



Massachusetts Water Resources Authority  
**COMPREHENSIVE ANNUAL  
FINANCIAL REPORT**

For the Fiscal Years Ended June 30, 2020 and 2019





# Massachusetts Water Resources Authority



## **Comprehensive Annual Financial Report**

For the Fiscal Years Ended June 30, 2020 and 2019

**Frederick A. Laskey**

Executive Director

Prepared by

Thomas J. Durkin, Director, Finance

Robert M. Belkin, Controller, Finance

This document is available at the MWRA website: [www.mwra.com](http://www.mwra.com)





WASM3, Cutting 56" lock bar steel rivet pipe in Arlington

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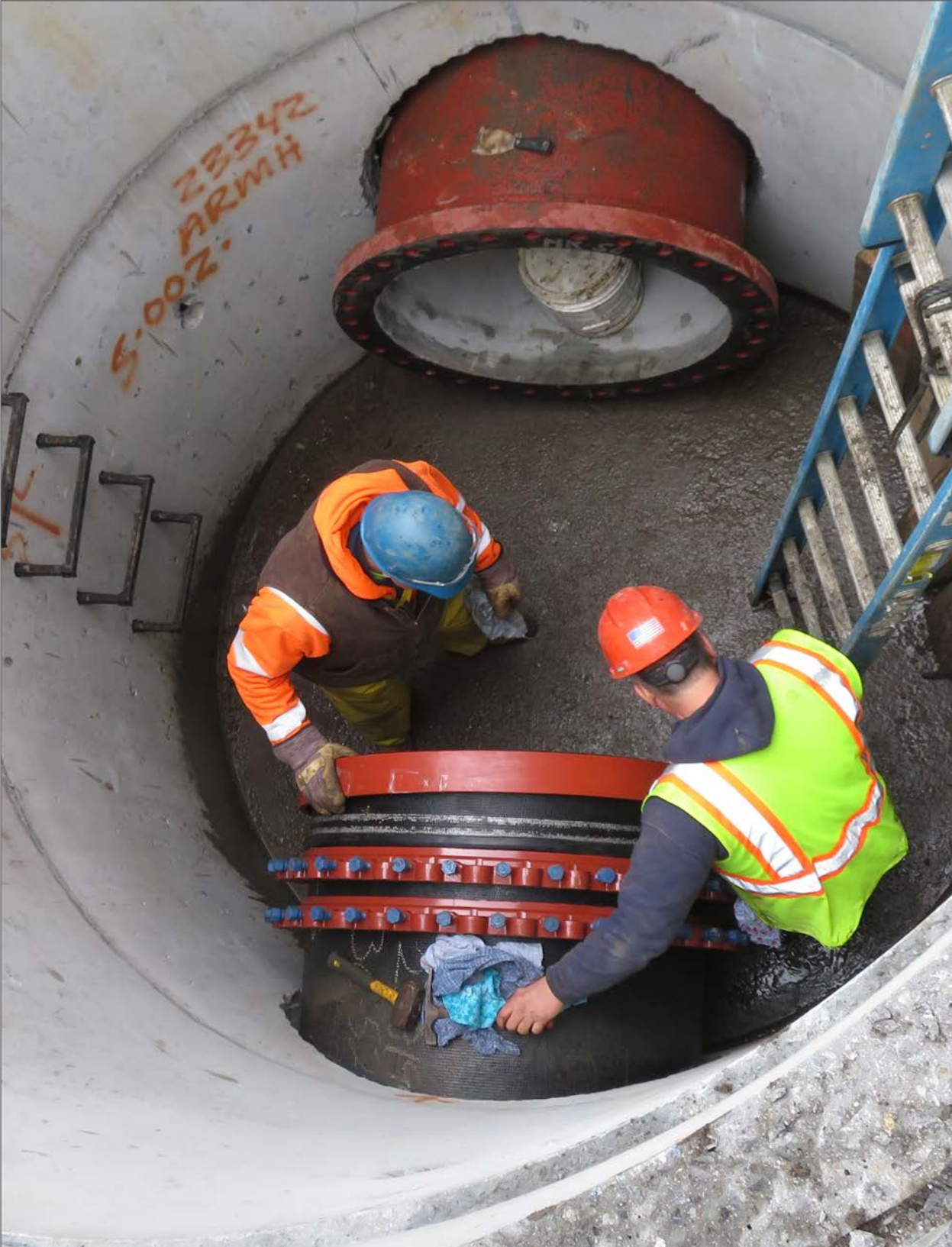
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# Introductory Section



Southern Extra High Redundant Pipeline in Dedham



# MASSACHUSETTS WATER RESOURCES AUTHORITY

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Frederick A. Laskey  
Executive Director

September 21, 2020

To the members of the MWRA Board of Directors

We are pleased to submit to you this Comprehensive Annual Financial Report (CAFR) of the Massachusetts Water Resources Authority (MWRA) for the years ended June 30, 2020 and 2019. This document has been submitted to the Government Finance Officers Association to be awarded a Certificate of Achievement for Excellence in Financial Reporting. The financial section of this CAFR includes management's discussion and analysis, the basic financial statements and the combining financial statements and schedules, as well as the independent auditors' report on these financial statements.

As required by generally accepted accounting principles (GAAP), MWRA management is responsible for the accuracy, completeness, and fairness of the presentation, including all disclosures. Management's discussion and analysis provides an overview of the MWRA's financial results. This letter of transmittal is designed to complement management's discussion and analysis and should be read in conjunction with it. Management's discussion and analysis can be found immediately following the Independent Auditors' Report.

Management assumes full responsibility for the completeness and reliability of the information contained in this report, based upon a comprehensive framework of internal control that it has established for this purpose. Because the cost of internal control should not exceed anticipated benefits, the objective is to provide reasonable, rather than absolute assurance that the financial statements are free of any material misstatements.

## MISSION

The Massachusetts Water Resources Authority is an independent authority that provides wholesale water and sewer services to its member communities and funds its operations primarily through member community assessments and charges. MWRA's mission is to provide reliable, cost-effective, high-quality water and sewer services that protect public health, promote environmental stewardship, maintain customer confidence, and support a prosperous economy. During the COVID-19 pandemic MWRA has maintained all core functions, without interruption.

## HISTORY

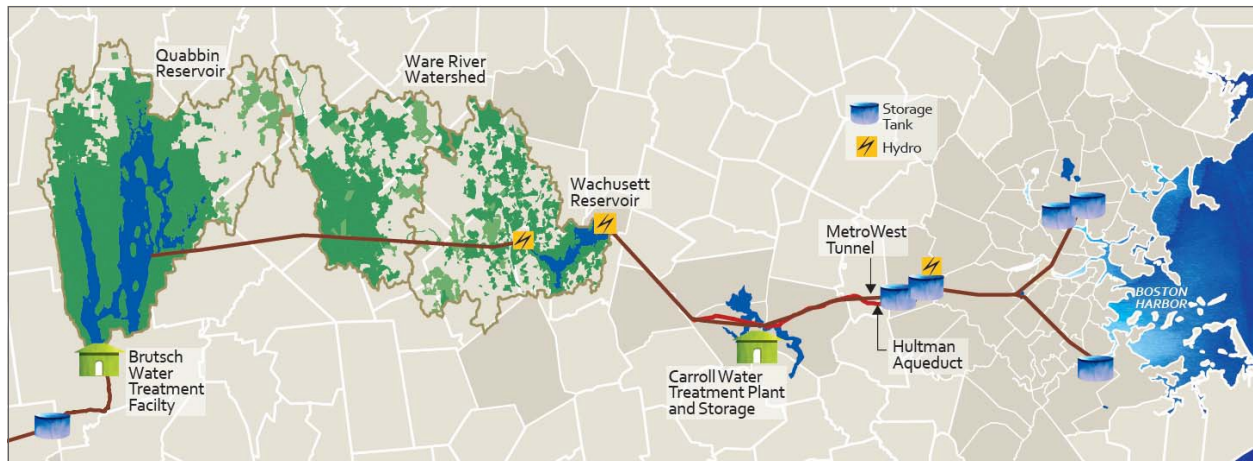
Created by the Massachusetts legislature in 1985 (Chapter 372 of the Acts of 1984, as amended, "the Enabling Act"), MWRA assumed control of the water and sewer systems, including facilities, properties, and the right to utilize water withdrawn from system reservoirs that had formerly been the Sewerage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

In 1985, responsibility for water distribution for 46 municipalities and sewage collection and treatment for 43 municipalities was transferred to the MWRA. In 1987, the legislature also transferred responsibility to operate and maintain the Clinton Wastewater Treatment Plant from the Commonwealth to the MWRA. New communities have the opportunity to join the MWRA water and sewer systems, and over the years, the number of member communities has increased. MWRA's facilities span from the Quabbin Reservoir in western Massachusetts to the Deer Island Treatment Plant in Boston Harbor. In Fiscal Year 2020, the systems served approximately 3.1 million people and more than 5,500 businesses.

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



## WATER SYSTEM



MWRA's water comes from the Quabbin Reservoir, 65 miles west of Boston, and the Wachusett Reservoir, 35 miles west of Boston. The Quabbin alone holds a five-year supply of water.

The Quabbin and Wachusett Reservoirs are well protected. Over 85% of the watershed lands that surround the reservoirs are covered in forest and wetlands. About 75% of the total watershed land cannot be built on. The natural undeveloped watersheds help to keep MWRA water clean and clear. Because the watersheds are well-protected, the water in the Quabbin and Wachusett Reservoirs is of very high quality. MWRA has won numerous awards for quality, taste, and sustainability.



Ozone And UV Generators at the John J. Carroll Water Treatment Plant

Water for most MWRA communities is treated at the John J. Carroll Water Treatment Plant in Marlborough with two state-of-the-art methods – ozone and UV light. The treated water leaves the plant through the MetroWest Water Supply Tunnel and the Hultman Aqueduct. Along the way, it is stored in covered tanks. From there it is drawn into distribution mains and many smaller community pipes. Three member communities receive water directly from the Quabbin Reservoir: Chicopee, South Hadley Fire District #1 and Wilbraham. That water is treated at the Brutsch Water Treatment Facility in Ware and leaves the plant through the Chicopee Valley Aqueduct.

Meters installed by the member communities measure the amount of water delivered to each home or business.

Over 85% of the water delivered is via gravity, and, as the water travels through the system, electricity is generated at four hydroelectric facilities.

To maintain and ensure water quality, MWRA conducts hundreds of thousands of analyses each year as water travels from the well-protected reservoirs all the way to household taps, including over 2,000 bacteria samples per month. In addition, MWRA uses real-time water quality monitoring throughout the system to immediately identify any issues with water quality.

Since its inception, MWRA has promoted water conservation among its member communities, requiring each to perform bi-annual leak detection surveys and providing educational materials to residents and students. Since 1985, the average annual water demand in the MWRA service area has decreased by over 130 million gallons.



## WASTEWATER SYSTEM



Clinton Wastewater Treatment Plant

Because of inadequate sewage treatment facilities, Boston Harbor was known as the dirtiest harbor in the country in the 1980s. The Deer Island Treatment Plant was constructed in the 1990s as part of the federal court mandated Boston Harbor Clean-up Project, which is widely recognized as a national environmental success story. The Charles River, once the inspiration for the song “Love that Dirty Water” now receives high marks for water quality, and Boston’s beaches are among the cleanest urban beaches in the nation.

MWRA also operates the smaller Clinton Wastewater Treatment Plant, which serves the Town of Clinton and the Lancaster Sewer District.

Wastewater is flushed through a building’s pipes into the community’s sewers. More than 5,300 miles of local sewers transport the flows from 43 communities into 227 miles of MWRA interceptor sewers. The interceptor sewers carry the region’s wastewater to two MWRA treatment plants. Most communities’ wastewater flows to the Deer Island Treatment Plant.

Before the flows reach the plant, they receive preliminary treatment at five headworks facilities that screen out larger objects, such as bricks and logs. These flows are then pumped through tunnels to the plant and receive Primary Treatment in settling tanks where up to 60% of the solids settle out as a mixture of sludge and water.

During Secondary Treatment, oxygen is added to the wastewater to speed up the growth of microorganisms. These microbes then consume the wastes and settle to the bottom of the secondary settling tanks. After secondary treatment, 80-90% of human waste and other solids have been removed.

The treated wastewater, or effluent, is disinfected and discharged through a 9.5-mile underwater tunnel into Massachusetts Bay. The effluent is dispersed over the last mile and a quarter of the tunnel through 55 “diffusers.” With water depths

up to 120 feet, the outfall provides a much higher rate of mixing and dilution than was possible with discharges into the shallow waters of Boston Harbor prior to construction of the new Deer Island Plant.

The remaining sludge from primary and secondary treatment is processed further in digesters, where it is mixed and heated to reduce its volume and stabilize biosolids. It is then transported through the Inter-Island Tunnel to the pelletizing plant in Quincy where it is dewatered, heat-dried, killing disease-causing bacteria, and reused as a fertilizer for use in agriculture, forestry and land reclamation.

MWRA also utilizes renewable energy at the Deer Island Treatment Plant, with wind, solar, hydroelectric and biogas systems. The plant currently generates over 50% of its total heat and electricity needs.



Wind turbines and solar panels at the Deer Island Wastewater Treatment Plant



Pleasure Bay Beach, South Boston

## RATES AND CHARGES

Over 95% of MWRA's budgeted revenues are derived from wholesale rates and charges assessed to member communities. The Enabling Act requires MWRA to set its rates and charges at levels sufficient to pay, among other things, its current expenses and its debt service, and to provide debt service coverage required by MWRA's General Bond Resolution ("the Resolution").

In accordance with the Enabling Act, MWRA's rate setting is exercised independently by its Board of Directors without being subject to the approval of any department, agency or other instrumentality of the Commonwealth of Massachusetts or any other governing body. MWRA establishes charges of general application separately for the services provided by the Waterworks System and the Sewer System. Rates and charges are adopted annually in June, after notice and public hearing, and review of non-binding recommendations by the MWRA Advisory Board. MWRA's charges for services are billed directly to the member communities on a wholesale basis. Member committees include cities, towns, and other governmental entities tasked with providing retail water and/or sewer services.

In setting water rates, the total amount of revenue that must be raised through water rates in a given fiscal year is identified through a budgeting process, net of other sources of anticipated revenue, such as investment income, receipts from water supply contracts and other special arrangements. Generally, charges for water services are computed on the basis of the proportioned metered water use of each member community for the immediately preceding calendar year.

Sewer charges are computed on a proportional allocation basis utilizing, among other things, total flow, contributing population and census population for each member community. Consistent with the initial step in setting water rates, MWRA first determines the total amount of revenue required to be raised from sewer charges. The total amount of required revenue for the Sewer System is allocated either to operating costs or capital costs, based on a three-year average of total flows for operating costs and total flows, census information and other factors for capital costs.

MWRA has adopted policies to enforce collection of member community assessments, including use of local aid intercept. Local aid intercept would allow MWRA, after certification to the State Treasurer of any unpaid assessment, to instruct the State Treasurer to deduct unpaid assessment amounts from any state reimbursement, grant or local aid to cities and towns that are member communities and remit that amount to the MWRA. The local aid intercept is not available, however, for any non-municipal member community. Fortunately, MWRA has not needed to use local aid intercept in more than 20 years.



## CAPITAL IMPROVEMENT PROGRAM

Since its establishment, MWRA has invested over \$8.6 billion to improve the wastewater and waterworks systems serving its 61 member communities. MWRA was created in response to and has been subject for most of its existence to a Clean Water Act enforcement action (Boston Harbor Case) to end years of wastewater pollution of Boston Harbor and its tributaries from the old Deer Island and Nut Island treatment plants and combined sewer overflows (CSOs). In 1982 and 1983, civil suits were filed against the MDC and other state agencies claiming that the Massachusetts Clean Waters Act had been violated as a result of discharges of untreated and partially treated sewage from Nut and Deer Islands. The Commonwealth, the Boston Water and Sewer Commission that provides retail water and sewer services within the city of Boston, the City of Quincy and the Town of Winthrop are also parties to the case.

The order of the federal court in the Boston Harbor Case set forth the schedules of activities to be undertaken to achieve compliance with the law. Since 1985, MWRA has complied with 420 milestones, which included the completion of extensive new wastewater treatment facilities at Deer Island in Boston and Nut Island in Quincy, a residuals processing facility in Quincy, and 35 separate CSO control projects in Boston, Brookline, Cambridge, Chelsea and Somerville which comprise the long-term CSO control plan, the last of which was completed in December 2015, in compliance with the Court Ordered milestone.

Under the Court Order, MWRA was required to file monthly compliance and progress reports on its ongoing activities through December 15, 2000 and quarterly compliance and progress reports through December 2016. MWRA was then required to submit bi-annual compliance and progress reports through December 2020. The Court has further extended the assessment period through 2021.

During the same time, MWRA also complied with regulatory mandates to improve and modernize the waterworks facilities, including the MetroWest Water Supply Tunnel, the Carroll Water Treatment Plant, and seven covered water storage facilities.

The mandated projects account for most of the Capital Improvement Program (CIP) spending to date. The five initiatives below account for over \$6.0 billion, or 72% of spending to date:

- Boston Harbor Clean-up Project - \$3.8 billion
- CSO Control Plan - \$911 million
- MetroWest Water Supply Tunnel - \$697 million
- Carroll Water Treatment Plant - \$423 million
- Covered Storage Facilities - \$239 million



Norumbega Covered Storage Facility in Weston

As MWRA matures as an agency, the infrastructure modernization and new facilities construction phase is nearing completion, and, barring new mandates, most of the future capital budget will be designated for Asset Protection, Water System Redundancy, Pipeline Replacement and Rehabilitation, and Business System Support. Asset Protection focuses on the preservation of capital assets. Water System Redundancy aims to reduce the risks of service interruption and allow for planned maintenance of the water system assets.

Long-term water redundancy is expected to be the largest future CIP initiative and includes two new tunnels with estimated spending in excess of \$1.4 billion over 17 years. Pipeline Replacement and Rehabilitation focuses on the maintenance and replacement of water and sewer pipelines. Business System Support provides for the continuing improvement and modernization of technology and security systems.



Capital initiatives to date have been primarily funded through long-term borrowings in the form of tax-exempt bonds, and the debt service on these outstanding bonds represents a significant and growing portion of the MWRA's operating budget. As of June 30, 2020, MWRA's total debt was \$5.1 billion. The capital finance obligation as a percent of total expenses has increased from 36% in 1990 to 62.2% in the Final FY2020 Current Expense Budget.

MWRA's senior credit ratings of Aa1 from Moody's, AA+ from S&P, and AA+ from Fitch, reflect strong management of financial performance, application of operating surpluses to early debt defeasance, satisfactory debt service coverage ratios, well maintained facilities, comprehensive long-term planning of both operating and capital needs, and the strong credit quality of its member service communities.

The long-term strategy for capital work is identified in the MWRA's Water and Wastewater Master Plans, which were published in 2006, updated in 2013, and again in 2019. Spending projections are the result of prioritizing the projects, establishing realistic estimates based on the latest information, striking a balance between maintenance and infrastructure improvements, and ensuring that there is adequate support for MWRA's core operations to meet all regulatory operating permit requirements.

## AWARDS AND ACKNOWLEDGMENTS

The Government Finance Officers Association of the United States and Canada awarded a Certificate of Achievement for Excellence in Financial Reporting to MWRA for its comprehensive annual financial report (CAFR) for the fiscal year ended June 30, 2019. This was the second year that MWRA applied for and received this prestigious award. In order to be awarded a Certificate of Achievement, MWRA had to publish an easily readable and efficiently organized CAFR that satisfied both generally accepted accounting principles and applicable program requirements.

A Certificate of Achievement for Excellence in Financial Reporting is valid for a period of one year only. However, we believe that our current CAFR continues to meet the Certificate of Achievement for Excellence in Financial Reporting Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

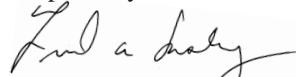
MWRA also received the Government Finance Officers Association's Distinguished Budget Presentation Award for its annual budget document dated September 2019. To qualify for the Distinguished Budget Presentation Award, the government's budget document had to be judged proficient as a policy document, a financial plan, and operations guide, and communications devise.

The preparation of this report would not have been possible without the skill, effort, and dedication of the entire staff of MWRA's Finance Division. We wish to thank all MWRA departments for their assistance in providing the data necessary to prepare this report. Credit is also due to the MWRA Board of Directors for their unfailing support for maintaining the highest standards of professionalism in the management of the MWRA's finances.

## INDEPENDENT AUDIT

The Enabling Act requires that the MWRA's financial statements be audited annually by an independent certified public accounting firm. The MWRA General Bond Resolution and certain loan agreements, by reference, specify that the audit be conducted by independent accountants of nationally recognized standing and be satisfactory to the Trustee. The financial section of the 2020 Comprehensive Annual Financial Report begins with the report of our independent auditors, CliftonLarsonAllen LLP. This report expresses an unmodified opinion as to the fairness of the presentation of our financial statements.

Respectfully submitted,



**Frederick A. Laskey**

Executive Director



**Thomas J. Durkin**

Director of Finance



**Robert M. Belkin, CPA**

Controller



Government Finance Officers Association

Certificate of  
Achievement  
for Excellence  
in Financial  
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Presented to

**Massachusetts Water Resources Authority**

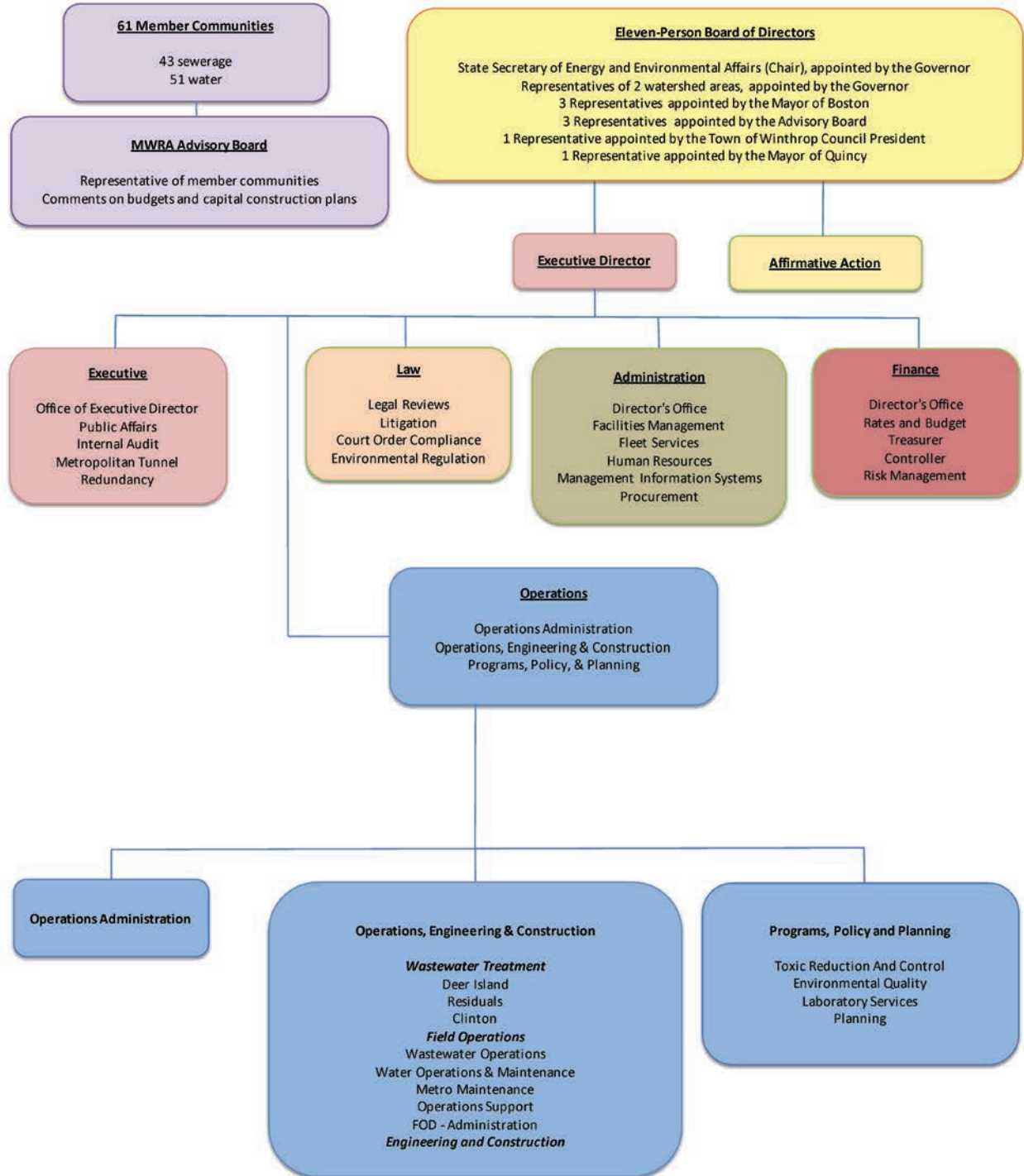
For its Comprehensive Annual  
Financial Report  
For the Fiscal Year Ended

June 30, 2019

*Christopher P. Morrill*

Executive Director/CEO

# MWRA Organizational Chart





# Principal Officials



Revere Beach on a summer day

## BOARD OF DIRECTORS

Kathleen A. Theoharides, Chair  
John J. Carroll, Vice Chair  
Andrew M. Pappastergion, Secretary  
Christopher Cook  
Kevin L. Cotter  
Paul E. Flanagan  
Joseph C. Foti  
Brian Peña  
Henry F. Vitale  
John J. Walsh  
Jennifer L. Wolowicz

## Executive Officers

Frederick A. Laskey, Executive Director  
David W. Coppes, Chief Operating Officer  
Thomas J. Durkin, Director, Finance  
Michele S. Gillen, Director, Administration  
Carolyn Francisco Murphy, General Counsel

## Controller Department

Robert Belkin, CPA, Controller  
Elizabeth Feloni, CPA, Accounting Manager  
June Kwan, Senior Staff Accountant  
Gaby DeLeon, Senior Staff Accountant  
Samantha Wilson, Senior Staff Accountant

# Financial Section



Fells Reservoir in Stoneham





The Board of Directors  
Massachusetts Water Resources Authority  
Boston, Massachusetts

## **Report on the Financial Statements**

We have audited the accompanying statements of net position of the Massachusetts Water Resources Authority (the Authority) as of June 30, 2020 and 2019, and the related statements of revenues, expenses and changes in net position and cash flows for the years then ended, and the related notes to the financial statements.

### ***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.

### ***Auditor's 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 audit 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 auditor's 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 in order 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 net position of the Authority as of June 30, 2020 and 2019, and the changes in net position and cash flows 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 the management's discussion and analysis (located on pages 16 through 23) and certain pension and other post-employment benefits information (located on pages 65 through 68) be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental 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 historical 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 of 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.

