	7	6	6	4	4	4
Construction	41	40	39	40	39	43	34	32	34	34
Eng. Services	-	-	-	-	-	-	35	33	33	33
Administration	125	126	123	125	128	127	78	78	78	80
Chief Admn. Officer	1	1	1	2	2	2	1	1	1	1
Meter Services	30	31	30	30	30	29	29	29	29	31
Account Services	35	36	36	35	36	38	36	36	37	37
Comm. & Community Svcs.	10	8	7	7	8	7	5	5	4	4
Facilities & Support Svcs	21	20	20	22	22	22	-	-	-	-
Information Technology	28	30	29	29	30	29	-	-	-	-
Human Resources	-	-	-	-	-	-	7	7	7	7
Finance	52	51	53	54	53	54	50	50	51	52
CFO	3	3	4	4	5	6	4	4	4	4
Budget	8	8	8	8	7	7	7	7	7	7
Accounting	8	8	8	8	8	8	8	8	8	8
Procurement	4	4	5	5	5	4	4	4	4	5
Financial Services	9	9	9	9	9	9	9	9	8	9
Revenues	20	19	19	20	19	20	18	18	20	19
Total Full Time Employees	502	502	502	502	505	508	481	479	487	496
Percent of Total										
Executive	7.17%	7.17%	6.97%	6.77%	6.34%	6.30%	10.81%	10.86%	10.88%	10.89%
Operations	41.04%	40.84%	41.04%	40.64%	41.39%	41.54%	42.83%	43.84%	43.94%	44.15%
Engineering	16.53%	16.73%	16.93%	16.93%	16.44%	16.54%	19.75%	18.58%	18.69%	18.35%
Administration	24.90%	25.10%	24.50%	24.90%	25.35%	25.00%	16.22%	16.28%	16.02%	16.13%
Finance	10.36%	10.16%	10.56%	10.76%	10.50%	10.63%	10.40%	10.44%	10.47%	10.48%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Table 16
Water and Sewer Distribution System
Current Year and Nine Years ago

2019

Appurtenances		Water Distribution System:		Pressure Zone	
		Water Main City Wide			
Hydrants	12,712	Total Linear Feet	5,326,305	High Pressure Fire System	15 Miles
MWRA Meters	0	Total Linear Miles	1,009	Northern High	4 Miles
Gate Valves*	17,598	Pumping Stations	1	Northern Low	90 Miles
				Southern Extra High	80 Miles
				Southern High	561 Miles
				Southern Low	259 Miles
		Sewer Distribution System:		Sewer System Code	
Appurtenances		Sewer Pipes City Wide			
Catch Basins	30,567	Total Linear Feet	8,128,752	Combined Sewer	145 Miles
Manholes	50,469	Total Linear Miles	1,537	Combined Sewer Overflow	12 Miles
Outfalls	252	Pumping Stations	9	Sanitary Sewer	710 Miles
Regulators	148			Storm Drain	670 miles
Tide Gates	200				

2010

Division Gates	226	Total Linear Feet	5,322,782	High Pressure Fire System	17 Miles
Hydrants	13,477	Total Linear Miles	1,008	Northern High	5 Miles
MWRA Meters	27			Northern Low	90 Miles
Gate Valves*	39,040			Southern Extra High	81 Miles
				Southern High	560 Miles
				Southern Low	256 Miles
		Sewer Distribution System:		Sewer System Code	
Appurtenances		Sewer Pipes City Wide			
Catch Basins	37,911	Total Linear Feet	7,994,445	Combined Sewer	202 Miles
Manholes	50,846	Total Linear Miles	1,514	Combined Sewer Overflow	4 Miles
Outfalls	486	Pumping Stations	8	Sanitary Sewer	663 Miles
Regulators	176	Actice CSO	37	Storm Drain	645 Miles
Tide Gates	202				