*Supplementary and Other Information*

Our audit was conducted for the purpose of forming an opinion on the Authority's financial statements. The schedule of Accounts Established by the General Revenue Bond Resolution, Combining Statements of Net Position and Combining Statements of Revenues, Expenses and Changes in Net Position (Supplemental Schedules), Introductory Section and Statistical Section are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The Supplemental Schedules are the responsibility of management and were derived from and relate directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the Supplemental Schedules are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The Introductory and Statistical Sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

The Board of Directors  
Massachusetts Water Resources Authority

**Other Reporting Required by *Government Auditing Standards***

In accordance with *Government Auditing Standards*, we have also issued our report dated August 28, 2020 on our consideration of the Authority'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 solely 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 the effectiveness of the Authority's 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 Authority's internal control over financial reporting and compliance.



**CliftonLarsonAllen LLP**

Boston, Massachusetts  
August 28, 2020

## MASSACHUSETTS WATER RESOURCES AUTHORITY

### Management's Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

This section of the Authority's annual financial report presents our discussion and analysis of the Authority's financial performance during the fiscal years ended June 30, 2020 and 2019. Please read it in conjunction with the Authority's financial statements, which immediately follow this section.

#### **Financial Highlights – Fiscal Year 2020**

The fiscal year 2020 customer service revenues were approximately \$773.2 million. Of this amount, rate revenues represent approximately 98.4%, or \$760.9 million, and were \$21.8 million higher than fiscal year 2019. This was due to an increase in assessments.

Total operating expenses, excluding depreciation, were approximately \$293.6 million in fiscal year 2020. The 3.8% decrease in total operating expenses over fiscal year 2019 is the result of decreases in pension expense of \$7.5 million, OPEB expense of \$7.0 million, utilities expense of \$1.3 million, maintenance expense of \$1.0 million, other materials expense of \$1.3 million and reimbursements to the Commonwealth of \$1.3 million. These decreases were offset by increases in personnel costs of \$4.7 million and Harbor Energy Electric Company (HEEC) capacity and O & M charges of \$3.2 million.

Net nonoperating expenses decreased \$13.8 million, or 8.2%, primarily due to a \$23.3 million reduction in interest expense offset by a \$9.6 million decrease in investment income. Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt. Interest income decreased due to a decrease in the unrealized gain on investments (\$5.6 million) and a decrease in actual interest earned on investments (\$4.0 million). This was due to a large volume of investments that were called and/or matured (\$190 million) and reinvested in securities with lower yields.

Total assets at June 30, 2020 were approximately \$7.2 billion, a \$238.6 million, or 3.2%, decrease over total assets at June 30, 2019.

During fiscal year 2020, the Authority issued General Revenue Bonds (Federally Taxable), 2019 Series E for \$50.0 million, General Revenue Refunding Bonds (Federally Taxable), 2019 Series F for \$547.8 million and General Revenue Refunding Bonds 2019 Series G for \$22.8 million. The proceeds from these bonds were used to finance new construction projects and refund bonds outstanding. The interest rate on these bonds range from 1.66% to 5%.

Total capital assets (net of depreciation) were approximately \$5.8 billion at June 30, 2020, an \$85 million, or 1.5%, decrease over June 30, 2019. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

#### **Financial Highlights – Fiscal Year 2019**

The fiscal year 2019 customer service revenues were approximately \$750.7 million. Of this amount, rate revenues represent approximately 98.4%, or \$739 million, and were \$22 million higher than fiscal year 2018. This was due to an increase in assessments.

Total operating expenses, excluding depreciation, were approximately \$305.1 million in fiscal year 2019. The 9.8% increase in total operating expenses over fiscal year 2018 is the result of increases in pension expense of \$17.7 million, increases in utility costs of \$2.5 million, increases in personnel costs of \$2.6 million, increases in maintenance costs of \$1.6 million, increases in chemical costs of \$1.2 million and increases in sludge pelletization costs of \$1.2 million.



## MASSACHUSETTS WATER RESOURCES AUTHORITY

### Management's Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

Net nonoperating expenses decreased \$29.5 million, or 14.9%, primarily due to a \$23.2 million increase in investment income and a \$6.3 million reduction in interest expense. Interest income increased due to an increase in the unrealized gain on investments. Lower long-term interest rates have caused the market values of investments to increase. Interest expense decreased due to a combination of principal repayments and refunding/defeasance of outstanding debt.

Total assets at June 30, 2019 were approximately \$7.4 billion, a \$57.5 million, or 0.8%, decrease over total assets at June 30, 2018.

During fiscal year 2019 the Authority issued General Revenue Bonds, 2019 Series B for \$125 million and General Revenue Refunding Bonds, 2019 Series C for \$19.2 million. The proceeds from these bonds were used finance new construction projects and refund bonds outstanding. The interest rate on these bonds is 5%.

Total capital assets (net of depreciation) were approximately \$5.8 billion at June 30, 2019, a \$107.9 million, or 1.8%, decrease over June 30, 2018. The decrease was primarily due to the rate of depreciation being higher than the rate of capitalization.

#### **Overview of the Financial Statements**

The financial section of this annual report consists of four parts: management's discussion and analysis (this section), the financial statements and related notes to the financial statements, required supplementary information, and other supplementary information.

The financial statements provide both long-term and short-term information about the Authority's overall financial status. The financial statements also include notes that explain some of the information in the financial statements and provide more detailed data. The statements are followed by a section of required supplementary information and other supplementary information that further explains and supports the information in the financial statements.

#### **Financial Analysis of the Authority**

##### ***Net Position***

The Authority's total net position at June 30, 2020 was approximately \$1.5 billion, a \$40.1 million decrease from June 30, 2019. Total assets decreased \$238.6 million, or 3.2%, to \$7.2 billion, and total liabilities decreased \$282.7 million, or 4.8%, to \$5.7 billion.

The Authority's total net position at June 30, 2019 was approximately \$1.6 billion, a \$39.3 million decrease from June 30, 2018. Total assets decreased \$57.5 million, or 0.8%, to \$7.4 billion, and total liabilities decreased \$48 million, or 0.8%, to \$5.9 billion.

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

	<b>Net Position</b>				
	(Dollars in thousands)				
	2020	2019	2018	Percentage change 2020–2019	Percentage change 2019–2018
Current assets	\$ 103,555	\$ 100,271	\$ 95,963	3.3%	4.5%
Restricted assets	806,763	837,850	727,104	(3.7)	15.2
Capital assets	5,755,377	5,840,416	5,948,350	(1.5)	(1.8)
Other assets	526,014	651,769	716,378	(19.3)	(9.0)
Total assets	<u>7,191,709</u>	<u>7,430,306</u>	<u>7,487,795</u>	<u>(3.2)</u>	<u>(0.8)</u>
Deferred outflows of resources from pension	33,219	64,041	17,154	(48.1)	273.3
Deferred outflows of resources from OPEB	1,946	333	-	100.0	-
Deferred outflows of resources from derivative instruments	42,543	31,640	20,988	34.5	50.8
Deferred outflows of resources from refunded debt	9,464	28,842	47,597	(67.2)	(39.4)
Current liabilities	373,758	362,949	350,382	3.0	3.6
Payable from restricted assets	162,145	156,048	157,721	3.9	(1.1)
Long-term debt	4,889,620	5,139,816	5,192,316	(4.9)	(1.0)
Long-term lease	24,876	26,093	27,219	(4.7)	(4.1)
Other liabilities	215,346	263,506	172,784	(18.3)	52.5
Total liabilities	<u>5,665,745</u>	<u>5,948,412</u>	<u>5,900,422</u>	<u>(4.8)</u>	<u>0.8</u>
Deferred inflows of resources from pension	15,887	6,066	14,963	161.9	(59.5)
Deferred inflows of resources from OPEB	37,410	7,907	10,032	373.1	-
Deferred inflows of resources from regulated activities	33,860	26,690	42,718	26.9	(37.5)
Net position:					
Net investment in capital assets	894,437	827,050	759,757	8.1	8.9
Restricted					
Construction	141,521	189,293	105,802	(25.2)	78.9
Debt Service	186,277	98,251	173,098	89.6	(43.2)
Operating	52,446	50,862	48,915	3.1	4.0
Revenue	39,765	30,126	29,952	32.0	0.6
Unrestricted	211,533	370,505	487,875	(42.9)	(24.1)
Total net position	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>	<u>\$ 1,605,399</u>	<u>(2.6%)</u>	<u>(3.7%)</u>

## MASSACHUSETTS WATER RESOURCES AUTHORITY

### Management's Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

#### Changes in Net Position

The decrease in net position at June 30, 2020 was \$40.1 million, or 2.6%, as compared with June 30, 2019. The Authority's total operating revenues increased by 3.0% to \$778.3 million and total operating expenses decreased 3.8% to \$293.6 million.

The decrease in net position at June 30, 2019 was \$39.3 million, or 2.4%, as compared with June 30, 2018. The Authority's total operating revenues increased by 2.3% to \$755.3 million and total operating expenses increased 9.8% to \$305.1 million.

#### Changes in Net Position

(Dollars in thousands)

	2020	2019	2018	Percentage change 2020–2019	Percentage change 2019–2018
Operating revenues:					
Customer service revenues	\$ 773,242	\$ 750,742	\$ 728,281	3.0%	3.1%
Other revenues	5,084	4,594	10,023	10.7	(54.2)
Total operating revenues	<u>778,326</u>	<u>755,336</u>	<u>738,304</u>	<u>3.0</u>	<u>2.3</u>
Operating expenses:					
Operations	113,284	113,878	106,943	(0.5)	6.5
Maintenance	29,737	30,651	29,067	(3.0)	5.4
Payments in lieu of taxes	8,330	8,230	8,220	1.2	0.1
Engineering, general, and administrative	142,276	152,351	133,627	(6.6)	14.0
Total operating expenses	<u>293,627</u>	<u>305,110</u>	<u>277,857</u>	<u>(3.8)</u>	<u>9.8</u>
Depreciation and amortization	211,214	207,127	202,799	2.0	2.1
Operating income	<u>273,485</u>	<u>243,099</u>	<u>257,648</u>	<u>12.5</u>	<u>(5.6)</u>
Nonoperating items:					
Regulatory accounting provisions	(165,792)	(121,739)	(106,777)	36.2	14.0
Net nonoperating expenses	(155,095)	(168,861)	(198,327)	(8.2)	(14.9)
Changes in derivative related accounts	2,940	2,940	2,940	-	-
Total nonoperating items	<u>(317,947)</u>	<u>(287,660)</u>	<u>(302,164)</u>	<u>10.5</u>	<u>(4.8)</u>
Capital grants and contributions	4,354	5,249	4,715	(17.1)	11.3
Change in net position	(40,108)	(39,312)	(39,801)	2.0	(1.2)
Total net position – beginning of year	1,566,087	1,605,399	1,666,297	(2.4)	(3.7)
Restatement to comply with GASB 75	-	-	(21,097)	-	-
Total net position – end of year	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>	<u>\$ 1,605,399</u>	<u>(2.6%)</u>	<u>(2.4%)</u>

During fiscal year 2020, the increases in customer service revenues were primarily due to the 3.10% increase in the rate revenue requirement (\$21.8 million).

During fiscal year 2019, the increases in customer service revenues were primarily due to the 3.07% increase in the rate revenue requirement (\$22 million).



**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Management’s Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

**Operating Costs by Functionality**

(Dollars in thousands)

	2020	2019	2018	Percentage change 2020–2019	Percentage change 2019–2018
Wastewater treatment and transport	\$ 103,627	\$ 102,732	\$ 98,070	0.9%	4.8%
Water treatment and transport	38,040	38,731	37,144	(1.8)	4.3
Water and wastewater quality	10,433	9,734	9,600	7.2	1.4
Metering and monitoring	6,420	6,516	5,059	(1.5)	28.8
Facilities planning, design, and construction	12,712	11,362	11,515	11.9	(1.3)
Management information systems	12,225	12,617	11,785	(3.1)	7.1
Administration and support	52,281	51,989	51,573	0.6	0.8
Total direct operating costs	<u>235,738</u>	<u>233,681</u>	<u>224,746</u>	0.9	4.0
Indirect operating costs	<u>57,889</u>	<u>71,429</u>	<u>53,111</u>	(19.0)	34.5
 Total operating costs	 <u>\$ 293,627</u>	 <u>\$ 305,110</u>	 <u>\$ 277,857</u>	 <u>(3.8%)</u>	 <u>(2.9%)</u>

Increases in water and wastewater quality are primarily due to increases in wages. Increases in facilities planning, design and construction are due to the reclassification of water redundancy program management cost center from water treatment and transport (approximately \$1 million) and overall increases in wages.

**Other Post-Employment Benefits (OPEB) Irrevocable Trust**

In April 2015, the Authority established the MWRA Other Post-Employment Benefits (OPEB) Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. It is intended that the Trust shall constitute a “Qualified OPEB Trust” according to the standards set forth in GASB Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions* and the standards of GASB Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. The Authority’s Board of Directors appointed a five-member Board of Trustees, made up of Authority senior managers, to control and manage the trust.

An initial deposit of \$10.8 million was made to the trust upon establishment of the trust. The balance of the trust at June 30, 2020 and 2019 was \$43.7 million and \$37.1 million, respectively.

## MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

### Capital Assets and Debt Administration

#### *Capital Assets*

As of June 30, 2020 and 2019, the Authority had \$5.8 billion of capital assets (net of depreciation), respectively. This includes land, construction in progress, plant and equipment for the water and sewer systems, furniture and fixtures, leasehold improvements, and motor vehicles and equipment. The Authority's net capital assets decreased approximately \$85.0 million, or 1.5%, during fiscal year 2020, primarily due to the rate of depreciation being higher than the rate of capitalization.

<b>Capital Assets</b>					
(Net of depreciation, dollars in thousands)					
	2020	2019	2018	Percentage change 2020–2019	Percentage change 2019–2018
Land	\$ 29,936	\$ 29,885	\$ 29,878	0.2%	0.0%
Construction in progress	214,102	149,794	180,525	42.9	(17.0)
Plant and equipment, water, and sewer systems	5,504,419	5,653,489	5,730,797	(2.6)	(1.3)
Furniture and fixtures	42	68	132	(38.2)	(48.5)
Leasehold improvements	255	267	279	(4.5)	(4.3)
Motor vehicles and equipment	6,623	6,913	6,739	(4.2)	2.6
Total	<u>\$ 5,755,377</u>	<u>\$ 5,840,416</u>	<u>\$ 5,948,350</u>	<u>(1.5%)</u>	<u>(1.8%)</u>

Additional information on the Authority's capital assets can be found in Note 8 of this financial report.

#### *Debt Administration*

The Authority's bond sales must be approved by its board of directors (the Board) and must comply with rules and regulations of the United States Treasury Department. Neither the Commonwealth of Massachusetts (the Commonwealth) nor any political subdivision thereof shall be obligated to pay the principal of, or premium or interest on, any debt outstanding and neither the faith and credit nor the taxing power of the Commonwealth or any political subdivision thereof is pledged to such payment.

#### *Bond Resolutions*

Pursuant to its general bond resolution, the Authority must comply with a rate covenant that requires it to set rates to maintain revenues sufficient to pay: current expenses; debt service on indebtedness; required deposits to reserves; costs of maintenance, replacement, and/or improvements to the wastewater and water systems that are considered current expenses and any additional amounts the Authority may be required to pay by any law or contract.

In addition to the rate covenant, the Authority is required to meet two covenants with respect to debt service coverage. The primary debt service coverage requires that the Authority fix and adjust rates and charges to provide revenues available for bond debt service in an amount equal to 1.2 times that is required for debt service on all outstanding bonds, not including subordinated bonds. The subordinated debt service coverage requires that the Authority fix and adjust rates and charges to provide revenues available for bond debt service in an amount equal to 1.1 times that is required for debt service on all outstanding bonds, including subordinated bonds.

Additional information on the Authority's long-term debt can be found in Note 6 of this financial report.

## MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

### ***Credit Rating***

The Authority's \$3.1 billion Senior Lien General Revenue Bonds are rated Aa1 from Moody's Investors Service, AA+ by S&P Global Ratings and AA+ from FitchRatings. The \$691 million Subordinate Lien General Revenue Bonds are rated Aa2 from Moody's Investors Service, AA by S&P Global Ratings and AA from FitchRatings. Some of the Authority's revenue bonds are enhanced by bond insurance. The credit ratings of these bond series will be the higher rating of either the Authority or the firm providing the enhancement. In the case of bonds enhanced by a letter of credit, the rating will be the highest of the Authority's, the provider or, if available, a joint rating. The subordinated debt of \$953 million with the Massachusetts Clean Water Trust is not rated as the Authority's debt.

### ***Economic Factors and Next Year's Budget***

In May 2020, the Board approved the fiscal year 2021 Current Expense Budget (CEB), which totals \$791.4 million in expenses.

The \$791.4 million expense total is comprised of \$481.9 million (60.9%) in capital financing costs and \$309.5 million (39.1%) in operating expenses, of which \$252.2 million (81.5%) is for direct expenses and \$57.3 million (18.5%) is for indirect expenses. The total represents an increase of \$17.1 million from fiscal year 2020 spending, which is comprised of \$27.6 million in higher operating costs and \$10.5 million in lower debt service costs.

The fiscal year 2021 rate revenue requirement approved by the Board is \$769.4 million; an increase of 1.00% compared with the fiscal year 2020 budget.

Fiscal year 2021 budgeted nonrate revenue totals \$22.0 million, a decrease of \$9.4 million from actual fiscal year 2020 nonrate revenue. The nonrate revenue budget is comprised of \$5.2 million in investment income, \$15.1 million in other user charges and other revenue, \$1.5 million in use of rate stabilization and \$0.2 million in entrance fees.

### ***Covid-19 Response***

In May 2020, the Board also approved allocation of Commonwealth of Massachusetts Debt Service Assistance, \$0.9 million, to offset June 2020 community assessment payments. The Board further approved a one-time exemption to community loan program guidelines to defer loan repayments in fiscal years 2021 and 2022.

### ***CIP 10 Year Plan***

The Authority's planned spending for capital improvements in future years reflects the Authority's ongoing efforts to upgrade and maintain the system and to align its project prioritization process with the Master Plan.

Major planned and ongoing projects include:

- Commitment to long-term redundancy plan for the metropolitan water tunnel system.
- Improvement and replacement of equipment on Deer Island and at major headworks facilities to ensure continued efficient and effective operations.

## MASSACHUSETTS WATER RESOURCES AUTHORITY

Management's Discussion and Analysis – Required Supplementary Information

June 30, 2020 and 2019

(Unaudited)

- Continued asset protection projects for both wastewater and water systems (pump stations and pipelines).
- Dedication to using resources efficiently, responding to climate change and reducing the environmental impacts of the Authority's daily operations by installing alternative energy sources and promotion of improved self-generation.
- Enhanced commitment to the community assistance programs for both the sewer and water systems to improve local infrastructure, including a new initiative to provide interest-free loans to assist communities in replacing lead service lines.
- Continued investment for the upgrade of Management Information Systems to ensure the availability, integrity and security of data.
- Continue the Residuals Asset Protection program for maintaining and improving the operations and infrastructure of the biosolids processing in the long term.

### **Contacting the Authority's Financial Management**

This report is designed to provide our bondholders, member communities and other interested parties with a general overview of the Authority's finances and to demonstrate the Authority's accountability for the revenue it receives. If you have questions about this report or need additional information, contact the Massachusetts Water Resources Authority, Finance Division, 100 First Avenue, Boston, MA 02129.



**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Statements of Net Position

June 30, 2020 and 2019

(Dollars in thousands)

<b>Assets</b>	<b>2020</b>	<b>2019</b>
Unrestricted current assets:		
Cash and cash equivalents (note 4)	\$ 70,858	\$ 54,810
Investments (note 4)	-	11,661
Intergovernmental loans (note 7)	31,252	32,732
Accounts receivable	1,445	1,068
Total unrestricted current assets	<u>103,555</u>	<u>100,271</u>
Restricted assets:		
Investments (note 4)	805,904	836,348
Interest receivable	859	1,502
Total restricted assets	<u>806,763</u>	<u>837,850</u>
Capital assets:		
Capital assets – not being depreciated (note 8)	244,038	179,679
Capital assets – being depreciated – net (note 8)	5,511,339	5,660,737
Total capital assets	<u>5,755,377</u>	<u>5,840,416</u>
Regulatory assets (note 3)	213,502	370,030
Other assets, net (note 7)	312,512	281,739
Total assets	<u>7,191,709</u>	<u>7,430,306</u>
<b>Deferred Outflows of Resources</b>		
Deferred outflows from pension (note 10)	33,219	64,041
Deferred outflows from OPEB (note 11)	1,946	333
Deferred outflows from derivative instruments (note 6)	42,543	31,640
Deferred outflows from refunding debt	9,464	28,842
<b>Liabilities</b>		
Current liabilities:		
Accounts payable and accrued expenses	52,919	50,031
Commercial paper notes (note 6)	75,000	75,000
Current portion of long-term debt (note 6)	245,839	237,918
Total current liabilities	<u>373,758</u>	<u>362,949</u>
Payable from restricted assets:		
Accounts payable for construction	22,532	15,588
Accrued interest on bonds payable	77,563	80,504
Reserves (note 5)	62,050	59,956
Total payable from restricted assets	<u>162,145</u>	<u>156,048</u>
Retainage on construction in progress	9,054	7,918
Long-term debt – less current portion (note 6)	4,889,620	5,139,816
Long-term capital lease (note 9)	24,876	26,093
Net pension liability (note 10)	74,659	99,956
Net OPEB liability (note 11)	89,090	123,992
Liability for derivative instruments (note 6)	42,543	31,640
Total liabilities	<u>5,665,745</u>	<u>5,948,412</u>
<b>Deferred Inflows of Resources</b>		
Deferred inflows from pension (note 10)	15,887	6,066
Deferred inflows from OPEB (note 11)	37,410	7,907
Deferred inflows from regulated activities (note 3)	33,860	26,690
<b>Net Position</b>		
Net investment in capital assets	894,437	827,050
Restricted		
Construction	141,521	189,293
Debt Service	186,277	98,251
Operating	52,446	50,862
Revenue	39,765	30,126
Unrestricted	211,533	370,505
Total net position	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>

Commitments and contingencies (notes 9,10,11,12 and 13)

*See accompanying Notes to Financial Statements*

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Statements of Revenues, Expenses, and Changes in Net Position

Years ended June 30, 2020 and 2019

(Dollars in thousands)

	<u>2020</u>	<u>2019</u>
Operating revenues (note 2):		
Customer services	\$ 773,242	\$ 750,742
Other	5,084	4,594
Total operating revenues	<u>778,326</u>	<u>755,336</u>
Operating Expenses:		
Operations	113,284	113,878
Maintenance	29,737	30,651
Payments in lieu of taxes	8,330	8,230
Engineering, general, and administrative	<u>142,276</u>	<u>152,351</u>
Total operating expenses	<u>293,627</u>	<u>305,110</u>
Income from operations before depreciation	484,699	450,226
Depreciation and amortization	<u>211,214</u>	<u>207,127</u>
Operating income	273,485	243,099
Regulatory accounting provisions:		
Change in reserves (note 5)	(2,094)	(1,882)
Change in regulatory provisions, net (note 3)	<u>(163,698)</u>	<u>(119,857)</u>
Total regulatory accounting provisions	<u>(165,792)</u>	<u>(121,739)</u>
Nonoperating revenues (expenses):		
Debt service grant	892	890
Investment income	17,645	27,210
Interest expense	(173,632)	(196,961)
Changes in derivative related accounts	<u>2,940</u>	<u>2,940</u>
Total nonoperating expenses	<u>(152,155)</u>	<u>(165,921)</u>
Net loss before capital grants and contributions	(44,462)	(44,561)
Capital grants and contributions	<u>4,354</u>	<u>5,249</u>
Decrease in net position	(40,108)	(39,312)
Total net position - beginning of year	<u>1,566,087</u>	<u>1,605,399</u>
Total net position - end of year	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>

*See accompanying Notes to Financial Statements*

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Statements of Cash Flows

Years ended June 30, 2020 and 2019

(Dollars in thousands)

	<u>2020</u>	<u>2019</u>
Cash flows from operating activities:		
Cash received from customers	\$ 772,854	\$ 750,509
Cash paid to suppliers for goods and services	(123,216)	(159,098)
Cash paid to employees for services	(145,278)	(142,878)
Cash paid in lieu of taxes	(8,326)	(8,230)
Other operating receipts	5,161	4,595
Net cash provided by operating activities	<u>501,195</u>	<u>444,898</u>
Cash flows from capital and related financing activities:		
Proceeds from sale of revenue bonds, loans, and notes	89,665	256,134
Capital grants for construction	4,354	5,249
Debt service grant	892	1,835
Capital lease principal payments	(1,226)	(1,125)
Capital lease interest payments	(1,991)	(2,091)
Repayment of debt	(291,554)	(265,380)
Interest paid on debt	(192,872)	(204,241)
Plant expenditures	(152,808)	(148,192)
Net cash used for capital and related financing activities	<u>(545,540)</u>	<u>(357,811)</u>
Cash flows from investing activities:		
Purchases of short-term investments	(114,350)	(9,763)
Sales and maturities of short-term investments	237,548	-
Changes in restricted money market investments	(76,557)	(92,297)
Interest received	13,752	17,169
Net cash provided (used) for investing activities	<u>60,393</u>	<u>(84,891)</u>
Net increase in cash and cash equivalents	16,048	2,196
Cash and cash equivalents - beginning of year	<u>54,810</u>	<u>52,614</u>
Cash and cash equivalents - end of year	<u>\$ 70,858</u>	<u>\$ 54,810</u>
Reconciliation of operating income to net cash provided by operating activities:		
Operating income	\$ 273,485	\$ 243,099
Adjustments to reconcile operating income to net cash provided by operating activities:		
Depreciation and amortization	211,214	207,127
Change in net pension liability	(25,297)	78,931
Change in deferred outflows from pension	30,822	(46,887)
Change in deferred inflows from pension	9,821	(8,897)
Change in net OPEB liability	(34,902)	2,788
Change in deferred outflows from OPEB	(1,613)	(333)
Change in deferred inflows from OPEB	29,503	(2,125)
Change in other accounts	5,042	(29,699)
Change in accounts payable	3,120	894
Net cash provided by operating activities	<u>\$ 501,195</u>	<u>\$ 444,898</u>

**NONCASH CAPITAL AND RELATED FINANCING ACTIVITIES**

In fiscal 2020, general revenue refunding bonds in the aggregate principal amount of \$570,575 were issued to defease \$529,485 of bonds outstanding.

In fiscal 2019, general revenue refunding bonds in the aggregate principal amount of \$19,190 were issued to defease \$20,340 of bonds outstanding.

*See accompanying Notes to Financial Statements*



# MASSACHUSETTS WATER RESOURCES AUTHORITY

Notes to Financial Statements

June 30, 2020 and 2019

(Dollars in thousands)

## (1) Organization

The Massachusetts Water Resources Authority (the Authority) was established in January 1985 pursuant to Chapter 372 (the Enabling Act) of the Act of 1984 of the Commonwealth of Massachusetts (the Commonwealth). The Authority, a successor agency to certain functions of the Metropolitan District Commission (the MDC) (which became part of the Department of Conservation and Recreation (the DCR) in July 2003), is a public instrumentality and, effective July 1, 1985, provides water supply services and sewage collection, treatment, and disposal services to areas of the Commonwealth.

The Authority is governed by an 11-member board of directors (the Board) chaired by the Secretary of Energy and Environmental Affairs for the Commonwealth. The Secretary and two other members are appointed by the Governor. Three members of the Board are appointed by the Mayor of Boston and three are appointed by the Authority's Advisory Board. One member is appointed by the Mayor of Quincy and one by the Winthrop Council President.

## (2) Summary of Significant Accounting Policies

The accounting policies of the Authority conform to U.S. generally accepted accounting principles as applicable to government enterprises. The following is a summary of the Authority's significant accounting policies:

### (a) Basis of Presentation

The Authority is required by the Enabling Act to establish user rates for its water and sewer services which provide sufficient funds to recover the costs of operations (excluding depreciation), debt service, maintenance, replacements, improvements to its facilities, and appropriate reserves. The Authority's financial statements are reported on the accrual basis of accounting and the economic measurement focus as specified by the Governmental Accounting Standards Board's (GASB) requirements for an enterprise fund.

The Authority distinguishes operating revenues and expenses from nonoperating items. Operating revenues and expenses generally result from providing water and sewer services to its member communities. All revenues and expenses not meeting this definition are reported as nonoperating revenues and expenses. All operating revenues are pledged for repayment of outstanding debt service.

In addition, the Authority applies the provisions of GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*, to provide a better matching of revenues and expenses. The effect of this policy has been to defer certain outflows of resources, which will be recovered through future revenues in accordance with the Authority's rate model, and to record deferred inflows of resources for revenue collected through current rates for costs expected to be incurred in the future. The effects of the Authority's accounting policies are discussed further in Note 3.

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Notes to Financial Statements

June 30, 2020 and 2019

(Dollars in thousands)

The Authority has implemented GASB Statement No. 88, *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements*. This statement resulted in expanded disclosures related to debt.

**(b) Capital Assets**

On July 1, 1985, ownership of the MDC’s sewer and waterworks personal property was transferred to the Authority. Pursuant to the Enabling Act, ownership of the real property of the MDC sewer and waterworks systems was not transferred from the Commonwealth to the Authority; however, the Authority has the right to use, improve, maintain, and manage that property. In addition, ownership of the real and personal property of the watershed system remains with the Commonwealth; however, the Authority has the right to utilize the water therefrom for water supply purposes.

The personal property, together with the rights to the real property and watershed system, was recorded at its estimated fair value of \$2,331,465 (including certain construction projects which were in progress as of July 1, 1985), based upon an appraisal performed by valuation specialists. Property, plant, and equipment acquired or constructed since July 1, 1985, is stated at acquisition cost, and includes the expenditure of capital grants in aid of construction.

Betterments and major renewals are capitalized and included in capital asset accounts, while expenditures for maintenance and repairs are charged to expense when incurred. The cost of depreciable assets and related accumulated depreciation is eliminated from the accounts when such items are disposed of or otherwise retired.

The Authority’s capitalization threshold is \$100.

**(c) Interest Cost and Principal Payments on Construction**

During fiscal years 2020 and 2019, none of the Authority’s interest expense was capitalized to construction in progress in accordance with its current policy of recovering such costs through rates as incurred. Rates collected for principal payments on debt related to assets under construction are deferred until the related asset is completed and depreciation commences.

**(d) Depreciation**

The Authority provides for depreciation by use of the straight-line method. Depreciation is intended to distribute the cost of depreciable properties, including those financed by capital grants in aid of construction, over the following estimated average useful lives:

	<u>Years</u>
Plant and Equipment, Water and Sewerage Systems	5–100
Motor Vehicles and Equipment	5
Furniture and Fixtures	7
Leasehold Improvements	3–5

## MASSACHUSETTS WATER RESOURCES AUTHORITY

### Notes to Financial Statements

June 30, 2020 and 2019

(Dollars in thousands)

**(e) Revenue Recognition**

The Authority recognizes revenue as amounts become collectible from its customers for water and sewer services provided. The majority of the Authority's billings to cities and towns are subject to, in the event of nonpayment, the local aid intercept allowed by the Enabling Act.

**(f) Net Position**

When both restricted and unrestricted resources are available for use, it is the Authority's policy to use the restricted resources first, then unrestricted as they are needed.

**(g) Cash and Cash Equivalents**

The Authority's policy is to treat unrestricted investments with a maturity date of three months or less when purchased as cash equivalents for purposes of the statements of cash flows. Restricted cash and cash equivalents are combined with investments on the statements of net position, and shown separately on the statements of cash flows as an investing activity.

**(h) Payments in Lieu of Taxes**

The Enabling Act authorizes and directs the Authority to pay to the DCR (formerly the MDC) Division of Watershed Management, who in turn remits payment to each city or town in which land of the Quabbin watershed and Ware River watershed is located. Each such payment is equal to the amount which the respective city or town would receive in property taxes, based upon the fair value of such land if such land were not tax exempt.

**(i) Investments**

Investments are recorded at fair value, other than certain investments that are recorded at net asset value (NAV). The Authority uses an independent pricing source to determine the fair value of investments at quoted market prices. Changes in fair value are included in nonoperating investment income in the Statements of Revenues, Expenses, and Changes in Net Position. Investments that are measured at NAV are the investments in the Massachusetts Municipal Depository Trust (MMDT) which is a 2a7-like external investment pool that is overseen by the Massachusetts State Treasurer and whose fair value of each share is equal to the number of shares; thus NAV is equal to \$1.00 per share.

**(j) Compensated Absences**

Employees of the Authority may accumulate unused sick time of which 30% will be paid in cash upon retirement from the Authority. 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. The liability for both amounts is calculated based on the pay or salary rates in effect at the statements of net position dates.

**(k) 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 Plan and additions to/deductions from the Plan's fiduciary net position have been determined on the same basis as they are reported by the Authority. For this purpose, benefit payments (including refunds of employee contributions) are recognized when due and payable in accordance with the benefit terms. Investments are reported at fair value.



**MASSACHUSETTS WATER RESOURCES AUTHORITY**

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June 30, 2020 and 2019

(Dollars in thousands)

**(l) Postemployment Benefits Other Than Pensions (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 MWRA and additions to/deductions from the MWRA's fiduciary net position have been determined on the same basis as they are reported by the MWRA. For this purpose, the MWRA recognizes benefit payments when due and payable in accordance with the benefit terms. Investments are reported at fair value, except for money market investments and participating interest-earning investment contracts that have a maturity at the time of purchase of one year or less, which are reported at cost.

**(m) Use of Estimates**

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenditures during the reporting period. Actual results could differ from those estimates.

**(3) Regulatory Assets and Deferred Inflows from Regulatory Activities**

In accordance with GASB Statement No. 62, *Codification of Accounting and Financial Reporting Guidance Contained in Pre-November 30, 1989 FASB and AICPA Pronouncements*, regulatory assets and deferred inflows from regulatory activities that result primarily from differences between depreciation on property, plant, and equipment not financed by grants or capital contributions, which is recovered through rates as principal payments on debt service, and from amounts determined by the Board to be utilized in a subsequent year to reduce customer billings (rate stabilization).

A summary of the activity of regulatory assets and deferred inflows for fiscal years 2020 and 2019 is as follows:

	<u>Sewer</u>	<u>Water</u>	<u>Total</u>
Balance - June 30, 2018 - net	\$ 412,335	\$ 50,862	\$ 463,197
Difference Between Depreciation of Capital Assets Not Financed by Grants or Capital Contributions, and Debt Service in Excess of Interest Expense	(87,547)	(39,125)	(126,672)
Other, Net	<u>3,340</u>	<u>3,475</u>	<u>6,815</u>
Balance - June 30, 2019 - net	328,128	15,212	343,340
Difference Between Depreciation of Capital Assets Not Financed by Grants or Capital Contributions, and Debt Service in Excess of Interest Expense	(103,318)	(53,210)	(156,528)
Other, Net	<u>(4,134)</u>	<u>(3,036)</u>	<u>(7,170)</u>
Balance - June 30, 2020 - net	<u>\$ 220,676</u>	<u>\$ (41,034)</u>	<u>\$ 179,642</u>

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(Dollars in thousands)

The net balance at June 30, 2020 and 2019 is presented on the statements of net position as follows:

	<u>2020</u>	<u>2019</u>	<u>Current year change</u>
Regulatory Assets	\$ 213,502	\$ 370,030	\$ (156,528)
Deferred Inflows from Regulatory Activities	(33,860)	(26,690)	(7,170)
Net Change	<u>\$ 179,642</u>	<u>\$ 343,340</u>	<u>\$ (163,698)</u>

The balance in the rate stabilization reserve was \$43,044 at June 30, 2020 and 2019, respectively.

**(4) Deposits and Investments**

The following represents essential risk information about the Authority's deposits and investments:

**(a) Custodial Credit Risk – Deposits**

The custodial credit risk for deposits and certificates of deposit is the risk that, in the event of a bank failure, the Authority's deposits may not be recovered.

The bank deposits at June 30, 2020 and 2019 were \$66,833 and \$53,876, respectively. Of these amounts, \$66,583 and \$53,626, were exposed to custodial credit risks as uninsured and uncollateralized.

**(b) Investments**

The Authority is authorized by its general bond resolution to invest in obligations of the U.S. Treasury, its agencies and instrumentalities, bonds, or notes of public agencies or municipalities, bank time deposits, guaranteed interest contracts, Massachusetts Municipal Depository Trust (MMDT) accounts, interest rate swap agreements, and repurchase agreements. All investments are held by a third-party in the Authority's name. These investments are recorded at fair value.

**(c) Credit Ratings**

All debt securities purchased, such as FNMA, FHLMC, and FHLB issues have historically had a credit rating of AAA or they have been collateralized to AAA. On August 8, 2011, Standard & Poor's reduced the credit rating for these agencies to AA+. The reduction in credit rating did not affect the Authority's bond covenants or escrow requirements.

The Massachusetts Municipal Depository Trust funds are not rated.

The general bond resolution limits the Authority to investing in securities that are rated in the three highest rating categories as defined by S&P and Moody's or other rating agencies.

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Notes to Financial Statements

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(Dollars in thousands)

**(d) Concentration Risk**

At June 30, 2020 and 2019, the Authority had investments with the issuer, Federal Home Loan Bank (FHLB), which totaled 5.5% and 12.6%, respectively, of the total investments.

At June 30, 2019, the Authority had investments with the issuer, Federal Farm Credit Banks (FFCB), which totaled 9.4% of the total investments.

**(e) Interest Rate Risk**

The following is a listing of the Authority's fixed income investments and related maturity schedule as of June 30, 2020 and 2019:

<b>June 30, 2020</b>					
<b>Investment maturities (in years)</b>					
Investment Type	Fair Value	<1	1-3	4-8	>9
Mass Municipal Depository Trust	\$ 676,361	\$ 676,361	\$ -	\$ -	\$ -
U.S. Agency Obligations	76,950	-	16,160	60,790	-
U.S. Treasury Bills	52,593	29,991	22,602	-	-
Total	<u>\$ 805,904</u>	<u>\$ 706,352</u>	<u>\$ 38,762</u>	<u>\$ 60,790</u>	<u>\$ -</u>

<b>June 30, 2019</b>					
<b>Investment maturities (in years)</b>					
Investment Type	Fair Value	<1	1-3	4-8	>9
Mass Municipal Depository Trust	\$ 599,315	\$ 599,315	\$ -	\$ -	\$ -
U.S. Agency Obligations	238,857	-	52,787	186,070	-
U.S. Treasury Bills	9,837	9,837	-	-	-
Total	<u>\$ 848,009</u>	<u>\$ 609,152</u>	<u>\$ 52,787</u>	<u>\$ 186,070</u>	<u>\$ -</u>

The majority of the Authority's investments are held in short-term money market funds and long-term investments in U.S. agency obligations that are held in the debt service reserve funds where the intent is to hold until maturity.

**(f) Investment Values**

The Authority categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. Debt securities classified in Level 1 of the fair value hierarchy are valued using prices quoted in active markets for those securities. Debt securities classified in Level 2 of the fair value hierarchy are valued using a matrix pricing technique. Matrix pricing is used to value securities based on the securities' relationship to benchmark quoted prices. The Authority has no securities classified in Level 3. The investment in MMDT, an external investment pool, is measured at \$1.00 per share – the net asset value determined by the pool.

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The Authority has the following recurring fair value measurements as of June 30, 2020 and 2019: U.S. Government agency obligations \$76,950 and \$238,857 (Level 2), respectively, U.S. Treasury Bills \$52,593 and \$9,837 (Level 2), respectively, and MMDT \$676,361 and \$599,315 (NAV), respectively. There are no withdrawal restrictions or unfunded commitments related to the MMDT investment.

**(g) Restricted Investments by Fund**

The following summarizes restricted investments as of June 30, 2020 and 2019 by various funds and accounts established by the Authority for debt covenants and other purposes:

	<u>2020</u>	<u>2019</u>
Restricted Investments:		
Construction	\$ 141,521	\$ 189,293
Debt Service Reserves	159,503	156,687
Debt Service Principal and Interest	319,640	318,545
Debt Service - Revenue Redemption	26,362	26,134
Operating Reserve	44,046	41,952
Rate Stabilization Reserve	43,044	43,044
Revenue	39,765	30,126
Combined Reserves - Renewal and Replacement Reserve	10,482	9,158
Combined Reserves - Insurance Reserve	14,000	14,000
Insurance Related Escrow Deposits	7,541	7,409
Total Restricted Investments	<u>\$ 805,904</u>	<u>\$ 836,348</u>

**(5) Bond Resolution Reserves**

The components of the reserves funded from revenues and required by the general and supplemental bond resolutions at June 30, 2020 and 2019 are as follows:

<u>Reserves</u>	<u>Sewer</u>	<u>Water</u>	<u>Total</u>	
			<u>2020</u>	<u>2019</u>
Renewal and Replacement	\$ 2,544	\$ 1,457	\$ 4,001	\$ 4,001
Insurance	7,000	7,000	14,000	14,000
Operating	28,855	15,194	44,049	41,955
Total	<u>\$ 38,399</u>	<u>\$ 23,651</u>	<u>\$ 62,050</u>	<u>\$ 59,956</u>

A renewal and replacement reserve of \$6,000 was established through grant receipts transferred from the Commonwealth in 1985 and is included in restricted net position at June 30, 2020 and 2019.



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Notes to Financial Statements

June 30, 2020 and 2019

(Dollars in thousands)

**(6) Notes Payable and Long-Term Debt**

Long-term debt at June 30, 2020 and 2019 consisted of the following:

	<u>2020</u>	<u>2019</u>
General Revenue Bonds:		
2002 Series J, 5 1/4% to 5 1/2%, issued December 18, 2002, due 2020 to 2022	\$ 117,680	\$ 140,895
2011 Series B, 5%, issued May 19, 2011, due 2021	3,030	6,255
2012 Series A, 3 1/4% to 5%, issued April 19, 2012, due 2022 to 2042	3,505	72,655
2014 Series D, 5%, issued November 19, 2014, due 2021 to 2044	57,030	60,165
2016 Series B, 3% to 5%, issued May 12, 2016, due 2023 to 2040	60,770	62,090
2017 Series B, 5%, issued May 18, 2017, due 2023 to 2042	62,815	66,980
2018 Series B, 3% to 5%, issued May 16, 2018, due 2024 to 2043	106,405	107,580
2019 Series B, 5%, issued May 22, 2019, due 2023 to 2044	121,265	125,000
2019 Series E, 1 9/10% to 3 1/4%, issued November 1, 2019, due 2024 to 2044	50,000	-
Total	<u>582,500</u>	<u>641,620</u>
General Revenue Refunding Bonds:		
2007 Series B, 5 1/4%, issued February 1, 2007, due 2023 to 2038	647,950	647,950
2009 Series B, 5%, issued February 19, 2009	-	65,480
2010 Series B, 5%, issued May 6, 2010	-	85,760
2011 Series C, 3 1/8% to 5 1/4%, issued December 8, 2011	-	291,160
2012 Series B, 4 1/4% to 5%, issued April 19, 2012	-	86,775
2013 Series A, 4% to 5%, issued March 27, 2013, due 2022 to 2036	94,655	102,515
2014 Series E, 5%, issued November 19, 2014, due 2020	4,215	5,245
2014 Series F, 4% to 5%, issued November 19, 2014, due 2021 to 2041	141,410	141,410
2016 Series C, 4% to 5%, issued May 12, 2016, due 2022 to 2040	675,195	678,185
2016 Series D, 3% to 5%, issued August 24, 2016, due 2025 to 2042	103,425	104,260
2017 Series C, 4% to 5%, issued May 18, 2017, due 2021 to 2032	237,370	245,500
2018 Series C, 5%, issued May 16, 2018, due 2023 to 2026	21,900	21,900
2019 Series C, 5%, issued May 22, 2019, due 2021 to 2022	19,190	19,190
2019 Series F, 1 2/3% to 3 1/10%, issued November 1, 2019, due 2020 to 2039	547,750	-
2019 Series G, 5%, issued November 1, 2019, due 2020	22,825	-
Total	<u>2,515,885</u>	<u>2,495,330</u>

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June 30, 2020 and 2019

(Dollars in thousands)

	<u>2020</u>	<u>2019</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust:		
1999 Series E Sewer, 4 3/4%, issued		
October 6, 1999, due 2020 to 2029	\$ 4,803	\$ 5,198
1999 Series E Water, 4 3/4%, issued		
October 6, 1999	-	800
1999 Series F, 5 3/4% to 6%, issued		
November 3, 1999, due 2020 to 2029	144,080	162,905
2000 Series E Sewer, 5 1/4% to 5 1/2%, issued		
November 1, 2000, due 2020 to 2030	38,438	41,020
2000 Series E Water, 5 1/4%, issued		
November 1, 2000, due 2020	840	1,670
2001 Series C Water, 5% , issued		
July 26, 2001, due 2021	365	720
2001 Series D Sewer, 5 3/8% to 5 1/2%, issued		
July 26, 2001, due 2020 to 2029	487	1,015
2001 Series D Water, 5 1/2%, issued		
July 26, 2001	-	113
2002 Series H Sewer, 5% to 5 1/4%, issued		
October 31, 2002, due 2020 to 2032	51,055	54,125
2002 Series H Water, 5% to 5 1/4%, issued		
October 31, 2002, due 2020 to 2022	6,460	8,475
2002 Series I Sewer, 5 1/4% to 5 1/2%, issued		
October 31, 2002, due 2020 to 2030	1,348	1,445
2002 Series I Water, 5 1/4%, issued		
October 31, 2002, due 2020	2	4
2003 Series A Water, 5%, issued		
October 31, 2002, due 2020 to 2022	295	386
2003 Series B Water, 5%, issued		
July 24, 2003, due 2021	328	652
2003 Series C Sewer, 5% to 5 1/4%, issued		
November 6, 2003, due 2020 to 2033	18,994	20,015
2003 Series C Water, 4 3/4% to 5%, issued		
November 6, 2003, due 2020 to 2023	5,430	6,680
2004 Series C Sewer, 5% to 5 1/4%, issued		
October 26, 2004, due 2020 to 2033	6,437	6,787
2004 Series C Water, 5%, issued		
October 26, 2004, due 2020 to 2022	168	295
2004 Series D Sewer, 4 1/2% to 5%, issued		
November 29, 2004, due 2020 to 2034	35,295	36,980
2004 Series D Water, 5%, issued		
November 29, 2004, due 2020 to 2024	4,480	5,220
2005 Series C Sewer, 5% to 5 1/4%, issued		
November 3, 2005, due 2020 to 2033	3,808	4,118
2005 Series C Water, 5%, issued		
November 3, 2005, due 2020 to 2023	284	350

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Notes to Financial Statements

June 30, 2020 and 2019

(Dollars in thousands)

	<u>2020</u>	<u>2019</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust (Continued):		
2005 Series D Sewer, 2 3/10%, issued		
November 16, 2005, due 2020 to 2035	\$ 39,533	\$ 41,552
2005 Series D Water, 0% to 2%, issued		
November 16, 2005, due 2020 to 2025	4,653	5,413
2005 Series E Sewer, 2%, issued		
November 16, 2005, due 2020 to 2025	139	161
2005 Series E Water, 2%, issued		
November 16, 2005, due 2020 to 2025	31	36
2006 Series C Sewer, 5%, issued		
October 26, 2006, due 2020 to 2034	4,885	5,244
2006 Series D Sewer, 2 3/10%, issued		
December 14, 2006, due 2020 to 2036	38,175	39,981
2006 Series D Water, 0% to 2%, issued		
December 14, 2006, due 2020 to 2026	10,842	12,356
2006 Series E Sewer, 2%, issued		
December 14, 2006, due 2020 to 2026	148	168
2006 Series E Water, 2%, issued		
December 14, 2006, due 2020 to 2026	66	75
2007 Series C Sewer, 2% to 2 3/10%, issued		
November 9, 2007, due 2020 to 2035	1,799	2,057
2007 Series C Water, 2%, issued		
November 9, 2007, due 2020 to 2025	925	1,077
2007 Series D Sewer, 2 3/10%, issued		
November 9, 2007, due 2020 to 2036	15,663	16,407
2007 Series E Sewer, 2 2/5%, issued		
December 18, 2007, due 2020 to 2037	38,250	39,926
2007 Series E Water, 2%, issued		
December 18, 2007, due 2020 to 2027	8,971	9,995
2008 Series G Sewer, 2%, issued		
December 9, 2008, due 2020 to 2026	2,416	2,757
2008 Series G Water, 2%, issued		
December 9, 2008, due 2020 to 2026	518	588
2009 Series C Sewer, 2% to 2 2/5%, issued		
March 18, 2009, due 2020 to 2038	49,700	52,200
2009 Series C Water, 2%, issued		
March 18, 2009, due 2020 to 2028	15,166	16,689
2009 Series D Sewer, 2% to 2 2/5%, issued		
December 15, 2009, due 2020 to 2037	6,691	7,163
2009 Series D Water, 2%, issued		
December 15, 2009, due 2020 to 2027	619	690
2010 Series D Sewer, 2% to 2 2/5%, issued		
July 8, 2010, due 2020 to 2040	18,684	19,613
2010 Series D Water, 2%, issued		
July 8, 2010, due 2020 to 2030	13,830	14,943
2011 Series A Sewer, 2% to 2 2/5%, issued		
March 15, 2011, due 2020 to 2038	3,573	3,847

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Notes to Financial Statements

June 30, 2020 and 2019

(Dollars in thousands)

	<u>2020</u>	<u>2019</u>
General Revenue Bonds with the Massachusetts		
Clean Water Trust (Continued):		
2011 Series A Water, 2%, issued		
March 15, 2011, due 2020 to 2028	\$ 2,917	\$ 3,213
2012 Series C Sewer, 2% to 2 2/5%, issued		
June 6, 2012, due 2020 to 2040	5,021	5,428
2012 Series C Water, 2%, issued		
June 6, 2012, due 2020 to 2030	2,476	2,673
2012 Series D Sewer, 2% to 2 2/5%, issued		
June 13, 2012, due 2020 to 2042	30,399	32,484
2012 Series D Water, 2%, issued		
June 13, 2012, due 2020 to 2032	5,992	6,387
2013 Series B Sewer, 2% to 2 2/5%, issued		
May 22, 2013, due 2021 to 2043	20,929	22,610
2013 Series B Water, 2%, issued		
May 22, 2013, due 2021 to 2033	6,007	6,404
2014 Series C Sewer, 2% to 2 2/5%, issued		
May 30, 2014, due 2020 to 2042	3,843	4,031
2014 Series C Water, 2%, issued		
May 30, 2014, due 2020 to 2032	4,105	4,396
2015 Series A Sewer, 2% to 2 2/5%, issued		
January 7, 2015, due 2021 to 2045	40,197	41,819
2015 Series A Water, 2%, issued		
January 7, 2015, due 2021 to 2035	12,468	13,165
2015 Series B Sewer, 2% to 2 2/5%, issued		
May 14, 2015, due 2020 to 2043	2,415	2,617
2015 Series B Water, 2%, issued		
May 14, 2015, due 2020 to 2033	1,607	1,722
2016 Series A Sewer, 2% to 2 2/5%, issued		
March 11, 2016, due 2020 to 2046	34,490	35,731
2016 Series A Water, 2%, issued		
March 11, 2016, due 2020 to 2036	11,397	11,987
2017 Series A Sewer, 2%, issued		
April 13, 2017, due 2020 to 2036	7,659	8,028
2017 Series A Water, 2%, issued		
April 13, 2017, due 2020 to 2037	21,739	22,787
2018 Series E Sewer, 2%, issued		
September 12, 2018, due 2020 to 2038	16,682	17,386
2018 Series E Water, 2%, issued		
September 12, 2018, due 2020 to 2038	31,295	32,614
2019 Series A Sewer, Interim loan, issued		
January 28, 2019	-	32,770
2019 Series A Water, Interim loan, issued		
January 28, 2019	-	19,720
2019 Series D Sewer, 2%, issued		
October 24, 2019, due 2020 to 2039	32,770	-
2019 Series D Water, 2%, issued		
October 24, 2019, due 2020 to 2039	19,720	-
2020 Series A Water, Interim loan, issued		
May 8, 2020	25,148	-
2020 Series A Water, Interim loan, issued		
May 8, 2020	15,000	-
Total	<u>952,950</u>	<u>979,883</u>
General Revenue Bonds (Variable Rates):		
1999 Series B, 1.02% to 2.51%, issued		
January 29, 1999, due 2020 to 2028	46,500	50,700
Total	<u>46,500</u>	<u>50,700</u>



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(Dollars in thousands)

	<u>2020</u>	<u>2019</u>
General Revenue Refunding Bonds (Variable Rates):		
2002 Series C, 0.53% to 2.18%, issued August 15, 2002	\$ -	\$ 35,120
2008 Series A, 0.94% to 2.33%, issued May 29, 2008, due 2020 to 2037	193,310	203,940
2008 Series C, 0.87% to 2.16%, issued May 29, 2008, due 2020 to 2026	54,500	70,700
2008 Series E, 0.94% to 2.32%, issued May 29, 2008, due 2020 to 2037	133,640	133,640
2012 Series E, 1.39% to 2.75%, issued November 15, 2012, due 2020 to 2031 (Direct Borrowing)	56,870	58,435
2012 Series G, 1.34% to 2.70%, issued November 15, 2012, due 2020 to 2023 (Direct Borrowing)	15,700	26,500
2014 Series A, 1.93% to 2.36%, issued May 20, 2014, due 2022 to 2025 (Direct Borrowing)	50,000	50,000
2014 Series B, 2.01% to 2.44%, issued May 20, 2014, due 2020 to 2022 (Direct Borrowing)	43,035	54,095
2018 Series A, 2.00% to 2.36%, issued March 26, 2018, due 2023 to 2031 (Direct Borrowing)	47,530	49,095
2018 Series D, 1.34% to 2.70%, issued May 31, 2018, due 2025 to 2029 (Direct Borrowing)	50,000	50,000
Total	<u>644,585</u>	<u>731,525</u>
Revolving Loan:		
2015 Series C, issued November 1, 2015, due 2021	<u>53,000</u>	<u>53,000</u>
Total	<u>4,795,420</u>	<u>4,952,058</u>
Less:		
Unamortized Bond Premiums and Discounts	309,025	391,722
Current Portion of Long-Term Debt	<u>(245,839)</u>	<u>(237,918)</u>
Total	<u>63,186</u>	<u>153,804</u>
Long-Term Debt, Net	<u>\$ 4,858,606</u>	<u>\$ 5,105,862</u>

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June 30, 2020 and 2019

(Dollars in thousands)

Long-term obligations at June 30, 2020 and 2019 consisted of the following:

	<b>2020</b>			<b>2020</b>	<b>Due</b>
	<b>Beginning</b>	<b>Additions</b>	<b>Reductions</b>	<b>Ending</b>	<b>Within</b>
	<b>Balance</b>			<b>Balance</b>	<b>One Year</b>
General Revenue Bonds	\$ 692,320	\$ 50,000	\$ 113,320	\$ 629,000	\$ 48,875
General Revenue Refunding Bonds	2,938,730	570,575	611,970	2,897,335	107,580
Refunding from Direct Borrowings	288,125	-	24,990	263,135	20,083
General Revenue Bonds with the Massachusetts Clean Water Trust	979,883	92,638	119,571	952,950	69,301
Borrowings Associated with Derivative Instruments	33,954	-	2,940	31,014	-
Revolving Loan	53,000	-	-	53,000	-
<b>Total</b>	<b>\$ 4,986,012</b>	<b>\$ 713,213</b>	<b>\$ 872,791</b>	<b>\$ 4,826,434</b>	<b>\$ 245,839</b>
	<b>2019</b>			<b>2019</b>	<b>Due</b>
	<b>Beginning</b>	<b>Additions</b>	<b>Reductions</b>	<b>Ending</b>	<b>Within</b>
	<b>Balance</b>			<b>Balance</b>	<b>One Year</b>
General Revenue Bonds	\$ 625,515	\$ 125,000	\$ 58,195	\$ 692,320	\$ 33,615
General Revenue Refunding Bonds	3,056,105	19,190	136,565	2,938,730	112,230
Refunding from Direct Borrowings	312,215	-	24,090	288,125	24,990
General Revenue Bonds with the Massachusetts Clean Water Trust	942,880	102,490	65,487	979,883	67,083
Borrowings Associated with Derivative Instruments	36,894	-	2,940	33,954	-
Revolving Loan	53,000	-	-	53,000	-
<b>Total</b>	<b>\$ 5,026,609</b>	<b>\$ 246,680</b>	<b>\$ 287,277</b>	<b>\$ 4,986,012</b>	<b>\$ 237,918</b>

The Authority is required to establish water and sewer rates and charges at a level sufficient to provide, among other things, primary and subordinated debt service coverage ratios of 120% and 110%, respectively. For the year ended June 30, 2020, the Authority had primary and subordinated debt service coverage ratios of 246% and 120%, respectively.