Source: Commission's CIP

* Includes only facilities owned by BWSC

Table 17
Insurance Coverage
Current Year and Nine Years Ago

2019 - 2020

Provider	Policy Period	Type of Coverage	Liability Limits	Annual Premium
Alliant	06/01/19 - 06/01/20	Property	\$250,000,000	\$86,086
Argonaut	06/01/19 - 06/01/20	Vehicles	1,000,000	145,260
Arch	06/01/19 - 06/01/20	Excess Workers Compensation	Statutory	99,937
Various	06/01/19 - 06/01/20	Excess Liability	35,000,000	665,868
Hanover	06/01/19 - 06/01/20	Fidelity and Crime	5,000,000	12,242
U.S. Specialty	06/01/19 - 06/01/20	Fiduciary	5,000,000	20,867
Lloyds of London	06/01/19 - 06/01/20	Cyber	0	31,375

2010 - 2011

Provider	Policy Period	Type of Coverage	Liability Limits	Annual Premium
Alliant	6/1/10 - 6/1/11	Property	\$144,325,763	\$42,879
Discover RE	6/1/10 - 6/1/11	Automobile	1,000,000	198,201
Discover RE	6/1/10 - 6/1/11	Excess Workers Compensation	25,000,000	89,439
AEGIS	6/1/10 - 6/1/11	Excess Liability	10,000,000	399,227
AEGIS	6/1/10 - 6/1/11	Public Officials Liability	5,000,000	107,382
Great American	6/1/10 - 6/1/11	Fidelity and Crime	5,000,000	10,495
U.S. Specialty	6/1/10 - 6/1/11	Fiduciary	5,000,000	13,446

Source: Commission's General Counsel

Table 18
Retirement System
Schedule of Funding Process

Year	Plan Fiduciary Net Position (FNP)	Total Pension Liability (TPL)	FNP as a Percentage of TPL (FNP/TPL)	Net Pension Liability (NPL)	Covered Payroll (CP)	NPL as a Percentage of CP (NPL/CP)
1/1/2008	\$ 76,186,255	\$ 83,308,046	91%	\$ 7,121,791	\$ 28,192,341	25%
1/1/2009	66,104,693	87,661,174	75%	21,556,481	29,601,958	73%
1/1/2010	71,120,461	89,057,766	80%	17,937,305	28,871,087	62%
1/1/2012	73,249,513	96,439,718	76%	23,190,205	27,979,116	83%
1/1/2014	87,411,057	120,174,128	73%	32,763,071	31,361,504	104%
1/1/2016	87,610,347	126,541,654	69%	38,931,280	31,361,504 *	124%
1/1/2017	102,433,499	128,937,098	79%	26,503,599	33,407,151	79%
1/1/2018	114,377,319	140,353,856	81%	25,976,537	34,743,437	75%
1/1/2019	108,760,295	149,208,298	73%	40,448,003	35,472,896	114%
1/1/2020	122,454,923	157,263,518	78%	34,808,595	35,533,839	98%

*Covered employee payroll for 2019 as estimated in the January 1, 2020 actuarial valuation and for 2018 as estimated in the January 1, 2019 valuation.

Information provided by Segal Group, Inc. from December 31, 2019 pension valuation report

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Compliance Section

2019 - 2018



**Independent Auditors' Report on Internal Control over Financial Reporting
and on Compliance and Other Matters Based on an Audit of
Financial Statements Performed in Accordance with *Government Auditing Standards***

To the Commissioners of
Boston Water & Sewer Commission
Boston, Massachusetts

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States, the financial statements of Boston Water and Sewer Commission (the "Commission") as of and for the years ended December 31, 2019 and 2018, and the related notes to the financial statements, which collectively comprise the Commission's basic financial statements, and have issued our report thereon dated August 3, 2020.

Internal Control over Financial Reporting

In planning and performing our audit of the financial statements, we considered the Commission's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Commission's internal control. Accordingly, we do not express an opinion on the effectiveness of the Commission's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Commission's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the entity's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the entity's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

A handwritten signature in cursive script that reads "O'Connor + Drew, P.C.".

**Certified Public Accountants
Braintree, Massachusetts**

August 3, 2020

Single Audit

In accordance with the Uniform Guidance, a Single Audit was not required because the Commission's federal expenditures were below the \$750,000 threshold.



Boston Water & Sewer Commission
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