Under the Authority's General Revenue Bond Resolution, all revenues, together with the investment earnings thereon, except to the extent that such earnings are required to be deposited in the Rebate Fund pursuant to a Supplemental Resolution, are pledged for payment of the Bonds.

The Act of 1984 imposes a limitation of \$600,000 on the total amount of bonds and notes which may be outstanding at any one time. The Authority has requested increases in its debt limit as necessary to allow for issuances of bonds in amounts required to finance the capital program. The state legislature increased the debt limit to \$6,450,000.

On November 1, 2019, the Authority issued General Revenue Bonds (Federally Taxable), 2019 Series E for \$50,000, General Revenue Refunding Bonds (Federally Taxable), 2019 Series F for \$547,750 and General Revenue Refunding Bonds, 2019 Series G for \$22,825.

The proceeds from the Series E bonds were used to finance new construction projects. The interest rate on these bonds range from 1.89 to 3.22%.

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The proceeds from the Series F bonds were used to refund \$840 of General Revenue Bonds 2011 Series B, \$69,150 of General Revenue Bonds 2012 Series A, \$66,870 of General Revenue Refunding Bonds 2010 Series B, \$282,435 of General Revenue Refunding Bonds 2011 Series C and \$86,775 of General Revenue Refunding Bonds 2012 Series B.

The interest rate of these bonds range from 1.66% to 3.10%. The cash flow required to make principal and interest payments on the funding bonds is approximately \$95,685 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is \$72,934.

The proceeds from the Series G bonds were used to refund \$23,415 of General Revenue Bonds 2002 Series C.

The interest rate on these bonds is 5%. The cash flow required to make principal and interest payments on the refunding bonds is approximately \$349 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is \$345.

On May 22, 2019, the Authority issued General Revenue Bonds, 2019 Series B for \$125,000 and General Revenue Refunding Bonds, 2019 Series C for \$19,190.

The proceeds from the Series B bonds were used to finance new construction projects. The interest rate on these bonds is 5%.

The proceeds from the Series C bonds were used to refund \$20,340 of General Revenue Refunding Bonds 2009 Series B. The interest rate on these bonds is 5%. The cash flow required to make principal and interest payments on the refunding bonds is approximately \$1,619 less than the debt service requirements of the refunded bonds. The economic gain (the difference between the present values of the debt service payments on the old and new debt) obtained from this refunding is \$1,551.

On November 1, 2015, the Authority entered into a revolving credit agreement with a bank. The Authority shall repay the loan at the Commitment Termination Date, November 17, 2021, at which point the Authority can elect to convert the revolving loan into a term loan. Interest is payable at 80% of the 1 month LIBOR rate, 0.17% and 2.40% at June 30, 2019 and 2018, respectively. Initial drawdown was \$100,000, which was reduced to \$79,000 at June 30, 2016. The balance was further reduced in fiscal year 2018 to \$53,000 using the proceeds from the General Revenue Bonds, 2018 Series B.

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***Synthetic Fixed Rate Swap Transactions***

In connection with several of its bond issues, the Authority has entered into various interest rate swap agreements to reduce the impact of changes in interest rates on its variable rate debt. Under these agreements, the Authority pays a fixed interest rate (ranging from 4.0% to 6.9%) and receives interest from the swap counterparties at a variable rate (either Securities Industry and Financial Markets Association (SIFMA) rate or a percentage of LIBOR). The SIFMA rate is based on the seven-day high-grade market index of tax-exempt variable rate demand obligations.

Item	Objective	Effective Date	Current Notional Amount	Termination Date	Fixed Payable Swap Rate	Variable Receivable Swap Rate	Fair Value at June 30,	
							2020	2019
A	Hedge changes in cash flows on the 2008 Series A Bonds	April 4, 2011	\$ 133,300	August 1, 2030	6.585%	67% LIBOR Plus 0.13%	\$ (12,108)	\$ (8,747)
B	Hedge changes in cash flows on the 2008 Series E Bonds	October 28, 2008	133,300	August 1, 2030	6.935	SIFMA	(18,532)	(15,272)
C	Hedge changes in cash flows on the 2008 Series A and 2008 Series E Bonds	August 1, 2030	70,400	August 1, 2037	6.585	67% LIBOR Plus 0.13%	(6,658)	(3,434)
D	Hedge changes in cash flows on the 2008 Series C Bonds	May 29, 2008	41,805	November 1, 2026	3.994	SIFMA	(4,138)	(3,860)
E	Hedge changes in cash flows on the 2008 Series C and 2012 Series G Bonds	May 29, 2008	27,880	November 1, 2026	4.033	SIFMA	(1,107)	(327)
Total							<u>\$ (42,543)</u>	<u>\$ (31,640)</u>

All of the above are pay-fixed interest rate swap agreements. Under these interest rate swap agreements, the Authority incurred net interest expense of \$16,852 and \$12,290 in fiscal year 2020 and fiscal year 2019, respectively.

For the swap effective on April 4, 2011, with a current notional amount of \$133,300, the fixed rate paid by the Authority is as follows: 4.120% from execution until August 2013, 5.144% from August 2013 until August 2019, and 6.585% from August 2019 until August 2030.

For the swap execution on October 28, 2008, with a current notional amount of \$133,300, the fixed rate paid by the Authority is as follows: 4.470% from execution until August 2013, 5.494% from August 2013 until August 2019, and 6.935% from August 2019 until August 2030.

The aggregate fair value balance of the derivative instruments at June 30, 2020 and 2019 is \$(42,543) and \$(31,640), respectively, and is reflected on the Authority's statements of net position as a liability for derivative instruments. This liability is offset by deferred outflows from derivative instruments. The original notional amounts of the interest rate swaps totaled \$535,895.



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The fair values of the interest rate swaps were estimated using the zero-coupon method. This method calculates the future net settlement payments required by the swap, assuming that the current forward rates implied by the yield curve correctly anticipate future spot interest rates. These payments are then discounted using the spot rates implied by the current yield curve for hypothetical zero-coupon bonds due on the date of each future net settlement on the swaps. The interest rate swaps are classified in Level 2 of the fair value hierarchy, as outlined in Government Accounting Standards Board Statement No. 72, *Fair Value Measurement and Application*, as valued using a market approach that considers benchmark interest rates.

***Risk Disclosure***

*Credit Risk* - Because all of the Authority’s swaps rely upon the performance of the third parties who serve as swap counterparties, the Authority is exposed to credit risk, or the risk that a swap counterparty fails to perform according to its contractual obligations. The appropriate measurement of this risk at the reporting date is the fair value of the swaps, as shown in the columns labeled Fair Value in the tables above. To mitigate credit risk, the Authority maintains strict credit standards for swap counterparties. The Authority monitors swap counterparties’ credit ratings by the three rating agencies (FitchRatings, Moody’s Investors Service, and S&P Global Ratings). Collateral may be obtained from any counterparty that does not maintain a set credit rating. Since all derivatives are in a liability position, there is no amount exposed to credit risk.

The following represents the credit ratings of the counterparties as of June 30, 2020:

<u>Derivative instrument</u>	<u>Counterparty credit rating</u>
Derivative A	A+
Derivative B	AA-
Derivative C	A+
Derivative D	A
Derivative E	A+

*Basis Risk* - The Authority is exposed to basis risk because the floating index the Authority receives on the swaps (SIFMA or 67% of LIBOR) may be different than the basis of the variable rate on the associated bonds. Should this occur, the expected savings may not be realized.

*Termination Risk* - The Authority or its counterparties may terminate a derivative instrument if the other party fails to perform under the terms of the contract. If, at the time of termination, a derivative is in a liability position, the Authority would be liable to the counterparty for a payment equal to the liability, subject to netting arrangements.

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*Rollover Risk* - The Authority can be exposed to rollover risk on hedging derivative instruments that are hedges of debt that terminate prior to the maturity of the debt. The Authority currently has no rollover risk. When derivative instruments A and B terminate in 2030, those bond series will then be hedged by derivative instrument C.

***Swap Payments and Associated Bonds Outstanding***

Bonds outstanding include certain variable rate bonds where the Authority pays a fixed interest rate and receives interest at a variable rate from the counterparty. The table below presents the debt service requirements and related net swap payments for these bonds. As rates vary, variable rate interest payments will vary.

Using rates as of June 30, 2020, debt service requirements of the hedged variable rate bonds and net swap payments, assuming current interest rates remain constant, were as follows:

<u>Fiscal Year Ending June 30:</u>	<u>Variable-rate</u>		<u>Interest Rate</u>	<u>Total</u>
	<u>Principal</u>	<u>Interest</u>	<u>Swaps, Net</u>	
2021	\$ 70,400	\$ 3,106	\$ 17,130	\$ 90,636
2022	32,230	2,429	15,005	49,664
2023	67,345	1,963	11,945	81,253
2024	15,025	1,790	9,299	26,114
2025	16,000	1,610	8,353	25,963
2026–2030	64,895	4,597	25,092	94,584
2031–2035	28,900	3,449	16,455	48,804
2036–2038	41,500	512	3,206	45,218
Total	<u>\$ 336,295</u>	<u>\$ 19,456</u>	<u>\$ 106,485</u>	<u>\$ 462,236</u>

***Demand Bonds***

Included in variable rate long-term debt of \$691,085 is \$427,950 of subordinated variable rate demand obligations (VRDOs). The bonds were issued on various dates from 1999 through 2008. Subordinated VRDOs are subject to purchase on the demand of the holder at a price equal to principal plus accrued interest. The ability of the Authority to purchase such bonds, if not remarketed, is secured through letters of credit and standby bond purchase agreements with various nationally recognized financial institutions that expire between December 2020 and August 2022. The VRDOs are classified as long-term debt because the liquidity agreement for each series contains term out provisions that, if demand is made to repurchase the bonds, calls for a two to three year amortization to repay the bonds.

In 2014, \$114,755 of 2014 Series A and B General Revenue Refunding Bonds were issued as direct-purchase bonds, to be held by the purchaser for a specific period of time and are not subject to purchase or remarketing at the demand of the holder and therefore do not require a letter of credit or standby bond purchase agreement. The \$50,000 of Series A and \$43,035 of Series B have been purchased through August 2025 and August 2022, respectively. In addition, the 2012 Series E & G General Revenue Refunding Bonds, totaling \$72,570, have two to three year term out provisions beginning at the expiration date and the 2018 Series A & D General Revenue Refunding Bonds, totaling \$97,530, have three year term out provisions beginning at the expiration dates.

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At June 30, 2020, the following bonds outstanding are considered defeased in-substance:

<b>Description</b>	<b>Redemption date</b>	<b>Redemption price</b>	<b>Outstanding principal amount</b>
2002 Series J	2020	100	\$ 7,630
2010 Series A	2020	100	93,935
2010 Series B	2020	100	114,565
2011 Series B	2020 - 2021	100	124,275
2011 Series C	2021	100	291,160
2012 Series A	2020 and 2022	100	123,950
2012 Series B	2022	100	86,775
2013 Series A	2020 - 2023	100	11,245
2014 Series D	2020 - 2024	100	10,115
2014 Series F	2020	100	115
2016 Series B	2020	100	1,360
2016 Series C	2022	100	2,990
2016 Series D	2024	100	835
2017 Series B	2020 and 2023	100	2,845
2017 Series C	2020 and 2021	100	13,375
2019 Series B	2023	100	3,735

The proceeds and available funds were deposited in irrevocable trusts with escrow agents in an amount which will provide for payment of interest due to the redemption date and redemption of the defeased bonds outstanding on such date. The defeased portion of such debt, accrued interest thereon, and related unamortized issuance and discount costs were removed from the statements of net position in an in-substance defeasance transaction.

In June 2020, the Authority used funds on hand to defease \$3,135 of the 2014 Series D, \$1,455 of the 2017 Series B and \$3,735 of the 2019 Series B General Revenue Bonds and \$7,860 of the 2013 Series A, \$2,990 of the 2016 Series C, \$835 of the 2016 Series D and \$8,130 of the 2017 Series C General Revenue Refunding Bonds outstanding.

In November 2019, the Authority used funds on hand to defease \$1,390 of the General Revenue Bonds 2017 Series B and \$8,725 of the General Revenue Refunding Bonds 2011 Series C outstanding.

In June 2019, the Authority used funds on hand to defease \$4,150 of the 2002 Series J General Revenue Bonds and \$20,000 of the 2009 Series B General Revenue Refunding Bonds outstanding.

In September 2018, the Authority used funds on hand to defease \$1,380 of the 2002 Series J General Revenue Bonds and \$12,550 of the 2009 Series B General Revenue Refunding Bonds outstanding.

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At June 30, 2020, outstanding bonds that are redeemable before their scheduled due dates are as follows:

<u>Description</u>	<u>Redemption date</u>	<u>Redemption price</u>	<u>Outstanding principal amount</u>
2013 Series A	August 2023	100	\$ 44,470
2014 Series D	August 2024	100	53,885
2014 Series F	August 2024	100	93,655
2016 Series B	August 2026	100	54,775
2016 Series C	August 2026	100	610,650
2016 Series D	August 2026	100	98,425
2017 Series B	August 2027	100	55,775
2017 Series C	August 2027	100	114,795
2018 Series B	August 2025	100	23,940
2018 Series B	August 2028	100	75,940
2019 Series B	August 2029	100	70,265
2019 Series E	August 2044	100	38,395
2019 Series F	August 2039	100	180,180

The variable rate General Revenue Bonds are subject to redemption prior to maturity at the option of the Authority in whole or in part, on any interest payment date for bond Series 1999B and 2002C and on any business day for bond Series 2008A, 2008C, 2008E, 2012G, 2014A, 2014B, 2018A and 2018D, respectively. Series 2012E is subject to redemption prior to maturity on any interest payment date after November 15, 2014.

During fiscal year 2020, the Authority executed loan agreements with the Massachusetts Clean Water Trust providing for 2020 Series A Sewer and Water loans in the principal amounts of \$25,148 and \$15,000, respectively. The Authority also executed loan agreements with the Massachusetts Clean Water Trust providing for 2019 Series D Sewer and Water loans in the principal amounts of \$32,770 and \$19,720, respectively, replacing interim loans executed in fiscal year 2019. All proceeds for these loans were received by June 30, 2020.

Federal and Commonwealth subsidies for purposes of offsetting principal payments aggregating \$24,986 will be recognized as capital grants in aid of construction over the term of the loans.

Interest is payable semiannually on all debt, except on the commercial paper, on which interest is payable upon maturity and the General Revenue Bonds and General Revenue Refunding Bonds with variable interest rates on which interest is payable monthly. The Senior General Revenue Bonds and the General Revenue Refunding Bonds are collateralized equally and ratably by a lien and pledge on substantially all of the Authority's cash and revenues, except the operating fund.



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The subordinated debt series, including the commercial paper interest are collateralized equally and ratably by a subordinated pledge on substantially all of the Authority's revenues and cash and investments, except the operating, senior debt service, and debt service reserve funds. Premiums, discounts, issuance costs, and the excess of reacquisition price over the carrying amount of the defeased debt are being amortized over the lives of the respective issues.

The amounts of long-term debt, principal, and interest payable in future fiscal years are as follows:

<u>Year Ending June 30:</u>	<u>Principal</u>	<u>Interest</u>	<u>Total</u>
2021	\$ 245,839	\$ 188,718	\$ 434,557
2022	297,346	178,472	475,818
2023	272,528	165,773	438,301
2024	294,459	155,813	450,272
2025	292,856	143,621	436,477
2026–2030	1,370,259	553,512	1,923,771
2031–2035	930,866	318,039	1,248,905
2036–2040	878,952	130,563	1,009,515
2041–2045	210,798	14,583	225,381
2046	1,517	39	1,556
Total	<u>\$ 4,795,420</u>	<u>\$ 1,849,133</u>	<u>\$ 6,644,553</u>

In fiscal year 2020 the Authority had \$75,000 of commercial paper notes outstanding. In fiscal year 2020 the Authority issued commercial paper notes of \$75,000 to finance capital expenditures.

These notes are secured by \$100,000 and \$150,000 irrevocable direct-pay letters of credit which expire on December 8, 2021, and April 12, 2023, respectively. These letters of credit carry a fee of 0.45% and 0.265% per annum, respectively, on the amount available. The maximum aggregate principal amount of commercial paper which may be outstanding at any one time is \$250,000.

Commercial paper at June 30, 2020 and 2019 consisted of the following:

	<u>2020 Beginning balance</u>	<u>Additions</u>	<u>Reductions</u>	<u>2020 Ending balance</u>
1.86% Commercial Paper	\$ 75,000	\$ -	\$ 75,000	\$ -
1.72% Commercial Paper	-	75,000	-	75,000
Total	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>
	<u>2019 Beginning balance</u>	<u>Additions</u>	<u>Reductions</u>	<u>2019 Ending balance</u>
0.94% Commercial Paper	\$ 75,000	\$ -	\$ 75,000	\$ -
1.86% Commercial Paper	-	75,000	-	75,000
Total	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>	<u>\$ 75,000</u>

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**(7) Accounts Receivable/Intergovernmental Loans**

The Authority has entered into various interest-free loan agreements with certain member communities. Under these agreements, the Authority loaned these communities \$40,599 and \$50,641 in fiscal years 2020 and 2019, respectively, to be received in five or ten equal annual installments.

The long-term portion of these loans at June 30, 2020 and 2019 is \$159,980 and \$151,756, respectively, and is included in other assets. The loans due within one year total \$33,383 and \$32,732 at June 30, 2020 and 2019, respectively. This program is designed to assist member communities with sewer and water systems rehabilitation.

**(8) Capital Assets**

Capital assets at June 30, 2020 and 2019 consisted of the following:

	<u>2019</u>	<u>Additions</u>	<u>Disposals/ transfers</u>	<u>2020</u>
Capital assets not being depreciated:				
Land	\$ 29,885	\$ 51	\$ -	\$ 29,936
Construction in progress	<u>149,794</u>	<u>110,945</u>	<u>(46,637)</u>	<u>214,102</u>
Total capital assets not being depreciated	<u>179,679</u>	<u>110,996</u>	<u>(46,637)</u>	<u>244,038</u>
Capital assets being depreciated:				
Plant and equipment – water and sewage system	9,846,990	46,037	-	9,893,027
Furniture and fixtures	17,561	-	-	17,561
Leasehold improvements	2,423	-	-	2,423
Motor vehicles and equipment	<u>10,880</u>	<u>548</u>	<u>-</u>	<u>11,428</u>
Total capital assets being depreciated	<u>9,877,854</u>	<u>46,585</u>	<u>-</u>	<u>9,924,439</u>
Less: accumulated depreciation for:				
plant and equipment – water and sewage system	4,193,501	195,107	-	4,388,608
Furniture and fixtures	17,493	26	-	17,519
Leasehold improvements	2,156	12	-	2,168
Motor vehicles and equipment	<u>3,967</u>	<u>838</u>	<u>-</u>	<u>4,805</u>
Total accumulated depreciation	<u>4,217,117</u>	<u>195,983</u>	<u>-</u>	<u>4,413,100</u>
Total capital assets being depreciated, net	<u>5,660,737</u>	<u>(149,398)</u>	<u>-</u>	<u>5,511,339</u>
Total capital assets, net	<u>\$ 5,840,416</u>	<u>\$ (38,402)</u>	<u>\$ (46,637)</u>	<u>\$ 5,755,377</u>

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Capital assets at June 30, 2019 and 2018 consisted of the following:

	<u>2018</u>	<u>Additions</u>	<u>Disposals/ transfers</u>	<u>2019</u>
Capital assets not being depreciated:				
Land	\$ 29,878	\$ 7	\$ -	\$ 29,885
Construction in progress	<u>180,525</u>	<u>86,441</u>	<u>(117,172)</u>	<u>149,794</u>
Total capital assets not being depreciated	<u>210,403</u>	<u>86,448</u>	<u>(117,172)</u>	<u>179,679</u>
Capital assets being depreciated:				
Plant and equipment – water and sewage system	9,730,790	116,200	-	9,846,990
Furniture and fixtures	17,543	18	-	17,561
Leasehold improvements	2,423	-	-	2,423
Motor vehicles and equipment	<u>9,933</u>	<u>947</u>	<u>-</u>	<u>10,880</u>
Total capital assets being depreciated	<u>9,760,689</u>	<u>117,165</u>	<u>-</u>	<u>9,877,854</u>
Less: accumulated depreciation for:				
plant and equipment – water and sewage system	3,999,993	193,508	-	4,193,501
Furniture and fixtures	17,411	82	-	17,493
Leasehold improvements	2,144	12	-	2,156
Motor vehicles and equipment	<u>3,194</u>	<u>773</u>	<u>-</u>	<u>3,967</u>
Total accumulated depreciation	<u>4,022,742</u>	<u>194,375</u>	<u>-</u>	<u>4,217,117</u>
Total capital assets being depreciated, net	<u>5,737,947</u>	<u>(77,210)</u>	<u>-</u>	<u>5,660,737</u>
Total capital assets, net	<u>\$ 5,948,350</u>	<u>\$ 9,238</u>	<u>\$ (117,172)</u>	<u>\$ 5,840,416</u>

Depreciation and amortization for fiscal years 2020 and 2019 was \$211,214 and \$207,127, respectively.

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**(9) Leases**

**Operating**

The Authority leases office space in Boston and other property under long-term operating leases. Future minimum rental payments required under operating leases having initial or remaining non-cancelable lease terms in excess of one year at June 30, 2020 are as follows:

<b><u>Year Ending June 30:</u></b>	<b><u>Amount</u></b>
2021	\$ 1,748
2022	1,724
2023	1,621
Total	<u>\$ 5,093</u>

Rental expense was \$3,881 and \$3,744 in fiscal years 2020 and 2019, respectively. Electrical power asset capacity charges and operation and maintenance charges are disclosed in Note 12.

**Capital**

In fiscal year 2002, the Authority entered into a 30-year capital lease agreement for the new maintenance facility. The interest rate for the capital lease is 7.83%. Future minimum lease payments for the capital lease at June 30, 2020 are as follows:

<b><u>Year Ending June 30:</u></b>	<b><u>Principal</u></b>	<b><u>Interest</u></b>	<b><u>Total</u></b>
2021	\$ 1,316	\$ 1,901	\$ 3,217
2022	1,423	1,794	3,217
2023	1,538	1,679	3,217
2024	1,663	1,554	3,217
2025	1,798	1,419	3,217
2026–2030	11,430	4,654	16,084
2031–2032	5,708	459	6,167
Total	<u>\$ 24,876</u>	<u>\$ 13,460</u>	<u>\$ 38,336</u>

Under this lease, the Authority is also responsible for “Additional Rent,” as defined in the lease. The Additional Rent includes real estate taxes, assessments, and other government charges.

The associated capital asset is reported in plant and equipment – water and sewage system at a cost of \$37,134 with \$22,281 of accumulated depreciation as of June 30, 2020.

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### (10) Retirement Benefits

#### (a) *Plan Description*

The Enabling Act provided for the establishment of the Massachusetts Water Resources Authority Employees' Retirement System (the Plan), a contributory single-employer retirement system that is separate from the State Employees Retirement System. The Plan is a defined benefit pension plan covering those employees not employed by the MDC prior to July 1, 1985. Complete financial statements for the Plan can be obtained from the Authority's administrative offices at Charlestown Navy Yard, 100 First Avenue, Boston, MA 02129.

#### (b) *Benefits Provided*

The Plan provides retirement, disability and death benefits. For employees hired prior to April 2, 2012, the annual amount of the retirement allowance is based on the member's final three-year average salary multiplied by (1) the number of years and full months of creditable service at the time of retirement and (2) a percentage based on age at retirement in accordance with a schedule provided by state law. Assuming normal retirement at age 65, this percentage is 2.5%, which is reduced for individuals who retire prior to age 65 to reflect the longer pay out period.

For employees hired on or after April 2, 2012, the annual amount of the retirement allowance is based on the member's final five-year average salary multiplied by (1) the number of years and full months of creditable service at the time of retirement and (2) a percentage based on age at retirement in accordance with a schedule provided by state law. Assuming normal retirement at age 67, this percentage is 2.5%.

Employees hired prior to April 2, 2012, may elect early retirement after 20 years of service or at any time after attaining age 55 with 10 years of eligible service. Plan members who become permanently and totally disabled may be eligible to receive a disability retirement allowance. The amount of benefits to be received depends on several factors, including the member's age, compensation, veteran status, years of service and whether or not the disability is work-related. In addition, certain death benefits exist for beneficiaries of employees who die in active service.

All MDC personnel who became employees of the Authority on July 1, 1985, and were members of the State Employees Retirement System, retained their membership in that system. The Authority is not liable for retirement allowances paid to or on account of these employees. Funding of the pension liability of the State Employees Retirement System is the obligation of the Commonwealth. Employees covered by this plan become 100% vested after 10 years of service.



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**(c) Employees Covered by Benefit Terms**

At December 31, 2019 (the date of the Plan's latest actuarial valuation), the following employees were covered by the benefit terms:

Retired Participants and Beneficiaries Receiving Benefits	672
Inactive Participants Entitled to a Return of their Employee Contributions	75
Inactive Participants with a Vested Right to a Deferred or Immediate Benefit	37
Active Participants	<u>1,105</u>
Total	<u><u>1,889</u></u>

**(d) Contributions**

Contributions made by employees are based upon a percentage of employee base pay (5% for employees hired before December 31, 1974, 7% for employees hired between January 1, 1975 and December 31, 1983, 8% for employees hired between December 31, 1983, and June 30, 1996, and 9% for employees hired after July 1, 1996). Additionally, certain employees earning in excess of \$30 contribute an extra 2% of their salary effective January 1, 1979. Employees receive full payment of contributions upon withdrawal from the Plan and 50% of interest earned for employees with five to nine years of service or 100% of interest earned for employees with 10 or more years of service.

The Authority's 2020 and 2019 contributions to the plan were based on an amount approved by the Retirement Board and the Authority's board of directors, which is based on an actuarially determined amount. The Authority's Enabling Act requires funding to be made in accordance with the Retirement Board's recommendation. In fiscal year 2020 the Authority made a \$7.3 million required contribution. In fiscal year 2019 the Authority made a \$7.0 million required contribution.

**(e) Net Pension Liability**

The Plan's net pension liability was measured as of December 31, 2019 and 2018. The total pension liability was determined by actuarial valuations as of January 1, 2020 and January 1, 2019, respectively.

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*Actuarial assumptions:* The total pension liability in the January 1, 2020 and January 1, 2019 actuarial valuations were determined using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	3%
Salary Increases	Based on years of service, starting at 5.75% at 0 years of service decreasing to 4% after 9 years of service
Discount Rate	7.10% at December 31, 2019; 7.25% at December 31, 2018
Cost of Living Adjustments	Adjusted to 3% of the first \$15,000 at December 31, 2019 as permitted under Massachusetts Chapter 188 of the Acts of 2010; 3% of the first \$13,000, increasing to 3% of first \$14,000 as of July 1, 2020 and to 3% of first \$15,000 as of July 1, 2021 at December 31, 2018
Mortality Rates:	
Pre-Retirement:	RP-2014 Blue Collar Employee Mortality Table projected generationally with Scale MP-2017
Healthy Retiree:	RP-2014 Blue Collar Healthy Annuitant Mortality Table projected generationally with Scale MP-2017
Disabled Retiree:	RP-2014 Blue Collar Healthy Annuitant Mortality Table set forward one year projected generationally with Scale MP-2017

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*Rates of return on investments:* 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 real rates of return (expected returns, net of pension 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. Best estimates of arithmetic real rates of return for each major asset class included in the Plan’s target asset allocation are summarized as follows:

<u>Asset Class</u>	<u>Target Allocation (%)</u>	<u>Long-Term Expected Rate of Return (%)</u>	
		<u>December 31, 2019</u>	<u>December 31, 2018</u>
Domestic Equity	24%	6.15	6.16
International Equity	20	6.78 - 8.65	6.69 - 9.47
Real Estate	10	4.33	4.58
Private Equity	10	9.99	10
Hedge Funds	11	3.19	3.68
Fixed Income	<u>25</u>	1.11 - 3.51	1.89 - 4.0
Total	<u><u>100%</u></u>		

**(f) Discount Rate**

The discount rate used to measure the total pension liability was 7.10% and 7.25% for December 31, 2019 and 2018, respectively. The projection of cash flows used to determine the discount rate assumed that Plan member contributions will be made at the current contribution rate and that the Authority contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the 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 pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

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**(g) Changes in the Net Pension Liability**

	Increase (Decrease)		
	Total Pension Liability (a)	Plan Fiduciary Net Position (b)	Net Pension Liability (a) - (b)
<b>Balances at June 30, 2018</b>	\$ 550,843	\$ 529,818	\$ 21,025
Changes for the Year:			
Service Cost	11,762	-	11,762
Interest	41,392	-	41,392
Differences Between Expected and actual experience	3,250	-	3,250
Contributions - employer	-	7,000	(7,000)
Contributions - employee	-	9,484	(9,484)
Net investment income	-	(17,114)	17,114
Benefit payments	(21,428)	(21,428)	-
Administrative expenses	-	(469)	469
Change of benefit terms	5,027	-	5,027
Changes of assumptions	16,401	-	16,401
Net changes	56,404	(22,527)	78,931
<b>Balances at June 30, 2019</b>	607,247	507,291	99,956
Changes for the year:			
Service cost	12,735	-	12,735
Interest	44,062	-	44,062
Differences between expected and actual experience	3,529	-	3,529
Contributions - employer	-	7,315	(7,315)
Contributions - employee	-	9,722	(9,722)
Net investment income	-	79,557	(79,557)
Benefit payments	(24,464)	(24,464)	-
Administrative expenses	-	(464)	464
Changes of assumptions	10,507	-	10,507
Net changes	46,369	71,666	(25,297)
<b>Balances at June 30, 2020</b>	\$ 653,616	\$ 578,957	\$ 74,659

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**(h) Sensitivity of the Net Pension Liability (Asset) to Changes in the Discount Rate**

The following presents the net pension liability (asset), calculated using the discount rate of 7.10% and 7.25%, as well as what the net pension liability (asset) would be if it were calculated using a discount rate that is 1-percentage-point lower (6.10% and 6.25%) or 1-percentage-point higher (8.10% and 8.25%) than the current rate:

	<b>1% Decrease (6.10%)</b>	<b>Current Discount (7.10%)</b>	<b>1% Increase (8.10%)</b>
Net pension liability as of June 30, 2020	<u>\$ 153,966</u>	<u>\$ 74,659</u>	<u>\$ 7,444</u>
	<b>1% Decrease (6.25%)</b>	<b>Current Discount (7.25%)</b>	<b>1% Increase (8.25%)</b>
Net pension liability as of June 30, 2019	<u>\$ 175,471</u>	<u>\$ 99,956</u>	<u>\$ 35,953</u>

**(i) Pension Expense and Deferred Outflows of Resources and Deferred Inflows of Resources Related to Pensions**

For the years ended June 30, 2020 and 2019, the Authority recognized pension expense of \$15,347 and \$30,146, respectively, and reported deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

	<b>June 30, 2020</b>		<b>June 30, 2019</b>	
	<b>Deferred Outflow of Resources</b>	<b>Deferred Inflow of Resources</b>	<b>Deferred Outflow of Resources</b>	<b>Deferred Inflow of Resources</b>
Differences between expected and actual experience	\$ 5,108	\$ 3,121	\$ 2,709	\$ 6,066
Changes of assumptions	28,111	-	26,455	-
Net difference between projected and actual earnings on pension plan investments	-	12,766	34,877	-
Total	<u>\$ 33,219</u>	<u>\$ 15,887</u>	<u>\$ 64,041</u>	<u>\$ 6,066</u>

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in pension expense as follows:

<b>Year Ending June 30:</b>	<b>Amount</b>
2021	\$ 5,192
2022	3,162
2023	9,637
2024	(2,998)
2025	2,339
Total	<u>\$ 17,332</u>



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**(11) Other Postemployment Benefits (OPEB)**

**(a) Plan Description**

In addition to providing the pension benefits described, the Authority provides postemployment health care and life insurance benefits for retired employees through the Group Insurance Commission (GIC). The GIC is a quasi-independent state agency that administers an agent multi-employer defined benefit OPEB plan. The benefits, benefit levels, employee contributions and employer contributions are governed by the Authority and can be amended by the Authority. The plan issues a separate financial report that can be obtained by contacting the Massachusetts Water Resources Authority, Finance Division, 100 First Avenue, Boston, MA 02129.

In April, 2015, the Authority established the MWRA Other Post-Employment Benefits (OPEB) Irrevocable Trust. The Trust was established for the sole purpose of providing for the advance funding of future costs of retired employee health insurance and other benefits provided to retirees. An initial deposit of \$10.8 million was made to the trust upon establishment of the trust. The balance of the trust was \$43.7 million and \$37.1 million at June 30, 2020 and June 30, 2019, respectively.

**(b) Plan Membership**

At June 30, 2020 plan membership consisted of the following:

Inactive plan members or beneficiaries currently receiving benefits	862
Inactive plan members entitled to but not yet receiving benefits	34
Active plan members	<u>939</u>
Total	<u><u>1,835</u></u>

**(c) Benefits Provided**

The Authority provides medical, prescription drug, mental health/substance abuse and life insurance to retirees and their covered dependents. All active employees who retire from the Authority and meet the eligibility criteria will receive these benefits.

**(d) Contributions**

Retirees who retired on or before July 1, 1994 contribute 10% of the cost of the health plans, as determined by the GIC. Those who retired after July 1, 1994 contribute 15% of the cost of the health plan and those who retired after October 1, 2009 contribute 20% of the cost of the health plan, as determined by the GIC. The Authority contributes the remainder of the health plan costs on a pay-as-you-go basis.

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**(e) Investments**

*Investment policy.* The assets are invested by the Trust with the Commonwealth of Massachusetts Pension Reserves Investment Trust (PRIT) fund. The Trust's Board of Trustees may vote to approve a different investment vehicle, at its discretion. The following was the PRIT fund's asset allocation at June 30, 2020 and 2019:

<u>Asset Class</u>	<u>Target Allocation (%)</u>
Domestic Equity	21%
International Equity	18
Fixed Income	23
Private Equity	13
Real Estate	10
Other	<u>15</u>
Total	<u><u>100 %</u></u>

*Concentrations.* No investment in any one organization represented 5% or more of the Trust's investments.

*Rate of return.* For the year ended June 30, 2020 and 2019, the annual money-weighted rate of return on investments, net of investment expense was 1.88% and 5.80%, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for changing amounts actually invested.

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**(f) Changes in the Net OPEB Liability**

	Increase (Decrease)		
	Total OPEB Liability (a)	Plan Fiduciary Net Position (b)	Net OPEB Liability (a) - (b)
<b>Balances at June 30, 2018</b>	\$ 150,978	\$ 29,774	\$ 121,204
Changes for the year:			
Service cost	4,463	-	4,463
Interest	10,705	-	10,705
Contributions - employer	-	10,656	(10,656)
Net investment income	-	1,724	(1,724)
Benefit payments	(5,082)	(5,082)	-
Net changes	10,086	7,298	2,788
<b>Balances at June 30, 2019</b>	161,064	37,072	123,992
Changes for the year:			
Service cost	4,604	-	4,604
Interest	11,424	-	11,424
Differences between expected and actual experience	(5,862)	-	(5,862)
Contributions - employer	-	10,885	(10,885)
Net investment income	-	695	(695)
Benefit payments	(4,923)	(4,923)	-
Changes of assumptions	(33,488)	-	(33,488)
Net changes	(28,245)	6,657	(34,902)
<b>Balances at June 30, 2020</b>	\$ 132,819	\$ 43,729	\$ 89,090

*Actuarial assumptions.* The total OPEB liability was determined by an actuarial valuation as of December 31, 2019 and 2017, and update procedures were used to roll forward the total OPEB liability to June 30, 2020 and 2019 measurement dates, respectively. The following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Inflation	3.0%
Salary increases	5.75%, decreasing over 9 years to an ultimate of 4.0%
Discount rate	7.0%, net of OPEB plan investment expense, including inflation
Healthcare cost trend rates	7.0% for 2019, decreasing 0.5% per year for 3 years to 5.5%, then decreasing by 0.5% each year to an ultimate rate of 4.5% 8.0% for 2018, decreasing 0.5% per year to an ultimate rate of 5.0%

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Mortality rates were based on the RP-2014 Blue Collar Mortality Table for Employees projected using generational mortality and scale MP-2017 for active employees, the RP-2014 Blue Collar Mortality Tables for Healthy Annuitants projected using generational mortality and scale MP-2017 for retirees and the RP-2014 Blue Collar Mortality Tables for Healthy Annuitants projected using generational mortality and scale MP-2017 set forward one year for the disabled.

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 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. Best estimates of arithmetic real rates of return for each major asset class included in the target asset allocation as of June 30, 2020 and 2019 (see discussion of the Trust's investment policy) are summarized in the following table:

<u>Asset Class</u>	<u>Long-Term Expected Rate of Return (%)</u>	
	<u>June 30, 2020</u>	<u>June 30, 2019</u>
Domestic Equity	6.15	6.16
International Equity	6.78 - 8.65	6.69 - 9.47
Fixed Income	1.11 - 3.51	1.89 - 4.00
Private Equity	9.99	10.00
Real Estate	4.33	4.58
Other	3.19 - 4.13	3.68 - 4.77

*Discount rate.* The discount rate used to measure the total OPEB liability was 7.0% for both June 30, 2020 and 2019. The projection of cash flows used to determine the discount rate assumed that Authority contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, 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 investments was applied to all periods of projected benefit payments to determine the total OPEB liability.

*Sensitivity of the net OPEB liability to changes in the discount rate.* The following presents the net OPEB liability of the Authority, as well as what the Authority's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.0%) or 1-percentage-point higher (8.0%) than the current discount rate:

	<u>1% Decrease (6.0%)</u>	<u>Discount Rate (7.0%)</u>	<u>1% Increase (8.0%)</u>
Net OPEB Liability as of June 30, 2020	<u>\$ 106,574</u>	<u>\$ 89,090</u>	<u>\$ 74,561</u>

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	<b>1% Decrease (6.0%)</b>	<b>Discount Rate (7.0%)</b>	<b>1% Increase (8.0%)</b>
Net OPEB Liability as of June 30, 2019	<u>\$ 146,464</u>	<u>\$ 123,992</u>	<u>\$ 105,452</u>

*Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates.* The following presents the net OPEB liability of the Authority, as well as what the Authority's net OPEB liability would be if it were calculated using healthcare cost trend rates that are 1-percentage-point lower (6.0-7.0%) or 1-percentage-point higher (8.0-9.0%) than the current healthcare cost trend rates:

	<b>1% Decrease (6.0% - 3.5%)</b>	<b>Base Rate (7.0% - 4.5%)</b>	<b>1% Increase (8.0% - 5.5%)</b>
Net OPEB Liability as of June 30, 2020	<u>\$ 72,456</u>	<u>\$ 89,090</u>	<u>\$ 109,595</u>

	<b>1% Decrease (7.0% - 4.0%)</b>	<b>Base Rate (8.0% - 5.0%)</b>	<b>1% Increase (9.0% - 6.0%)</b>
Net OPEB Liability as of June 30, 2019	<u>\$ 99,237</u>	<u>\$ 123,992</u>	<u>\$ 152,589</u>

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

For the years ended June 30, 2020 and 2019, the Authority recognized OPEB expense of \$3,873 and \$10,987, respectively, and reported deferred outflows of resources and deferred inflows of resources related to OPEB from the following sources:

	<b>June 30, 2020</b>		<b>June 30, 2019</b>	
	<b>Deferred Outflow of Resources</b>	<b>Deferred Inflow of Resources</b>	<b>Deferred Outflow of Resources</b>	<b>Deferred Inflow of Resources</b>
Differences between expected and actual experience	\$ -	\$ 10,620	\$ -	\$ 7,907
Changes of assumptions	-	26,790	-	-
Net difference between projected and actual earnings on OPEB Trust investments	<u>1,946</u>	<u>-</u>	<u>333</u>	<u>-</u>
Total	<u>\$ 1,946</u>	<u>\$ 37,410</u>	<u>\$ 333</u>	<u>\$ 7,907</u>

Amounts reported as deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized in OPEB expense as follows:

<b>Year Ending June 30:</b>	<b>Amount</b>
2021	\$ (9,351)
2022	(9,351)
2023	(9,314)
2024	<u>(7,448)</u>
Total	<u>\$ (35,464)</u>



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## (12) Commitments and Contingencies

### (a) General

The Authority's capital improvement program continues to proceed. As part of this program, the Authority has entered into a number of contracts for the design and construction of infrastructure and improvements to its facilities. Commitments under these contracts aggregated approximately \$919,878 at June 30, 2020.

The Authority's operating and construction plans are designed to comply with the Federal District Court's schedule of actions. The Authority has incurred capital expenditures of approximately \$8,600,000 from fiscal years 1986 through 2020, including those projects required to comply with the Federal District Court's schedule. The Authority anticipates spending an additional \$1,142,536 on these projects through fiscal year 2023. These capital expenditures have been forecasted based upon certain preliminary assumptions and estimates, which may change significantly as design and construction of the necessary facilities proceed. Funding is expected to come from various federal and state grants, as available and approved, and from the Authority's debt proceeds. To date, federal appropriations for the Boston Harbor Project have aggregated \$810,000.

### (b) Boston Harbor Case

The Authority continues to be a defendant, along with Boston Water and Sewer Commission (BWSC) and the Commonwealth, in the federal Boston Harbor Case. The federal action was originally brought in 1985 by the United States on behalf of the United States Environmental Protection Agency (EPA) and by certain citizens' groups for Clean Water Act violations. As part of the Boston Harbor Case, the Authority was required to undertake certain corrective actions to meet wastewater treatment, discharge and combined sewer overflow (CSO) requirements, including the completion of new and improved primary and secondary treatment facilities at Deer Island. Beyond these major improvements to its wastewater treatment capabilities, the Authority also was required to improve water quality in the Alewife Brook and Charles and Mystic Rivers by its adoption of a Long Term CSO Control Plan which was comprised of 35 projects, the last three of which were completed on time by the close of calendar year 2015. In March 2016 the federal district court formally received the Authority's 2015 annual CSO project report, officially noting completion of all Plan projects.

In March 2006, the Authority reached agreement with the United States and the Massachusetts Department of Environmental Protection (DEP) on the scope and schedule for the remaining CSO projects which was filed with the Court as part of a joint motion to amend the Court Schedule. In April 2006, the Court allowed the joint motion and issued an Order with a schedule. Under the Order, the Authority had a three-year performance assessment period, from 2018 through 2020, to conduct analyses which will compare project benefits of the CSO program against actual performance results and to report those findings to the district court. The Court has further extended the assessment period through 2021.

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As part of the agreement, DEP agreed to reissue and EPA agreed to approve five (5) consecutive variances of no more than three years duration each, through the year 2020, for the Charles River and Alewife Brook/Upper Mystic River that are consistent with and limited to the requirements in the Authority's revised Long Term CSO Control Plan. Variances have most recently been issued by DEP on or about August 2019. The variances will respectively remain in place for the Charles River until August 31, 2024 and for the Alewife/Upper Mystic until August 31, 2024. In addition, the United States and the Authority agreed to withdraw the February 27, 1987 *Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflows* and replace it with a Second Stipulation that requires the Authority to implement the CSO requirements set forth in the Court Schedule and to meet the levels of control described in the Authority's long term CSO Control Plan. Once these performance parameters have been reached, the Second Stipulation makes the Authority responsible for only those CSO outfalls which it owns and operates.

There has been no imposition of penalties by the Court against MWRA on the merits of the claims originally asserted in the Boston Harbor Case to date. The Court always retains the right to order remedial action and to assess penalties.

### (c) *Deer Island Submarine Power Cable*

In 2004, the United States Army Corps of Engineers (Corps) notified Boston Edison Co. (NSTAR), its subsidiary Harbor Energy Electric Company (HEEC), and the Authority of allegations that each, as permittees, were in violation of certain depth requirements contained in a permit (MA BOSS 198900530, dated August 31, 1989) which authorized the installation of a submarine electric power cable running under the channel bed of Boston Harbor extending from South Boston to Deer Island, used to provide electric power for Deer Island operations. The Corps alleges that the power cable, in places, has been installed at depths less than those required by the permit and would eventually interfere with a project of harbor dredging known as the Boston Harbor Deep Draft Navigation Improvement Project (the "Project") which will allow deep-draft cargo vessels to dock in Boston Harbor.

MWRA's position is that it is not the owner of the cable, that it was not involved in the planning, design, location or installation of the cable, that it had no meaningful knowledge, participation in or control over the misplacement of the cable and therefore should have no legal responsibility to move it or relocate it. MWRA has also maintained that its status as a "permittee" in the Corps' permit differs substantially from that of NSTAR and HEEC as the former merely lent its name to an application for the permit solely because it would allow permit review by the Corps to be expedited. The cable is vitally important to MWRA as it provides the primary means by which electricity is delivered to Deer Island to power its wastewater operations.

### Settlement Efforts

Efforts to resolve the dispute concerning compliance with the permit and responsibility for the cable protection costs date back to approximately 2005. Discussions during these prior years among the interested parties over the years produced only a proposed method intended by NSTAR and HEEC for protection of the cable from the Project which would have entailed carefully exposing the cable, placing concrete mats over it followed by backfilling of sediments over both the cable and mats without either moving it or burying the cable deeper in the channel. The Authority has consistently advised NSTAR and HEEC that it has and will accept no financial responsibility whatsoever for the costs of either protecting or relocating the cable.

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### Litigation and Conditional Settlement

United States of America v. NSTAR Electric Company d/b/a Eversource Energy, Harbor Electric Energy Co., and Massachusetts Water Resources Authority, U.S. District Court, District of Massachusetts, C.A. No. 16-11470-RGS As a result of the need to achieve even deeper dredging depths than the Army Corps had initially recommended in 2016 and the likelihood that those depths might not be practicably reachable especially in light of the addition of the proposal to add protective concrete mats, the United States, acting on behalf of the Corps, commenced a lawsuit in July 2016 in the federal district court in Boston against MWRA, NSTAR and HEEC under the Rivers and Harbors Act and under the Clean Water Act asking the federal district court to determine the permittees' non-compliance with the 1990 permit and to assess penalties for the obstruction caused by the mis-located cable in two shipping channels of Boston Harbor. In that lawsuit, the Corps also asked that MWRA, NSTAR and HEEC, each named as permittees under the permit, be enjoined from further maintaining the cable in its present location. MWRA filed its Answer to the Complaint, including cross claims against co-defendants NSTAR and HEEC, in August 2016. Following a failed motion to dismiss both the Complaint and MWRA's cross-claims, NSTAR and HEEC eventually filed their Answer to the Complaint and cross-claimed against MWRA upon a theory of indemnification that MWRA had the primary obligation as the sole customer of the cable to pay any and all expenses necessary to correct the location of the cable improperly installed by HEEC.

Resolution of the federal court litigation was conditionally accomplished over the period of May through July 2017 when it became imperative that the Corps be able to determine whether it would be able to save the federal appropriation dollars for the Project without the aid of or reliance upon the federal court's enforcement powers. The first component of this recent resolution was the negotiation and execution of an agreement among MWRA, NSTAR and HEEC of an agreement whereby HEEC will provide MWRA with a new 115 kV power cable over a different cross-harbor route by December 31, 2019.

In fiscal year 2020 the new cable was installed and energized and the old cable de-energized and decommissioned, meeting the stipulated dates in the Order.

The agreement stipulates that the Authority will pay 50% of the cost of the cable, total estimated at \$114,000 less a credit of \$17,500, at the in-service date of the new cable or earlier if the parties mutually agree to such advance payment. The remainder of the total cost of the cable will be paid by the Authority to HEEC in accordance with the provisions for electric service set forth in the tariff established by the Massachusetts Department of Public Utilities. The credit of \$17,500 will be provided by HEEC to the Authority if the cable is placed in service by December 31, 2019. The credit will be applied at a rate of \$2,500 over a period of seven years, commencing in 2020. In fiscal years 2020 and 2019 the Authority, upon agreement by HEEC, prepaid \$45,000 of its estimated share of the cost of the cable.

The agreement is for a term of thirty years, at least the useful life of the cable. Annual tariff cost of the cable is estimated between \$4,500 and \$7,300 in the next ten years. In addition to the tariff cost, operating and maintenance costs will also be charged.

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The second component of the conditional resolution of the federal court lawsuit involves the entry of a Stipulation and Order in the federal lawsuit by the parties and the Court in July 2017 which, inter alia, compels NSTAR and HEEC, but not MWRA, to be responsible for all costs and efforts toward the design and installation, by the end of calendar year 2019 inclusive of all permitting, of the new 115 kV power cable along a new route to serve MWRA's power distribution needs at its Deer Island facility. NSTAR and HEEC, but not MWRA, further agreed to de-energize and decommission the existing non-compliant power cable by February 2020 and remove from the harbor channels portions of the old cable by May 2020. As noted above, the old cable was de-energized and decommissioned in fiscal year 2020 meeting the stipulated dates in the Order. The Order includes the potential assessment of stipulated penalties and/or actual delay damages against NSTAR and HEEC, but not MWRA, for failure without good cause to meet those milestones, the completion of which are necessary to allow the harbor and shipping channel-deepening Project to move forward. MWRA will not be a permittee with respect to the new Corps permit and satisfaction of HEEC and NSTAR's obligations regarding the installation of the new cable will preclude the Corps from any further enforcement of its 1990 permit against MWRA. All claims of all parties to the federal court lawsuit have been stayed pending satisfaction of the obligations of HEEC and NSTAR under the Stipulation and Order. Completion of all obligations under the Stipulation and Order will result in the eventual dismissal with prejudice of all such claims. Outstanding permit issues are all that remain for the Corps to sign off on dismissal of this action.

### *(d) Miscellaneous*

The Authority is also a defendant in several legal actions and administrative proceedings arising out of its operation, maintenance, and improvement of the water and sewer systems under its care. It is the opinion of management that any judgments or settlements that may result from these actions will not have a materially adverse effect upon the Authority.

## **(13) Risk Management**

The Authority is exposed to various risks of loss. The risk management program involves insurance and self insurance related to property, general liability (including automobile, marine and employers' liability), excess liability, public officials' liability, workers' compensation, unemployment liability, and employee health care and life insurance.

Buildings, plants, and equipment are fully insured on an all risk replacement basis to the extent that losses exceed \$2,500 per occurrence, up to a limit of \$300,000. The Authority maintains insurance coverage for general liability, automobile liability, marine liability, and employers' liability to the extent that losses exceed \$2,500 per occurrence, up to a limit of \$25,000. In addition to the primary liability insurance, the Authority maintains excess liability policies with additional limits of \$75,000. The Authority also maintains public officials' liability insurance with a limit of \$5,000 per occurrence with a \$1,000 deductible. All insurance policies are renewed on an annual basis. The amount of claim settlements has not exceeded insurance coverage in any of the previous three fiscal years.

## **(14) Subsequent Events**

On August 20, 2020 the Authority issued General Revenue Bonds 2020 Series B for \$160,000. The proceeds from these bonds will be used to finance new construction projects. The interest rate on these bonds is 5%.

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Schedules of Employer Contributions – Last Ten Years

Required Supplementary Information – GASB No. 68

(Unaudited)

(Dollars in Thousands)

	Fiscal year ended June 30									
	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Actuarially Determined Contribution	\$ 7,315	\$ 7,000	\$ 3,277	\$ 3,133	\$ 8,159	\$ 7,808	\$ 5,919	\$ 5,766	\$ 5,512	\$ 5,343
Contributions in Relation to the Actuarially Determined Contribution	7,315	7,000	3,277	4,633	8,159	12,630	12,447	10,490	7,363	5,343
Contribution Deficiency (Excess)	\$ -	\$ -	\$ -	\$ (1,500)	\$ -	\$ (4,822)	\$ (6,528)	\$ (4,724)	\$ (1,851)	\$ -
Covered Payroll	\$ 97,814	\$ 95,819	\$ 92,975	\$ 89,755	\$ 89,169	\$ 88,646	\$ 84,829	\$ 84,829	\$ 82,870	\$ 82,870
Contributions as a Percentage of Covered Payroll	7.48%	7.31%	3.52%	5.16%	9.15%	14.25%	14.67%	12.37%	8.89%	6.45%

**Notes to Required Supplementary Information**

Valuation Date: Actuarial determined contributions for fiscal 2019 are determined with the January 1, 2018 actuarial valuation.

Actuarial Cost Method: Entry age normal

Amortization Method: Payments increase at 4.5% per year

Remaining Amortization Period: 8 years from July 1, 2018

Asset Valuation Method: Market value of assets as reported in the Plan's annual statement less unrecognized return in each of the last five years.

Unrecognized return is equal to the difference between the actual market value return and the expected market value return and is recognized over a five-year period, further adjusted, if necessary, to be within 10% of the market value.

**Actuarial Assumptions:**

Investment Rate of Return: 7.50%

Discount Rate: 7.50%

Inflation Rate: 3.00%

Projected Salary Increases: Based on years of service, ranging from 5.75% at 0 years of service decreasing to 4.00% after 9 years of service.

Cost of Living Adjustments: 3% on first \$13,000

**Plan Membership:**

Retired Participants and Beneficiaries

Receiving Benefits: 582

Inactive Participants Entitled to a Return

of their Employee Contributions: 64

Inactive Participants with a Vested Right

to a Deferred or Immediate Benefit: 42

Active Participants: 1,100

Total: 1,788

See accompanying independent auditors' report



**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Schedules of Changes in the Employer's Net Pension Liability and Related Ratios – Last Ten Years

Required Supplementary Information – GASB No. 68

(Unaudited)

(Dollars in Thousands)

	Measurement Date					
	December 31,					
	2019	2018	2017	2016	2015	2014
<b>Total Pension Liability:</b>						
Service cost	\$ 12,735	\$ 11,762	\$ 11,308	\$ 11,080	\$ 10,638	\$ 10,529
Interest	44,062	41,392	38,520	36,917	34,598	33,587
Differences between expected and actual experience	3,529	3,250	(146)	(9,143)	-	(8,380)
Changes of assumptions	10,507	16,401	7,977	13,298	-	4,921
Changes of benefit terms	-	5,027	-	2,050	-	-
Benefit payments, including refunds of employee contributions	(24,464)	(21,428)	(18,222)	(16,129)	(15,390)	(12,963)
Net change in total pension liability	46,369	56,404	39,437	38,073	29,846	27,694
Total pension liability - beginning	607,247	550,843	511,406	473,333	443,487	415,793
Total pension liability - ending	<u>\$ 653,616</u>	<u>\$ 607,247</u>	<u>\$550,843</u>	<u>\$511,406</u>	<u>\$473,333</u>	<u>\$443,487</u>
<b>Plan Fiduciary Net Position:</b>						
Contributions - employer	\$ 7,315	\$ 7,000	\$ 3,277	\$ 4,633	\$ 8,159	\$ 12,630
Contributions - employee	9,722	9,484	9,091	8,757	8,402	8,245
Net investment income	79,557	(17,114)	70,517	24,183	(530)	20,484
Benefit payments, including refunds of employee contributions	(24,464)	(21,428)	(18,222)	(16,129)	(15,390)	(12,963)
Administrative expenses	(464)	(469)	(447)	(426)	(412)	(408)
Other - military service fund contribution	-	-	-	-	-	16
Net change in fiduciary net position	71,666	(22,527)	64,216	21,018	229	28,004
Plan fiduciary net position - beginning	507,291	529,818	465,602	444,584	444,355	416,351
Plan fiduciary net position - ending	<u>\$ 578,957</u>	<u>\$ 507,291</u>	<u>\$529,818</u>	<u>\$465,602</u>	<u>\$444,584</u>	<u>\$444,355</u>
Net Pension Liability (Asset) - Ending	\$ 74,659	\$ 99,956	\$ 21,025	\$ 45,804	\$ 28,749	\$ (868)
Plan's Fiduciary Net Position as a Percentage of the Total Pension Liability	88.58%	83.54%	96.18%	91.04%	93.93%	100.20%
Covered Payroll	\$ 98,145	\$ 95,819	\$ 92,975	\$ 89,755	\$ 89,169	\$ 88,646
Net Pension Liability (Asset) as a Percentage of Covered Payroll	76.07%	104.32%	22.61%	51.03%	32.24%	(0.98%)

This schedule is intended to present 10 years of data. Additional years will be presented when available.

See accompanying independent auditors' report

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Schedules of Changes in the Employer's Net OPEB Liability and Related Ratios – Last Ten Years

Required Supplementary Information – GASB No. 75

(Unaudited)

(Dollars in Thousands)

	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>
<b>Total OPEB Liability</b>				
Total OPEB Liability - Beginning	\$ 161,064	\$ 150,978	\$ 154,254	\$ 146,143
Service Cost	4,604	4,463	2,820	2,705
Interest	11,424	10,705	10,821	10,253
Differences between expected and actual experience	(5,862)	-	(11,860)	-
Change of assumptions	(33,488)	-	-	-
Benefit Payments	<u>(4,923)</u>	<u>(5,082)</u>	<u>(5,057)</u>	<u>(4,847)</u>
Net Change in total OPEB liability	<u>(28,245)</u>	<u>10,086</u>	<u>(3,276)</u>	<u>8,111</u>
Total OPEB Liability - Ending	<u>132,819</u>	<u>161,064</u>	<u>150,978</u>	<u>154,254</u>
<b>Plan Fiduciary Net Position</b>				
Plan fiduciary net position - beginning	<u>37,072</u>	<u>29,774</u>	<u>22,782</u>	<u>16,123</u>
Contributions - employer (claims + additional funding)	10,885	10,656	10,093	9,723
Net Investment Income	695	1,724	1,956	1,783
Benefit Payments	<u>(4,923)</u>	<u>(5,082)</u>	<u>(5,057)</u>	<u>(4,847)</u>
Net Change in plan fiduciary net position	<u>6,657</u>	<u>7,298</u>	<u>6,992</u>	<u>6,659</u>
Plan fiduciary net position - ending	<u>43,729</u>	<u>37,072</u>	<u>29,774</u>	<u>22,782</u>
Net OPEB Liability	<u>\$ 89,090</u>	<u>\$ 123,992</u>	<u>\$ 121,204</u>	<u>\$ 131,472</u>
Plan fiduciary net position as a percentage of the total OPEB liability	32.9%	23.0%	19.7%	14.8%
Covered-employee payroll	\$ 103,778	\$ 98,238	\$ 94,816	\$ 86,475
MWRA's net OPEB liability as a percentage of covered-employee payroll	85.8%	126.2%	127.8%	152.0%

**Notes to Schedule**

*Changes in Assumptions* - December 31, 2019 Valuation: the per capital health care costs were updated to reflect recent experience (reduced to 7% starting from 8%), trend assumptions were revised to better reflect future expectations, the excise tax on high cost health plans beginning in 2022 was repealed effective December 20, 2019 and removed from the valuation, spouse election percentage assumptions was lowered from 75% to 65% after analysis of past experience

Data is being accumulated annually to present 10 years of the reported information.

See accompanying independent auditors' report

**MASSACHUSETTS WATER RESOURCE AUTHORITY**  
Schedules of Employer Contributions - Last Ten Years  
Required Supplementary Information – GASB No. 75

(Unaudited)

(Dollars in Thousands)

	Fiscal year ended June 30,									
	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011
Actuarially determined contribution	\$ 8,997	\$ 11,812	\$ 11,400	\$ 10,948	\$ 14,996	\$ 14,564	\$ 15,621	\$ 14,482	\$ 19,151	\$ 17,433
Contributions in relation to the actuarially determined contribution	10,885	10,656	10,093	9,723	9,804	14,852	3,493	2,813	3,986	3,293
Contribution deficiency (excess)	<u>\$ (1,888)</u>	<u>\$ 1,156</u>	<u>\$ 1,307</u>	<u>\$ 1,225</u>	<u>\$ 5,192</u>	<u>\$ (288)</u>	<u>\$ 12,128</u>	<u>\$ 11,669</u>	<u>\$ 15,165</u>	<u>\$ 14,140</u>
Covered-employee Payroll	\$ 103,788	\$ 98,238	\$ 94,816	\$ 86,475						
Contributions as a Percentage of Covered-employee Payroll	10.5%	10.8%	10.6%	11.2%						

**Notes to Schedule**

Methods and assumptions used to determine contributions rates:

- Actuarial cost method Entry Age Normal
- Amortization method 30 years (closed)
- Asset valuation method Market value of assets
- Inflation 3%
- Healthcare cost trend rates 7% for 2019, decreasing 0.5% per year for 6 years to an ultimate rate of 4.5%
- Discount rate 7%
- Mortality *Actives:* RP-2014 Blue Collar mortality table for employees projected using generational mortality and scale MP-2017  
*Retirees:* RP-2014 Blue Collar mortality tables for healthy annuitants projected using generational mortality and scale MP-2017  
*Disabled:* RP-2014 Blue Collar mortality tables for healthy annuitants projected using generational mortality and scale MP-2017. Set forward one year.

See accompanying independent auditors' report

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Accounts Established by the General Revenue Bond Resolution

June 30, 2020

(comparative totals for June 30, 2019)

(Dollars in thousands)

	<u>Construction</u>	<u>Debt Service</u>	<u>Operating</u>	<u>Rate Stabilization</u>	<u>Revenue</u>	<u>Combined Reserves</u>	<u>Total</u>
Balance – June 30, 2019	\$ 189,293	\$ 501,366	\$ 41,952	\$ 43,044	\$ 30,126	\$ 23,158	\$ 828,939
Proceeds from:							
Revenue Bonds and Loans	89,665	-	-	-	-	-	89,665
Cash Received from Customers	-	-	-	-	778,015	-	778,015
Interest Income	2,632	9,327	-	-	3,410	1,527	16,896
Debt Service Grant	-	892	-	-	-	-	892
Grant Receipts	-	4,354	-	-	-	-	4,354
Construction Payments	(152,808)	-	-	-	-	-	(152,808)
Capital Lease Payments	(1,226)	(1,991)	-	-	-	-	(3,217)
Debt Service Payment	(991)	(442,643)	-	-	(40,792)	-	(484,426)
Other Commonwealth Payments	-	-	-	-	(23,423)	-	(23,423)
Interfund Transfers	13,804	432,117	2,094	-	(447,812)	(203)	-
Transfers from (to) Operating Account	1,152	2,083	-	-	(259,759)	-	(256,524)
Balance – June 30, 2020	<u>\$ 141,521</u>	<u>\$ 505,505</u>	<u>\$ 44,046</u>	<u>\$ 43,044</u>	<u>\$ 39,765</u>	<u>\$ 24,482</u>	<u>\$ 798,363</u>

	<u>Sewer</u>	<u>Water</u>	<u>Total</u>	
			<u>2020</u>	<u>2019</u>
Restricted Investments:				
Construction	\$ 85,420	\$ 56,101	\$ 141,521	\$ 189,293
Debt Service - Debt Service Reserves	96,804	62,699	159,503	156,687
Debt Service - Debt Service P & I	228,471	91,169	319,640	318,545
Debt Service - Revenue Redemption	5,817	20,545	26,362	26,134
Operating Reserve	29,407	14,639	44,046	41,952
Rate Stabilization Reserve	25,547	17,497	43,044	43,044
Revenue	23,990	15,775	39,765	30,126
Combined - Renewal and Replacement Reserve	7,700	2,782	10,482	9,158
Combined - Insurance Reserve	7,000	7,000	14,000	14,000
Total Restricted Investments	<u>\$ 510,156</u>	<u>\$ 288,207</u>	<u>\$ 798,363</u>	<u>\$ 828,939</u>

See accompanying independent auditors' report.

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Combining Statement of Net Position

June 30, 2020

(Dollars in thousands)

<b>Assets</b>	<b>Sewer</b>	<b>Water</b>	<b>Combined Total</b>
Unrestricted current assets:			
Cash and cash equivalents	\$ 46,351	\$ 24,507	\$ 70,858
Intergovernmental loans	6,144	25,108	31,252
Accounts receivable	430	1,015	1,445
Total unrestricted current assets	<u>52,925</u>	<u>50,630</u>	<u>103,555</u>
Restricted assets:			
Investments	512,938	292,966	805,904
Interest receivable	632	227	859
Total restricted assets	<u>513,570</u>	<u>293,193</u>	<u>806,763</u>
Capital assets:			
Capital assets – not being depreciated	146,663	97,375	244,038
Capital assets – being depreciated – net	<u>3,236,084</u>	<u>2,275,255</u>	<u>5,511,339</u>
Total capital assets	<u>3,382,747</u>	<u>2,372,630</u>	<u>5,755,377</u>
Regulatory assets	234,086	(20,584)	213,502
Other assets, net	<u>141,780</u>	<u>170,732</u>	<u>312,512</u>
Total assets	<u>4,325,108</u>	<u>2,866,601</u>	<u>7,191,709</u>
<b>Deferred Outflows of Resources</b>			
Deferred outflows from pension	21,987	11,232	33,219
Deferred outflows from OPEB	1,257	689	1,946
Deferred outflows from derivative instruments	38,417	4,126	42,543
Deferred outflows from refunding debt	6,455	3,009	9,464
<b>Liabilities</b>			
Current liabilities:			
Accounts payable and accrued expenses	51,673	1,246	52,919
Commercial paper notes	21,000	54,000	75,000
Current portion of long-term debt	<u>180,468</u>	<u>65,371</u>	<u>245,839</u>
Total current liabilities	<u>253,141</u>	<u>120,617</u>	<u>373,758</u>
Payable from restricted assets:			
Accounts payable for construction	19,616	2,916	22,532
Accrued interest on bonds payable	51,537	26,026	77,563
Reserves	<u>38,399</u>	<u>23,651</u>	<u>62,050</u>
Total payable from restricted assets	<u>109,552</u>	<u>52,593</u>	<u>162,145</u>
Retainage on construction in progress	6,384	2,670	9,054
Long-term debt – less current portion	3,026,024	1,863,596	4,889,620
Long-term capital lease	17,559	7,317	24,876
Net pension liability	47,958	26,701	74,659
Other postemployment benefits	57,324	31,766	89,090
Liability for derivative instruments	<u>38,417</u>	<u>4,126</u>	<u>42,543</u>
Total liabilities	<u>3,556,359</u>	<u>2,109,386</u>	<u>5,665,745</u>
<b>Deferred Inflows of Resources</b>			
Deferred inflows from pension	10,251	5,636	15,887
Deferred inflows from OPEB	24,141	13,269	37,410
Deferred inflows from regulated activities	13,410	20,450	33,860
<b>Net Position</b>			
Net investment in capital assets	385,842	508,595	894,437
Restricted			
Construction	85,420	56,101	141,521
Debt Service	146,032	40,245	186,277
Operating	32,820	19,626	52,446
Revenue	23,990	15,775	39,765
Unrestricted	<u>114,959</u>	<u>96,574</u>	<u>211,533</u>
Total net position	<u>\$ 789,063</u>	<u>\$ 736,916</u>	<u>\$ 1,525,979</u>
Commitments and contingencies			
See accompanying independent auditors' report			

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Combining Statement of Net Position

June 30, 2019

(Dollars in thousands)

	<b>Assets</b>	<b>Sewer</b>	<b>Water</b>	<b>Combined Total</b>
Unrestricted current assets:				
Cash and cash equivalents		\$ 38,806	\$ 16,004	\$ 54,810
Investments		1,747	9,914	11,661
Intergovernmental loans		6,591	26,141	32,732
Accounts receivable		333	735	1,068
Total unrestricted current assets		<u>47,477</u>	<u>52,794</u>	<u>100,271</u>
Restricted assets:				
Investments		533,346	303,002	836,348
Interest receivable		1,319	183	1,502
Total restricted assets		<u>534,665</u>	<u>303,185</u>	<u>837,850</u>
Capital assets:				
Capital assets – not being depreciated		86,432	93,247	179,679
Capital assets – being depreciated – net		3,367,256	2,293,481	5,660,737
Total capital assets		<u>3,453,688</u>	<u>2,386,728</u>	<u>5,840,416</u>
Regulatory assets		337,404	32,626	370,030
Other assets, net		112,477	169,262	281,739
Total assets		<u>4,485,711</u>	<u>2,944,595</u>	<u>7,430,306</u>
	<b>Deferred Outflows of Resources</b>			
Deferred outflows from pension		41,775	22,266	64,041
Deferred outflows from OPEB		215	118	333
Deferred outflows from derivative instruments		28,590	3,050	31,640
Deferred outflows from refunding debt		15,716	13,126	28,842
	<b>Liabilities</b>			
Current liabilities:				
Accounts payable and accrued expenses		47,852	2,179	50,031
Commercial paper notes		21,000	54,000	75,000
Current portion of long-term debt		171,822	66,096	237,918
Total current liabilities		<u>240,674</u>	<u>122,275</u>	<u>362,949</u>
Payable from restricted assets:				
Accounts payable for construction		9,626	5,962	15,588
Accrued interest on bonds payable		51,757	28,747	80,504
Reserves		36,870	23,086	59,956
Total payable from restricted assets		<u>98,253</u>	<u>57,795</u>	<u>156,048</u>
Retainage on construction in progress		4,804	3,114	7,918
Long-term debt – less current portion		3,207,325	1,932,491	5,139,816
Long-term capital lease		18,289	7,804	26,093
Net pension liability		64,200	35,756	99,956
Other postemployment benefits		79,862	44,130	123,992
Liability for derivative instruments		28,590	3,050	31,640
Total liabilities		<u>3,741,997</u>	<u>2,206,415</u>	<u>5,948,412</u>
	<b>Deferred Inflows of Resources</b>			
Deferred inflows from pension		3,945	2,121	6,066
Deferred inflows from OPEB		5,089	2,818	7,907
Deferred inflows from regulated activities		9,276	17,414	26,690
	<b>Net Position</b>			
Net investment in capital assets		348,359	478,691	827,050
Restricted				
Construction		119,196	70,097	189,293
Debt Service		71,572	26,679	98,251
Operating		34,538	16,324	50,862
Revenue		18,171	11,955	30,126
Unrestricted		219,864	150,641	370,505
Total net position		<u>\$ 811,700</u>	<u>\$ 754,387</u>	<u>\$ 1,566,087</u>
Commitments and contingencies				
See accompanying independent auditors' report				



**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Combining Statement of Revenues, Expenses, and Changes in Net Position

Year Ended June 30, 2020

(Dollars in thousands)

	<u>Sewer</u>	<u>Water</u>	<u>Combined Total</u>
Operating revenues:			
Customer services	\$ 504,993	\$ 268,249	\$ 773,242
Other	3,118	1,966	5,084
Total operating revenues	<u>508,111</u>	<u>270,215</u>	<u>778,326</u>
Operating Expenses:			
Operations	67,757	45,527	113,284
Maintenance	19,207	10,530	29,737
Payments in lieu of taxes	-	8,330	8,330
Engineering, general, and administrative	88,797	53,479	142,276
Total operating expenses	<u>175,761</u>	<u>117,866</u>	<u>293,627</u>
Income from operating before depreciation	332,350	152,349	484,699
Depreciation and amortization	<u>149,712</u>	<u>61,502</u>	<u>211,214</u>
Operating Income	<u>182,638</u>	<u>90,847</u>	<u>273,485</u>
Regulatory accounting provisions:			
Change in reserves	(1,529)	(565)	(2,094)
Change in regulatory provisions, net	<u>(107,452)</u>	<u>(56,246)</u>	<u>(163,698)</u>
Total regulatory accounting provisions	<u>(108,981)</u>	<u>(56,811)</u>	<u>(165,792)</u>
Nonoperating revenues (expenses):			
Debt service grant	820	72	892
Investment income	10,604	7,041	17,645
Interest expense	(112,686)	(60,946)	(173,632)
Changes in derivative related accounts	2,528	412	2,940
Total nonoperating expenses	<u>(98,734)</u>	<u>(53,421)</u>	<u>(152,155)</u>
Net loss before capital grants and contributions	(25,077)	(19,385)	(44,462)
Capital grants and contributions	<u>2,440</u>	<u>1,914</u>	<u>4,354</u>
Decrease in net position	(22,637)	(17,471)	(40,108)
Total net position - beginning of year	<u>811,700</u>	<u>754,387</u>	<u>1,566,087</u>
Total net position - end of year	<u>\$ 789,063</u>	<u>\$ 736,916</u>	<u>\$ 1,525,979</u>

See accompanying independent auditors' report

**MASSACHUSETTS WATER RESOURCES AUTHORITY**

Combining Statement of Revenues, Expenses, and Changes in Net Position

Year Ended June 30, 2019

(Dollars in thousands)

	<u>Sewer</u>	<u>Water</u>	<u>Combined Total</u>
Operating revenues:			
Customer services	\$ 491,785	\$ 258,957	\$ 750,742
Other	3,087	1,507	4,594
Total operating revenues	<u>494,872</u>	<u>260,464</u>	<u>755,336</u>
Operating Expenses:			
Operations	66,731	47,147	113,878
Maintenance	21,344	9,307	30,651
Payments in lieu of taxes	-	8,230	8,230
Engineering, general, and administrative	94,703	57,648	152,351
Total operating expenses	<u>182,778</u>	<u>122,332</u>	<u>305,110</u>
Income from operating before depreciation	312,094	138,132	450,226
Depreciation and amortization	<u>147,206</u>	<u>59,921</u>	<u>207,127</u>
Operating Income	<u>164,888</u>	<u>78,211</u>	<u>243,099</u>
Regulatory accounting provisions:			
Change in reserves	(1,148)	(734)	(1,882)
Change in regulatory provisions, net	<u>(84,207)</u>	<u>(35,650)</u>	<u>(119,857)</u>
Total regulatory accounting provisions	<u>(85,355)</u>	<u>(36,384)</u>	<u>(121,739)</u>
Nonoperating revenues (expenses):			
Debt service grant	793	97	890
Investment income	16,457	10,753	27,210
Interest expense	(126,142)	(70,819)	(196,961)
Changes in derivative related accounts	2,528	412	2,940
Total nonoperating expenses	<u>(106,364)</u>	<u>(59,557)</u>	<u>(165,921)</u>
Net loss before capital grants and contributions	(26,831)	(17,730)	(44,561)
Capital grants and contributions	<u>3,196</u>	<u>2,053</u>	<u>5,249</u>
Decrease in net position	(23,635)	(15,677)	(39,312)
Total net position - beginning of year	<u>835,335</u>	<u>770,064</u>	<u>1,605,399</u>
Total net position - end of year	<u>\$ 811,700</u>	<u>\$ 754,387</u>	<u>\$ 1,566,087</u>
See accompanying independent auditors' report			



Temperature reading at Park Circle tank in Arlington



Working through the COVID-19 pandemic

This part of the Massachusetts Water Resources Authority's Fiscal Year 2020 Comprehensive Annual Financial Report presents detailed information to provide context to the information in the financial statements, note disclosures, required supplementary information and supplemental schedules.

### CONTENTS

#### Financial Trends (76–79)

These schedules contain trend information to help the reader understand how MWRA's financial performance and well-being have changed over time.

#### Revenue Capacity (80–83)

These schedules contain information to help the reader assess MWRA's primary revenue source and community assessments.

#### Debt Capacity (84–87)

These schedules present information to help the reader assess the affordability of the MWRA's current level of outstanding debt and MWRA's ability to issue additional debt in the future.

#### Demographic and Economic Information (88–93)

These schedules offer demographic and economic indicators to help the reader understand the environment within which MWRA's financial activities take place.

#### Operating Information (94–96)

These schedules contain service and infrastructure data to help the reader understand how the information in MWRA's financial report relates to the services the MWRA provides and the activities it performs.

MASSACHUSETTS WATER RESOURCES AUTHORITY  
**Components of Net Position**  
**Last Ten Fiscal Years**  
(Dollars in thousands)

	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net investment in capital assets	\$ 894,437	\$ 827,050	\$ 759,757	\$ 729,903
Restricted				
Construction	141,521	189,293	105,802	117,813
Debt Service	186,277	98,251	173,098	140,344
Operating	52,446	50,862	48,915	47,544
Revenue	39,765	30,126	29,952	33,372
Unrestricted	211,533	370,505	487,875	597,321
<b>Total net position</b>	<b>\$ 1,525,979</b>	<b>\$ 1,566,087</b>	<b>\$ 1,605,399</b>	<b>\$ 1,666,297</b>

Source: FY2011–2020 financial statements, FY2011–2018 reclassified to conform to 2019 and 2020 presentation



<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
\$ 679,739	\$ 632,029	\$ 608,232	\$ 588,872	\$ 705,721	\$ 835,638
119,743	72,375	80,109	129,783	240,904	164,456
161,723	171,305	145,160	135,678	11,217	24,555
47,167	48,029	47,508	48,366	46,456	47,369
17,733	38,105	37,616	32,181	32,198	28,237
678,004	749,750	837,790	860,287	796,751	774,678
<u>\$ 1,704,109</u>	<u>\$ 1,711,593</u>	<u>\$ 1,756,415</u>	<u>\$ 1,795,167</u>	<u>\$ 1,833,247</u>	<u>\$ 1,874,933</u>



MASSACHUSETTS WATER RESOURCES AUTHORITY  
**Changes in Net Position**  
**Last Ten Fiscal Years**  
(Dollars in thousands)

	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
<b>Operating revenues:</b>				
Customer services	\$ 773,242	\$ 750,742	\$ 728,281	\$ 705,933
Other	5,084	4,594	10,023	10,843
Total operating revenues	<u>778,326</u>	<u>755,336</u>	<u>738,304</u>	<u>716,776</u>
<b>Operating expenses:</b>				
Operations	113,284	113,878	106,943	106,844
Maintenance	29,737	30,651	29,067	30,799
Payments in lieu of taxes	8,330	8,230	8,220	8,191
Engineering, general, and administrative	142,276	152,351	133,627	140,435
Total operating expenses	<u>293,627</u>	<u>305,110</u>	<u>277,857</u>	<u>286,269</u>
Depreciation and amortization	211,214	207,127	202,799	201,481
Operating income	<u>273,485</u>	<u>243,099</u>	<u>257,648</u>	<u>229,026</u>
<b>Nonoperating items:</b>				
Regulatory accounting provisions	(165,792)	(121,739)	(106,777)	(62,714)
Net nonoperating expenses	(155,095)	(168,861)	(198,327)	(214,288)
Changes in derivative related accounts	2,940	2,940	2,940	2,940
Total nonoperating items	<u>(317,947)</u>	<u>(287,660)</u>	<u>(302,164)</u>	<u>(274,062)</u>
Capital grants and contributions	4,354	5,249	4,715	7,224
Decrease in net position	(40,108)	(39,312)	(39,801)	(37,812)
Total net position – beginning of year	1,566,087	1,605,399	1,666,297	1,704,109
Restatement to comply with GASB*	-	-	(21,097)	-
<b>Total net position – end of year</b>	<u>\$ 1,525,979</u>	<u>\$ 1,566,087</u>	<u>\$ 1,605,399</u>	<u>\$ 1,666,297</u>

\*2018 - GASB 75

\*2015 - GASB 68

<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
\$ 683,501	\$ 661,305	\$ 639,691	\$ 617,415	\$ 599,372	\$ 579,240
13,472	7,299	8,326	5,978	3,248	5,114
<u>696,973</u>	<u>668,604</u>	<u>648,017</u>	<u>623,393</u>	<u>602,620</u>	<u>584,354</u>
98,972	102,322	100,778	101,425	99,802	93,756
30,978	28,323	29,453	26,956	26,776	27,964
8,129	7,966	7,872	7,640	7,311	7,000
133,959	124,792	135,401	131,329	127,621	126,127
<u>272,038</u>	<u>263,403</u>	<u>273,504</u>	<u>267,350</u>	<u>261,510</u>	<u>254,847</u>
197,128	194,000	193,062	190,852	191,124	180,734
<u>227,807</u>	<u>211,201</u>	<u>181,451</u>	<u>165,191</u>	<u>149,986</u>	<u>148,773</u>
(72,162)	(41,634)	(3,808)	23,917	57,229	74,139
(204,259)	(217,218)	(225,293)	(239,616)	(259,537)	(263,761)
2,940	2,940	2,940	5,798	2,940	(8,728)
<u>(273,481)</u>	<u>(255,912)</u>	<u>(226,161)</u>	<u>(209,901)</u>	<u>(199,368)</u>	<u>(198,350)</u>
38,190	6,429	5,958	6,630	7,696	7,036
(7,484)	(38,282)	(38,752)	(38,080)	(41,686)	(42,541)
1,711,593	1,756,415	1,795,167	1,833,247	1,874,933	1,917,474
-	(6,540)	-	-	-	-
<u>\$ 1,704,109</u>	<u>\$ 1,711,593</u>	<u>\$ 1,756,415</u>	<u>\$ 1,795,167</u>	<u>\$ 1,833,247</u>	<u>\$ 1,874,933</u>

**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Historical Rate Revenue and Percentage Increases**  
**Last Ten Fiscal Years**  
(Dollars in millions)

	Water		Sewer		Combined	
	Amount	Increase	Amount	Increase	Amount	Increase
2020	\$ 258.7	3.6%	\$ 502.2	2.7%	\$ 760.9	3.0%
2019	249.8	3.1	489.2	3.1	739.0	3.1
2018	242.4	3.5	474.6	3.0	717.0	3.2
2017	234.3	3.5	460.6	3.3	694.9	3.3
2016	226.4	7.7	446.1	1.4	672.4	3.4
2015	210.2	3.5	440.1	3.4	650.3	3.4
2014	203.2	3.7	425.5	3.4	628.7	3.5
2013	196.0	6.6	411.5	1.4	607.5	3.5
2012	183.9	2.0	405.8	4.2	589.7	3.5
2011	180.2	0.6	389.6	1.9	659.8	1.5

Note: Rate revenue is derived exclusively from member community assessments and does not include other charges and fees.

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**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Historical Revenues, Expenses and Fund Deposits**  
**Last Ten Fiscal Years**  
(Dollars in thousands)

	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
<b>Revenues:</b>				
Rates and Charges	\$ 770,817	\$ 748,389	\$ 726,073	\$ 703,688
Investment Income	12,986	16,985	12,755	9,758
Transfer from Rate Stabilization Fund	-	-	-	-
Other Income	8,400	6,947	12,231	13,088
<b>Total Revenues</b>	<b>792,203</b>	<b>772,321</b>	<b>751,059</b>	<b>726,534</b>
Operating Expenses	281,880	277,104	263,226	258,046
Capital Lease	3,217	3,217	3,217	3,217
<b>Net Operating Revenues</b>	<b>507,106</b>	<b>492,000</b>	<b>484,616</b>	<b>465,271</b>
Debt Service on Bonds	\$ 241,330	\$ 285,663	\$ 279,790	\$ 286,666
Other Debt Service	225,558	169,017	158,485	139,430
Debt Prepayment	5,000	7,100	10,900	10,995
Amount Available After Operations and Debt Service	\$ 35,218	\$ 30,220	\$ 35,441	\$ 28,180
<b>Fund Deposits:</b>				
Reserve Funds	\$ 2,094	\$ 1,882	\$ 821	\$ (168)
Construction Fund	\$ 17,317	\$ 16,740	\$ 14,683	\$ 13,059
Core Fund	\$ -	\$ -	\$ -	\$ -
Rate Stabilization	\$ -	\$ -	\$ 6,532	\$ -

Note: Schedule prepared in accordance with MWRA General Bond Resolution.

<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
\$ 681,223	\$ 650,316	\$ 628,721	\$ 607,512	\$ 589,700	\$ 569,800
10,303	9,689	12,130	13,590	16,268	15,193
-	-	3,500	-	1,092	5,030
15,750	18,289	19,296	15,881	12,920	14,554
707,276	678,294	663,647	636,983	619,980	604,577
293,682	258,534	257,724	252,333	245,210	240,678
3,217	3,217	3,217	3,217	3,217	3,217
410,377	416,543	402,706	381,433	371,553	360,682
\$ 274,212	\$ 233,079	\$ 228,652	\$ 209,826	\$ 208,332	\$ 224,746
114,481	161,736	160,032	158,666	145,722	124,656
-	-	-	-	-	-
\$ 21,684	\$ 21,728	\$ 14,022	\$ 12,941	\$ 17,499	\$ 11,280
\$ (35)	\$ 483	\$ 169	\$ 1,398	\$ 195	\$ (407)
\$ 11,462	\$ 10,464	\$ 9,516	\$ 8,535	\$ 7,481	\$ 7,539
\$ -	\$ 730	\$ 132	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -	\$ -	\$ -



**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Debt Service Coverage**  
**Last Ten Fiscal Years**  
(Dollars in thousands)

	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Operating Revenues	\$ 778,326	\$ 755,336	\$ 738,304	\$ 716,776
Interest Income	12,985	16,985	12,755	9,758
Transfers from Rate Stabilization Fund	-	-	-	-
<b>Total Revenues</b>	<b>\$ 791,311</b>	<b>\$ 772,321</b>	<b>\$ 751,059</b>	<b>\$ 726,534</b>
Operating Expenses	\$ (272,901)	\$ (276,631)	\$ (263,394)	\$ (266,415)
Commonwealth Obligations	22,075	23,412	23,757	23,912
OPEB	(7,012)	331	(236)	3,449
Pollution Remediation	127	1,078	1,225	4,752
Capital Lease	(3,217)	(3,217)	(3,217)	(3,217)
<b>Net Revenues</b>	<b>\$ 530,383</b>	<b>\$ 517,294</b>	<b>\$ 509,194</b>	<b>\$ 489,015</b>
CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -
Revenues Available for Primary and SRF Primary Coverage (Before Provision for Transfer to Rate Stabilization Fund)(A)	\$ 530,383	\$ 517,294	\$ 509,194	\$ 489,015
Provision for Transfer to Rate Stabilization Fund	\$ -	\$ -	\$ 6,532	\$ -
Revenues Available for Primary and SRF Primary Coverage (After Provision for Transfer to Rate Stabilization Fund)(B)	\$ 530,383	\$ 517,294	\$ 502,662	\$ 489,015
Required Senior Debt Service Fund Deposits(C)	\$ 216,129	\$ 269,435	\$ 261,383	\$ 262,093
Required Subordinated Debt Service Deposits(D)	\$ 225,558	\$ 169,017	\$ 158,485	\$ 139,430
Coverage:				
Before Provision for Transfer to Rate Stabilization Fund:				
Primary	245%	192%	195%	187%
SRF Primary	120%	118%	121%	122%
After Provision for Transfer to Rate Stabilization Fund:				
Primary	245%	192%	192%	187%
SRF Primary	120%	118%	120%	122%
Required CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -
CORE Fund Deposits	\$ -	\$ -	\$ -	\$ -

Note: Schedule prepared in accordance with MWRA General Bond Resolution.

	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
\$	696,973	\$ 668,605	\$ 648,017	\$ 623,393	\$ 602,620	\$ 584,354
	10,303	9,689	12,130	13,590	16,268	15,193
	-	-	3,500	-	1,092	5,030
\$	707,276	\$ 678,294	\$ 663,647	\$ 636,983	\$ 619,980	\$ 604,577
\$	(278,887)	\$ (271,329)	\$ (273,500)	\$ (267,351)	\$ (261,510)	\$ (254,846)
	27,470	27,168	26,641	26,004	25,630	24,709
	11,555	9,401	13,521	13,123	15,118	14,169
	322	3,394	2,261	-	-	-
	(3,217)	(3,217)	(3,217)	(3,217)	(3,217)	(3,217)
\$	464,519	\$ 443,711	\$ 429,353	\$ 405,542	\$ 396,001	\$ 385,392
\$	-	\$ 862	\$ 132	\$ -	\$ -	\$ -
\$	464,519	\$ 442,849	\$ 429,221	\$ 405,542	\$ 396,001	\$ 385,392
\$	-	\$ -	\$ -	\$ -	\$ -	\$ 4,148
\$	464,519	\$ 442,849	\$ 429,221	\$ 405,542	\$ 396,001	\$ 381,244
\$	272,570	\$ 208,500	\$ 203,338	\$ 192,834	\$ 188,054	\$ 199,294
\$	114,481	\$ 161,737	\$ 160,032	\$ 151,598	\$ 145,236	\$ 117,656
	170%	212%	211%	210%	211%	193%
	120%	120%	118%	118%	119%	122%
	170%	212%	211%	210%	211%	191%
	120%	120%	118%	118%	199%	120%
\$	-	\$ 862	\$ 132	\$ -	\$ -	\$ -
\$	-	\$ 862	\$ 132	\$ -	\$ -	\$ -

**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Long Term Debt by System**  
**Last Ten Fiscal Years**  
(Dollars in thousands)

	2020		2019		2018		2017	
	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water
<b>General Revenue Bonds:</b>								
1993C Series Bonds	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2002J Series Bonds	107,445	10,235	128,338	12,557	171,651	17,369	218,739	22,601
2003D Series Bonds	-	-	-	-	-	-	-	-
2004A Series Bonds	-	-	-	-	-	-	-	-
2006A Series Bonds	-	-	-	-	-	-	-	-
2007A Series Bonds	-	-	-	-	-	-	-	-
2009A Series Bonds	-	-	-	-	-	-	-	-
2010A Series Bonds	-	-	-	-	-	-	973	417
2011B Series Bonds	2,121	909	4,379	1,877	5,495	2,355	5,852	2,508
2012A Series Bonds	1,753	1,753	36,328	36,328	37,295	37,295	37,295	37,295
2014D Series Bonds	38,780	18,250	40,912	19,253	40,912	19,253	41,851	19,694
2016B Series Bonds	30,385	30,385	31,045	31,045	31,685	31,685	32,985	32,985
2017B Series Bonds	31,408	31,408	33,490	33,490	34,120	34,120	34,120	34,120
2018B Series Bonds	63,843	42,562	64,548	43,032	64,548	43,032	-	-
2019B Series Bonds	84,886	36,380	87,500	37,500	-	-	-	-
2019E Series Bonds	25,000	25,000	-	-	-	-	-	-
<b>General Revenue Refunding Bonds:</b>								
1997D Series Bonds	-	-	-	-	-	-	-	-
1998B Series Bonds	-	-	-	-	-	-	-	-
2004B Series Bonds	-	-	-	-	-	-	-	-
2005A Series Bonds	-	-	-	-	-	-	-	-
2005B Series Bonds	-	-	-	-	-	-	-	-
2006B Series Bonds	-	-	-	-	-	-	22,823	7,608
2007B Series Bonds	544,278	103,672	544,278	103,672	544,278	103,672	544,278	103,672
2009B Series Bonds	-	-	47,146	18,334	91,019	35,396	104,562	40,663
2010B Series Bonds	-	-	49,741	36,019	55,648	40,297	57,214	41,431
2011C Series Bonds	-	-	113,552	177,608	125,252	195,908	125,252	195,908
2012B Series Bonds	-	-	18,223	68,552	18,223	68,552	18,223	68,552
2013A Series Bonds	53,007	41,648	57,408	45,107	57,408	45,107	79,537	62,493
2014E Series Bonds	3,688	527	4,589	656	13,654	1,951	13,654	1,951
2014F Series Bonds	43,837	97,573	43,837	97,573	43,837	97,573	43,837	97,573
2016C Series Bonds	344,349	330,846	345,874	332,311	345,874	332,311	347,624	333,991
2016D Series Bonds	67,226	36,199	67,769	36,491	67,769	36,491	67,769	36,491
2017C Series Bonds	106,817	130,554	110,475	135,025	112,275	137,225	114,635	140,110
2018C Series Bonds	16,425	5,475	16,425	5,475	16,425	5,475	-	-
2019C Series Bonds	13,817	5,373	13,817	5,373	-	-	-	-
2019F Series Bonds	219,100	328,650	-	-	-	-	-	-
2019G Series Bonds	7,608	15,217	-	-	-	-	-	-
<b>General Revenue Bonds (variable rates):</b>								
1999B Series Bonds	27,900	18,600	30,420	20,280	32,820	21,880	35,160	23,440
<b>General Revenue Refunding Bonds (variable rates):</b>								
2002C Series Bonds	-	-	11,290	23,830	11,290	23,830	11,290	23,830
2002D Series Bonds	-	-	-	-	-	-	-	-
2008A Series Bonds	170,113	23,197	179,467	24,473	184,294	25,131	187,343	25,547
2008B Series Bonds	-	-	-	-	-	-	-	-
2008C Series Bonds	52,320	2,180	67,872	2,828	82,848	3,452	97,248	4,052
2008D Series Bonds	-	-	-	-	-	-	-	-
2008E Series Bonds	122,949	10,691	122,949	10,691	122,949	10,691	122,949	10,691
2008F Series Bonds	-	-	-	-	-	-	-	-
2012E Series Bonds	11,943	44,927	12,271	46,164	12,590	47,361	12,897	48,518
2012F Series Bonds	-	-	-	-	-	-	10,936	41,139
2012G Series Bonds	15,072	628	25,440	1,060	35,424	1,476	45,024	1,876
2014A Series Bonds	4,500	45,500	4,500	45,500	4,500	45,500	4,500	45,500
2014B Series Bonds	3,873	39,162	4,869	49,226	5,828	58,927	5,828	58,927
2018A Series Bonds	9,981	37,549	10,310	38,785	10,628	39,982	-	-
2018D Series Bonds	4,500	45,500	4,500	45,500	4,500	45,500	-	-
<b>Revolving Loan:</b>								
2015C Revolving Loan	26,500	26,500	26,500	26,500	26,500	26,500	39,500	39,500
<b>General Revenue Bonds with the Massachusetts Clean Water Trust:</b>	743,953	208,997	767,588	212,295	766,343	176,538	814,296	192,155
<b>Total</b>	<b>\$2,999,375</b>	<b>\$1,796,045</b>	<b>\$3,127,650</b>	<b>\$1,824,408</b>	<b>\$3,177,882</b>	<b>\$1,811,833</b>	<b>\$3,298,193</b>	<b>\$1,795,238</b>

2016		2015		2014		2013		2012		2011	
Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water	Sewer	Water
\$ -	\$ -	\$ 8,807	\$ 1,258	\$ 17,172	\$ 2,453	\$ 25,117	\$ 3,588	\$ 25,117	\$ 3,588	\$ 28,446	\$ 4,064
247,895	26,285	254,960	27,070	268,703	28,597	268,703	28,597	268,703	28,597	397,898	131,397
-	-	-	-	-	-	-	-	-	-	37,780	75,560
-	-	-	62,320	-	149,990	-	149,990	-	200,000	7,865	97,005
-	-	33,660	164,340	33,660	164,340	33,660	164,340	33,660	164,340	-	200,000
-	-	48,180	16,060	57,334	19,111	60,210	20,070	68,370	22,790	34,000	166,000
3,630	1,556	59,605	25,545	67,571	28,959	68,418	29,322	69,227	29,669	70,504	23,501
55,892	23,954	94,350	40,436	98,098	42,042	101,388	43,452	103,135	44,201	70,000	30,000
49,043	49,043	66,310	66,310	69,683	69,683	72,338	72,338	75,000	75,000	105,000	45,000
46,427	21,848	48,052	22,613	-	-	-	-	-	-	-	-
32,985	32,985	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	6,871	439
-	-	-	-	-	-	-	-	-	-	18,557	773
-	-	-	-	33,604	4,801	42,831	6,119	42,831	6,119	43,216	6,174
118,730	145,115	138,173	168,878	155,174	189,657	155,174	189,657	160,499	196,166	160,499	196,166
25,082	50,163	26,763	53,527	26,763	53,527	26,763	53,527	26,763	53,527	26,763	53,527
23,614	7,871	129,431	43,144	162,701	54,234	162,701	54,234	197,955	65,985	197,955	65,985
544,278	103,672	544,278	103,672	544,278	103,672	544,278	103,672	544,278	103,672	544,278	103,672
113,386	44,094	193,043	75,072	195,142	73,888	197,352	76,748	201,758	78,462	203,443	79,117
62,608	45,337	95,836	69,399	100,824	73,011	106,471	77,099	106,471	77,099	106,471	77,099
125,252	195,908	127,592	199,568	127,592	199,568	127,592	199,568	127,592	199,568	-	-
18,223	68,552	18,223	68,552	18,223	68,552	18,223	68,552	18,223	68,552	-	-
92,758	72,882	95,102	74,723	95,108	74,727	95,556	75,079	-	-	-	-
22,133	3,162	24,714	3,531	-	-	-	-	-	-	-	-
43,837	97,573	43,873	97,652	-	-	-	-	-	-	-	-
347,624	333,991	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
35,160	23,440	35,160	23,440	35,160	23,440	37,380	24,920	37,380	24,920	41,580	27,720
-	-	-	-	-	-	-	-	-	-	-	-
11,290	23,830	11,290	23,830	11,290	23,830	11,290	23,830	11,290	23,830	23,108	47,467
-	-	-	-	-	-	-	-	-	-	56,450	-
206,664	28,181	251,438	34,287	294,224	40,121	297,154	40,521	297,154	40,521	297,154	40,521
-	-	-	-	-	-	-	-	-	-	25,857	97,273
101,395	4,225	105,427	4,393	109,286	4,554	112,973	4,707	174,432	7,268	180,192	7,508
-	-	-	-	-	-	-	-	-	-	-	-
122,949	10,691	122,949	10,691	122,949	10,691	159,215	13,845	193,816	16,854	193,816	16,854
4,500	45,500	4,500	45,500	4,500	45,500	14,828	149,927	16,642	168,268	16,642	168,268
13,194	49,636	13,194	49,636	13,194	49,636	13,194	49,636	-	-	-	-
12,663	47,637	12,663	47,637	12,663	47,637	12,663	47,637	-	-	-	-
47,789	1,991	50,477	2,103	53,050	2,210	55,507	2,313	-	-	-	-
4,500	45,500	4,500	45,500	4,500	45,500	-	-	-	-	-	-
5,828	58,927	5,828	58,927	5,828	58,927	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
39,500	39,500	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
853,081	182,716	859,991	182,973	853,322	177,847	892,160	184,391	899,618	187,141	884,690	185,558
<u>\$3,431,908</u>	<u>\$1,885,764</u>	<u>\$3,528,369</u>	<u>\$1,912,586</u>	<u>\$3,591,594</u>	<u>\$1,932,704</u>	<u>\$3,713,138</u>	<u>\$1,957,678</u>	<u>\$3,782,221</u>	<u>\$1,983,408</u>	<u>\$3,779,037</u>	<u>\$1,946,646</u>

MASSACHUSETTS WATER RESOURCES AUTHORITY  
**Schedule of Sewer Flows**  
**Last Ten Fiscal Years**  
(Million gallons per day)

<b>MWRA Community</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Arlington	4.99	5.28	4.79	4.64
Ashland	1.25	1.37	1.28	1.36
Bedford	2.44	2.72	2.51	2.46
Belmont	3.04	3.40	2.93	2.69
Boston (BWSC)	89.04	101.54	89.82	87.04
Braintree	7.33	8.74	7.07	6.26
Brookline	8.00	9.72	8.05	7.72
Burlington	3.77	3.95	3.58	3.38
Cambridge	19.18	19.08	17.98	17.83
Canton	2.90	3.35	3.24	2.79
Chelsea	5.86	5.90	5.49	5.12
Dedham	3.73	4.52	3.92	3.41
Everett	5.56	6.43	5.60	5.12
Framingham	6.35	7.86	7.32	6.87
Hingham Sewer District	1.33	1.62	1.32	1.25
Holbrook	0.85	1.01	0.91	0.85
Lexington	5.27	5.85	5.03	4.59
Malden	8.66	9.35	8.73	8.45
Medford	7.78	7.79	7.52	7.17
Melrose	4.31	4.80	4.18	4.29
Milton	3.17	3.97	3.28	3.04
Natick	2.89	3.28	2.77	2.76
Needham	3.76	4.28	3.68	3.52
Newton	14.35	16.50	14.21	14.73
Norwood	5.57	6.93	6.20	5.41
Quincy	12.94	14.92	13.48	12.58
Randolph	3.49	4.06	3.85	3.58
Reading	2.63	3.63	2.88	2.89
Revere	6.47	7.18	6.18	6.14
Somerville	9.79	10.25	10.63	10.27
Stoneham	3.57	3.57	3.13	2.68
Stoughton	2.81	3.55	3.24	2.75
Wakefield	4.39	5.02	4.17	4.09
Walpole	2.10	2.48	2.07	1.99
Waltham	8.81	10.02	9.07	8.39
Watertown	3.40	3.84	3.48	3.36
Wellesley	3.59	3.80	3.22	3.15
Westwood	1.72	1.99	1.76	1.78
Weymouth	8.40	10.14	8.65	7.93
Wilmington	1.58	1.56	1.45	1.40
Winchester	2.32	2.73	2.30	2.23
Winthrop	2.29	2.40	2.10	2.14
Woburn	6.52	5.97	6.29	6.48

Source: MWRA metering

<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
3.96	4.56	4.15	4.47	5.08	4.72
1.11	1.16	1.20	1.22	1.24	1.10
2.34	2.57	2.42	2.41	2.52	2.33
2.31	2.89	2.56	2.92	3.10	3.05
80.51	87.21	85.18	94.79	97.02	95.81
6.63	7.08	6.39	6.58	6.82	6.52
7.07	8.62	8.89	9.09	10.03	9.61
3.00	3.31	3.12	3.22	3.45	3.53
16.31	17.93	16.15	17.28	17.16	16.84
2.59	2.77	2.98	2.77	2.26	2.44
4.67	5.16	4.76	4.88	4.91	5.08
3.06	3.53	3.44	3.57	3.61	3.39
4.54	4.95	4.85	5.15	5.81	4.81
7.15	7.62	6.76	7.05	6.11	6.28
1.22	1.37	1.25	1.32	1.26	1.28
0.83	0.89	0.86	0.92	0.76	0.78
4.22	4.93	4.47	5.06	5.25	5.00
8.19	9.20	8.13	8.95	9.11	9.18
6.72	8.26	7.09	7.96	7.68	7.63
3.69	4.64	3.86	4.50	4.69	3.91
2.56	3.26	2.93	3.14	3.33	3.32
2.80	2.93	2.95	3.07	3.10	2.95
3.06	3.39	3.29	3.52	3.62	3.71
14.11	15.22	13.29	15.31	17.09	15.61
4.58	5.29	4.97	5.13	4.82	4.50
12.11	13.56	12.96	13.45	14.09	13.79
2.82	3.52	3.41	3.66	3.63	3.43
2.42	2.83	2.65	2.86	3.07	2.87
5.97	6.82	6.13	7.01	7.50	7.36
9.96	10.70	9.30	10.87	10.63	10.79
2.39	3.16	2.70	3.15	3.47	3.12
2.60	3.20	2.67	2.66	3.09	2.83
3.59	4.26	3.50	3.88	4.42	4.21
1.75	1.88	1.89	2.00	1.93	1.92
8.10	9.11	8.06	9.26	9.39	9.77
3.00	3.31	3.14	3.49	3.68	3.66
2.82	3.14	3.05	3.38	3.63	3.29
1.50	1.50	1.28	1.42	1.42	1.33
7.15	7.82	6.90	8.18	7.56	7.39
1.28	1.33	1.20	1.20	1.32	1.27
1.94	2.24	1.99	2.30	2.39	2.28
1.85	1.90	1.84	1.99	2.21	2.22
5.83	6.86	6.97	7.34	7.28	7.48

**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Schedule of Water Flows**  
**Last Ten Fiscal Years**  
(Million gallons per day)

<b>MWRA Community</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Arlington	3.618	3.573	3.676	3.782
Belmont	1.953	1.990	2.032	2.105
Boston (BWSC)	60.687	62.331	63.418	64.334
Brookline	4.782	4.903	4.948	5.068
Chelsea	3.336	3.278	3.368	3.323
Chicopee	5.188	4.878	5.131	5.122
Clinton	1.297	1.390	1.416	1.433
Everett	3.857	3.710	3.778	3.905
Framingham	5.657	5.669	5.752	5.883
Lexington	5.381	5.034	5.047	5.304
Lynnfield W.D.	0.513	0.488	0.549	0.560
Malden	5.123	5.101	5.088	4.941
Marblehead	1.788	1.654	1.804	1.817
Medford	4.567	4.292	4.587	4.624
Melrose	2.044	1.976	2.038	2.071
Milton	2.305	2.271	2.420	2.578
Nahant	0.326	0.315	0.323	0.390
Newton	8.656	8.540	8.511	8.973
Norwood	2.727	2.662	2.771	2.835
Quincy	8.018	7.894	8.106	8.869
Reading	1.548	1.540	1.610	1.658
Revere	3.500	3.558	3.600	3.673
Saugus	2.932	2.830	2.852	2.926
Somerville	5.653	5.653	5.636	5.805
So. Hadley Fire District #1	1.130	0.978	1.034	1.070
Southborough	0.996	0.904	0.934	0.984
Stoneham	2.066	1.865	2.220	2.247
Swampscott	1.539	1.473	1.461	1.426
Waltham	6.248	6.400	6.600	6.599
Watertown	2.529	2.547	2.640	2.582
Weston	1.590	1.566	1.739	1.973
Wilbraham	1.175	1.066	1.107	1.166
Winthrop	1.273	1.258	1.224	1.196
Cambridge (Partial)	-	0.025	-	1.403
Canton (Partial)	0.892	1.342	1.198	1.867
Dedham-Westwood W.D. (Partial)	0.909	0.210	0.134	0.198
Lynn (LWSC) (Partial)	0.141	0.330	0.269	0.233
Marlborough (Partial)	4.047	3.883	4.074	3.834
Needham (Partial)	0.873	0.834	0.638	0.703
Northborough (Partial)	1.000	0.893	0.890	0.912
Peabody (Partial)	1.018	1.562	3.487	2.105
Stoughton (Partial)	0.102	0.078	0.102	0.154
Wakefield (Partial)	1.843	1.782	1.541	1.667
Wellesley (Partial)	1.114	1.158	1.160	0.994
Wilmington (Partial)	0.475	0.461	0.456	0.485
Winchester (Partial)	1.104	1.230	1.144	1.407
Woburn (Partial)	2.699	2.766	2.400	2.627
Worcester (Partial)	-	-	-	2.322
Comm. of Mass. - Fernald (Other)	-	-	-	-
D.C.R. Parks/Pool/Blue Hills (Other)	0.086	0.077	0.103	0.044
MWRA - Deer Island Water (Other)	1.249	1.310	1.275	1.325
Other Reservoir Withdrawals (Other)	4.655	6.146	6.001	2.821
Quinapoxet Withdrawal (Other)	6.343	3.192	5.250	2.654
Westboro State Hospital (Other)	-	-	-	-
Westboro State Hospital (DYS) (Other)	-	0.008	0.024	0.023

Source: MWRA metering



<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
3.907	3.826	3.778	3.933	4.061	4.309
2.187	2.157	2.113	2.169	2.174	2.092
64.902	64.567	63.184	64.325	64.395	65.128
5.275	5.500	5.462	5.344	5.078	5.120
3.283	3.248	3.306	3.121	3.095	3.036
5.306	5.251	5.285	5.394	5.496	5.457
1.637	1.700	1.719	1.951	1.975	1.896
3.883	3.755	3.832	3.902	3.857	4.007
6.017	6.621	6.504	6.542	6.578	6.859
5.377	5.824	5.145	4.961	4.534	4.990
0.522	0.488	0.463	0.415	0.354	0.415
5.225	5.684	5.250	5.372	5.524	5.486
1.839	1.803	1.791	1.715	1.698	1.757
4.944	5.059	5.075	4.957	4.835	5.077
2.207	2.323	2.235	2.218	2.144	2.247
2.632	2.598	2.394	2.464	2.442	2.383
0.384	0.357	0.331	0.307	0.290	0.311
9.986	10.095	9.174	8.858	8.891	8.871
2.776	2.932	2.892	2.736	2.808	3.241
9.209	9.330	9.173	8.933	8.878	9.126
1.646	1.625	1.616	1.648	1.601	1.728
3.770	3.919	3.909	3.798	3.871	3.975
2.862	2.935	2.805	2.632	2.668	2.892
6.186	5.672	5.609	5.843	5.521	5.706
1.091	1.082	1.074	1.128	1.159	1.209
1.050	1.014	0.956	0.909	0.860	0.973
2.336	2.573	2.793	2.982	2.785	2.849
1.431	1.380	1.559	1.459	1.546	1.510
7.077	7.133	6.823	6.855	6.753	7.451
2.553	2.599	2.661	2.606	2.583	2.664
1.940	1.919	1.675	1.608	1.599	1.719
1.193	1.153	1.112	1.153	1.121	1.174
1.225	1.312	1.263	1.243	1.241	1.264
0.942	-	5.874	-	-	-
1.559	1.068	0.875	1.082	1.560	1.968
0.140	0.273	0.039	0.089	0.063	0.046
0.690	0.175	0.227	0.172	0.233	0.230
3.570	3.247	3.482	2.969	2.260	3.294
0.933	0.907	0.787	0.894	1.091	0.802
0.906	0.891	0.875	0.882	0.882	0.760
1.126	1.257	1.155	0.828	0.509	0.668
0.526	0.979	0.759	0.753	0.632	0.658
1.426	1.505	1.355	1.439	1.360	1.531
1.054	0.820	0.686	1.499	0.789	1.058
0.539	0.456	0.256	0.204	0.084	0.555
1.542	1.042	1.048	0.987	0.928	0.978
2.482	2.673	2.383	3.029	2.520	2.317
0.001	-	-	0.002	-	-
-	0.015	0.063	0.066	0.060	0.070
0.052	0.058	0.061	0.052	0.047	0.052
1.397	1.279	1.247	1.310	1.448	1.341
-	-	-	-	-	0.160
7.582	3.824	4.110	6.241	0.530	5.544
-	-	-	0.014	0.015	0.039
0.024	0.045	0.017	0.017	-	-

**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Sewer-System Total**  
**Community Population Estimates**  
**Last Ten Calendar Years**

Population	Customer Type	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Arlington	Sewer & Water	45,531	45,624	45,510	45,052	44,204	44,212	44,028	43,711	43,290	42,844
Ashland	Sewer	17,807	17,739	17,706	17,684	17,185	17,191	17,150	16,993	16,767	16,593
Bedford	Sewer	14,123	14,195	14,197	14,411	14,058	14,086	13,975	13,765	13,455	13,320
Belmont	Sewer & Water	26,116	26,330	26,458	26,171	25,425	25,431	25,332	25,204	24,987	24,729
Boston Water & Sewer Comm.	Sewer & Water	692,600	694,583	685,094	673,184	651,710	649,917	645,966	636,479	625,087	617,594
Braintree	Sewer	37,190	37,250	37,156	37,297	36,984	36,968	36,727	36,249	35,990	35,744
Brookline	Sewer & Water	59,121	59,310	59,157	59,126	59,277	59,246	59,128	59,115	59,132	58,732
Burlington	Sewer	28,627	28,742	27,176	26,351	25,502	25,507	25,463	25,165	24,755	24,498
Cambridge	Sewer & Partial Water	118,927	118,977	113,630	110,651	107,705	107,732	107,289	106,471	106,038	105,162
Canton	Sewer & Partial Water	23,805	23,629	23,444	22,952	22,257	22,246	22,221	21,932	21,710	21,561
Chelsea	Sewer & Water	39,690	40,160	40,227	38,599	37,359	37,881	37,670	36,828	35,649	35,177
Chicopee	Water	55,126	55,582	55,363	55,342	55,789	56,233	55,882	55,795	55,583	55,305
Clinton	Water	14,000	14,022	13,958	13,873	13,837	13,788	13,748	13,693	13,643	13,624
Dedham	Sewer & Partial Water	25,219	25,334	25,364	25,263	25,322	25,346	25,299	24,974	24,895	24,729
Everett	Sewer & Water	46,451	46,880	46,324	44,840	43,484	43,110	42,935	42,567	42,101	41,667
Framingham	Sewer & Water	74,416	73,123	72,032	71,594	70,569	70,583	70,441	70,068	68,991	68,318
Hingham Sewer District	Sewer	7,795	7,586	7,611	7,708	7,370	7,260	7,475	7,279	7,201	7,162
Holbrook	Sewer	11,033	11,048	11,026	11,022	10,994	10,988	10,952	10,899	10,866	10,791
Lexington	Sewer & Water	33,132	33,792	33,727	33,410	32,810	32,817	32,650	32,272	31,718	31,394
Lynnfield	Water	12,999	13,041	12,944	12,839	12,765	12,667	12,409	11,821	11,726	11,621
Malden	Sewer & Water	60,470	61,036	61,246	60,840	60,776	60,788	60,509	60,374	60,071	59,540
Marblehead	Water	20,555	20,634	20,559	20,467	20,428	20,364	20,256	20,119	19,980	19,854
Marlborough	Partial Water	39,597	39,825	39,788	39,793	39,799	39,691	39,468	39,305	38,934	38,580
Medford	Sewer & Water	57,341	57,765	57,797	57,213	57,266	57,385	57,170	57,033	56,738	56,173
Melrose	Sewer & Water	28,016	28,193	28,367	27,928	27,777	27,810	27,690	27,435	27,263	26,983
Milton	Sewer & Water	27,593	27,616	27,575	27,351	27,358	27,345	27,270	27,158	27,182	27,003
Nahant	Water	3,513	3,524	3,506	3,493	3,496	3,483	3,474	3,446	3,432	3,417
Natick	Sewer	36,050	36,229	36,246	36,137	35,326	35,339	35,214	33,760	33,349	33,006
Needham	Sewer & Partial Water	31,388	31,248	30,999	30,755	29,797	29,785	29,736	29,366	29,083	28,886
Newton	Sewer & Water	88,414	88,904	88,994	89,045	87,908	87,927	87,971	86,307	85,945	85,146
Northborough	Partial Water	15,109	15,101	15,038	14,962	14,944	14,905	14,749	14,646	14,664	14,397
Norwood	Sewer & Water	29,725	29,327	29,195	29,097	29,021	29,007	28,951	28,780	28,801	28,602
Peabody	Partial Water	53,070	53,278	53,008	52,809	52,661	52,489	52,243	51,913	51,633	51,403
Quincy	Sewer & Water	94,470	94,580	94,166	93,688	93,373	93,327	93,494	93,027	92,909	92,271
Randolph	Sewer	34,362	34,398	34,272	33,610	33,541	33,519	33,456	33,226	32,336	32,112
Reading	Sewer & Water	25,400	25,337	26,106	25,834	25,397	25,433	25,327	25,192	25,001	24,747
Revere	Sewer & Water	53,073	53,821	53,993	53,157	53,316	54,063	53,756	53,179	52,459	51,755
Saugus	Water	28,361	28,385	28,265	28,125	28,080	27,976	27,826	27,387	27,047	26,730
Somerville	Sewer & Water	81,360	81,562	81,360	81,322	78,929	78,857	78,804	77,104	76,519	75,754
South Hadley Fire District #1	Water	17,625	17,806	17,836	17,765	17,625	17,712	17,715	17,834	17,817	17,726
Southborough	Water	10,208	10,169	10,138	10,087	10,015	9,936	9,894	9,851	9,816	9,775
Stonham	Sewer & Water	24,126	22,729	22,036	21,953	21,803	21,808	21,734	21,605	21,659	21,437
Stoughton	Sewer & Partial Water	28,915	28,950	28,528	28,431	28,197	28,183	28,106	27,849	27,150	26,962
Swampscott	Water	15,298	15,227	14,976	14,898	14,564	14,085	14,025	13,949	13,874	13,807
Wakefield	Sewer & Partial Water	27,045	27,135	27,157	26,753	26,147	26,182	26,080	25,613	25,191	24,932
Walpole	Sewer	25,200	25,209	25,073	25,125	24,788	24,776	24,818	24,562	24,234	24,070
Waltham	Sewer & Water	62,495	62,962	62,442	63,002	62,412	62,424	62,227	61,918	61,181	60,632
Watertown	Sewer & Water	35,939	35,954	35,756	34,025	33,124	33,130	32,996	32,863	32,248	31,915
Wellesley	Sewer & Partial Water	28,670	29,673	29,479	29,215	28,897	29,180	29,090	28,748	28,152	27,982
Weston	Water	12,124	12,134	12,119	12,100	12,066	11,921	11,845	11,698	11,515	11,370
Westwood	Sewer & Partial Water	16,400	16,127	16,056	15,279	14,904	14,896	14,876	14,768	14,721	14,618
Weymouth	Sewer	57,746	57,719	56,664	55,972	55,510	55,482	55,419	54,906	54,116	53,743
Wilbraham	Water	14,689	14,749	14,625	14,588	14,573	14,477	14,432	14,366	14,311	14,226
Wilmington	Sewer & Partial Water	23,445	23,907	23,803	23,570	23,199	23,204	23,147	22,936	22,557	22,325
Winchester	Sewer & Partial Water	22,799	22,851	22,838	22,808	22,159	22,166	22,079	21,869	21,594	21,374
Winthrop	Sewer & Water	18,544	18,688	18,625	18,190	17,979	18,232	18,111	17,940	17,737	17,497
Woburn	Sewer & Partial Water	40,228	40,397	39,701	39,452	39,162	39,170	39,083	38,949	38,520	38,120
<b>SYSTEM</b>		<b>2,673,071</b>	<b>2,680,096</b>	<b>2,656,436</b>	<b>2,626,208</b>	<b>2,580,923</b>	<b>2,579,666</b>	<b>2,569,781</b>	<b>2,542,261</b>	<b>2,513,323</b>	<b>2,489,345</b>

Source: U.S. Census Bureau

**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Sewer-System Total**  
**Community Population Estimates**  
**Last Ten Calendar Years**

System Share	Customer Type	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Arlington	Sewer & Water	1.70%	1.70%	1.71%	1.72%	1.71%	1.71%	1.71%	1.72%	1.72%	1.72%
Ashland	Sewer	0.67%	0.66%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%	0.67%
Bedford	Sewer	0.53%	0.53%	0.53%	0.55%	0.54%	0.55%	0.54%	0.54%	0.54%	0.54%
Belmont	Sewer & Water	0.98%	0.98%	1.00%	1.00%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%
Boston Water & Sewer Comm.	Sewer & Water	25.91%	25.92%	25.79%	25.63%	25.25%	25.19%	25.14%	25.04%	24.87%	24.81%
Braintree	Sewer	1.39%	1.39%	1.40%	1.42%	1.43%	1.43%	1.43%	1.43%	1.43%	1.44%
Brookline	Sewer & Water	2.21%	2.21%	2.23%	2.25%	2.30%	2.30%	2.30%	2.33%	2.35%	2.36%
Burlington	Sewer	1.07%	1.07%	1.02%	1.00%	0.99%	0.99%	0.99%	0.99%	0.98%	0.98%
Cambridge	Sewer & Partial Water	4.45%	4.44%	4.28%	4.21%	4.17%	4.18%	4.18%	4.19%	4.22%	4.22%
Canton	Sewer & Partial Water	0.89%	0.88%	0.88%	0.87%	0.86%	0.86%	0.86%	0.86%	0.86%	0.87%
Chelsea	Sewer & Water	1.48%	1.50%	1.51%	1.47%	1.45%	1.47%	1.47%	1.45%	1.42%	1.41%
Chicopee	Water	2.06%	2.07%	2.08%	2.11%	2.16%	2.18%	2.17%	2.19%	2.21%	2.22%
Clinton	Water	0.52%	0.52%	0.53%	0.53%	0.54%	0.53%	0.53%	0.54%	0.54%	0.55%
Dedham	Sewer & Partial Water	0.94%	0.95%	0.95%	0.96%	0.98%	0.98%	0.98%	0.98%	0.99%	0.99%
Everett	Sewer & Water	1.74%	1.75%	1.74%	1.71%	1.68%	1.67%	1.67%	1.67%	1.68%	1.67%
Framingham	Sewer & Water	2.78%	2.73%	2.71%	2.73%	2.73%	2.74%	2.74%	2.76%	2.75%	2.74%
Hingham Sewer District	Sewer	0.29%	0.28%	0.29%	0.29%	0.29%	0.28%	0.29%	0.29%	0.29%	0.29%
Holbrook	Sewer	0.41%	0.41%	0.42%	0.42%	0.43%	0.43%	0.43%	0.43%	0.43%	0.43%
Lexington	Sewer & Water	1.24%	1.26%	1.27%	1.27%	1.27%	1.27%	1.27%	1.27%	1.26%	1.26%
Lynnfield	Water	0.49%	0.49%	0.49%	0.49%	0.49%	0.48%	0.48%	0.46%	0.47%	0.47%
Malden	Sewer & Water	2.26%	2.28%	2.31%	2.32%	2.35%	2.36%	2.35%	2.37%	2.39%	2.39%
Marblehead	Water	0.77%	0.77%	0.77%	0.78%	0.79%	0.79%	0.79%	0.79%	0.79%	0.80%
Marlborough	Partial Water	1.48%	1.49%	1.50%	1.52%	1.54%	1.54%	1.54%	1.55%	1.55%	1.55%
Medford	Sewer & Water	2.15%	2.16%	2.18%	2.18%	2.22%	2.22%	2.22%	2.24%	2.26%	2.26%
Melrose	Sewer & Water	1.05%	1.05%	1.07%	1.06%	1.08%	1.08%	1.08%	1.08%	1.08%	1.08%
Milton	Sewer & Water	1.03%	1.03%	1.04%	1.04%	1.06%	1.06%	1.06%	1.07%	1.08%	1.08%
Nahant	Water	0.13%	0.13%	0.13%	0.13%	0.14%	0.14%	0.14%	0.14%	0.14%	0.14%
Natick	Sewer	1.35%	1.35%	1.36%	1.38%	1.37%	1.37%	1.37%	1.33%	1.33%	1.33%
Needham	Sewer & Partial Water	1.17%	1.17%	1.17%	1.17%	1.15%	1.15%	1.16%	1.16%	1.16%	1.16%
Newton	Sewer & Water	3.31%	3.32%	3.35%	3.39%	3.41%	3.41%	3.42%	3.39%	3.42%	3.42%
Northborough	Partial Water	0.57%	0.56%	0.57%	0.57%	0.58%	0.58%	0.57%	0.58%	0.58%	0.58%
Norwood	Sewer & Water	1.11%	1.09%	1.10%	1.11%	1.12%	1.12%	1.13%	1.13%	1.15%	1.15%
Peabody	Partial Water	1.99%	1.99%	2.00%	2.01%	2.04%	2.03%	2.03%	2.04%	2.05%	2.06%
Quincy	Sewer & Water	3.53%	3.53%	3.54%	3.57%	3.62%	3.62%	3.64%	3.66%	3.70%	3.71%
Randolph	Sewer	1.29%	1.28%	1.29%	1.28%	1.30%	1.30%	1.30%	1.31%	1.29%	1.29%
Reading	Sewer & Water	0.95%	0.95%	0.98%	0.98%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%
Revere	Sewer & Water	1.99%	2.01%	2.03%	2.02%	2.07%	2.10%	2.09%	2.09%	2.09%	2.08%
Saugus	Water	1.06%	1.06%	1.06%	1.07%	1.09%	1.08%	1.08%	1.08%	1.08%	1.07%
Somerville	Sewer & Water	3.04%	3.04%	3.06%	3.10%	3.06%	3.06%	3.07%	3.03%	3.04%	3.04%
South Hadley Fire District #1	Water	0.66%	0.66%	0.67%	0.68%	0.68%	0.69%	0.69%	0.70%	0.71%	0.71%
Southborough	Water	0.38%	0.38%	0.38%	0.38%	0.39%	0.39%	0.39%	0.39%	0.39%	0.39%
Stonham	Sewer & Water	0.90%	0.85%	0.83%	0.84%	0.84%	0.85%	0.85%	0.85%	0.86%	0.86%
Stoughton	Sewer & Partial Water	1.08%	1.08%	1.07%	1.08%	1.09%	1.09%	1.09%	1.10%	1.08%	1.08%
Swampscott	Water	0.57%	0.57%	0.56%	0.57%	0.56%	0.55%	0.55%	0.55%	0.55%	0.55%
Wakefield	Sewer & Partial Water	1.01%	1.01%	1.02%	1.02%	1.01%	1.01%	1.01%	1.01%	1.00%	1.00%
Walpole	Sewer	0.94%	0.94%	0.94%	0.96%	0.96%	0.96%	0.97%	0.97%	0.96%	0.97%
Waltham	Sewer & Water	2.34%	2.35%	2.35%	2.40%	2.42%	2.42%	2.42%	2.44%	2.43%	2.44%
Watertown	Sewer & Water	1.34%	1.34%	1.35%	1.30%	1.28%	1.28%	1.28%	1.29%	1.28%	1.28%
Wellesley	Sewer & Partial Water	1.07%	1.11%	1.11%	1.11%	1.12%	1.13%	1.13%	1.13%	1.12%	1.12%
Weston	Water	0.45%	0.45%	0.46%	0.46%	0.47%	0.46%	0.46%	0.46%	0.46%	0.46%
Westwood	Sewer & Partial Water	0.61%	0.60%	0.60%	0.58%	0.58%	0.58%	0.58%	0.58%	0.59%	0.59%
Weymouth	Sewer	2.16%	2.15%	2.13%	2.13%	2.15%	2.15%	2.16%	2.16%	2.15%	2.16%
Wilbraham	Water	0.55%	0.55%	0.55%	0.56%	0.56%	0.56%	0.56%	0.57%	0.57%	0.57%
Wilmington	Sewer & Partial Water	0.88%	0.89%	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%	0.90%
Winchester	Sewer & Partial Water	0.85%	0.85%	0.86%	0.87%	0.86%	0.86%	0.86%	0.86%	0.86%	0.86%
Winthrop	Sewer & Water	0.69%	0.70%	0.70%	0.69%	0.70%	0.71%	0.70%	0.71%	0.71%	0.70%
Woburn	Sewer & Partial Water	1.50%	1.51%	1.49%	1.50%	1.52%	1.52%	1.52%	1.53%	1.53%	1.53%
<b>SYSTEM</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**MASSACHUSETTS WATER RESOURCES AUTHORITY**  
**Full-time Equivalent Employees by Function**  
**Last Ten Fiscal Years**

Division	2020		2019		2018		2017	
	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate
Executive	4.0	20.00%	4.0	20.00%	4.0	20.00%	5.0	0.00%
Internal Audit	5.8	25.00%	5.7	25.00%	6.7	12.50%	6.7	12.50%
Public Affairs	9.9	28.57%	9.9	28.57%	10.9	15.38%	11.9	7.69%
Affirmative Action	5.0	28.57%	5.0	28.57%	6.0	0.00%	4.0	33.33%
Emergency Preparedness	4.0	0.00%	4.0	0.00%	8.0	0.00%	8.0	0.00%
Tunnel Redundancy	7.0	0.00%	7.0	0.00%	1.0	0.00%	-	
Finance	32.3	21.43%	31.5	23.81%	33.5	19.05%	35.5	14.29%
Operations	920.4	9.37%	922.8	8.51%	923.3	8.70%	930.0	7.35%
Law	12.5	31.58%	12.5	31.58%	13.5	26.32%	13.5	26.32%
Administration	138.8	15.00%	136.8	15.63%	135.5	13.46%	135.4	12.26%

<b>2016</b>		<b>2015</b>		<b>2014</b>		<b>2013</b>		<b>2012</b>		<b>2011</b>	
FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate	FTE	Vacancy Rate
5.0	0.00%	5.0	0.00%	5.0	0.00%	5.0	0.00%	5.0	0.00%	4.0	0.00%
6.7	12.50%	6.7	12.50%	7.5	0.00%	7.5	0.00%	7.5	0.00%	7.5	0.00%
12.9	7.14%	12.9	7.69%	11.9	7.69%	12.9	0.00%	12.9	0.00%	13.9	0.00%
6.0	0.00%	5.0	33.33%	6.0	14.29%	7.0	0.00%	6.8	12.50%	7.0	12.50%
5.8	0.00%	4.8	0.00%	5.8	0.00%	4.8	0.00%	3.8	0.00%	4.8	0.00%
-		-		-		-		-		-	
37.5	11.63%	38.3	9.30%	39.3	4.65%	39.3	6.98%	41.3	4.55%	42.3	2.27%
922.7	6.93%	925.1	7.35%	917.2	7.55%	935.1	4.96%	939.8	4.77%	949.4	3.35%
15.5	15.79%	14.5	26.32%	14.9	15.79%	15.1	15.79%	16.1	10.53%	17.1	5.26%
138.0	10.32%	138.0	9.74%	136.6	9.03%	139.6	8.97%	144.8	5.77%	147.4	3.85%

# MASSACHUSETTS WATER RESOURCES AUTHORITY

## Capital Asset Statistics by Function



Wachusett Dam, Clinton

### WATER SYSTEM

- ◆ 2 protected reservoirs
  - Quabbin
  - Wachusett
- ◆ 2 water treatment facilities
  - John J. Carroll
  - William A. Brutsch
- ◆ 385 miles of distribution infrastructure, including aqueducts, deep rock tunnels, and pipeline
- ◆ 12 active storage reservoirs and standpipes
- ◆ 11 active pumping stations
- ◆ Average Daily flow: 200 mgd
- ◆ Safe yield: 300 mgd
- ◆ Treatment Capacity: 405 mgd
- ◆ Percentage of capacity utilized: 67%\*  
*\*based on safe yield*



Digesters at Deer Island Treatment Plant

### WASTEWATER SYSTEM

- ◆ 274 miles of sewer pipelines and cross-harbor tunnels
- ◆ 11 pump stations
- ◆ 1 screening facility
- ◆ 1 gate house
- ◆ 6 CSO treatment/storage facilities
- ◆ 2 wastewater treatment plants
  - Deer Island Treatment Plant
  - Clinton Advanced Wastewater Treatment Plant
- ◆ 4 remote headworks
- ◆ 1 Pellet Plant residuals processing
- ◆ Average daily flow: 365 mgd
- ◆ Peak wet weather capacity: 1,270 mgd
- ◆ Percentage of capacity utilized on average: 30%







## Massachusetts Water Resources Authority

Charlestown Navy Yard

Building 39

Boston, MA 02129

617.242.6000

[www.mwra.com](http://www.mwra.com)