# NEW YORK CITY WATER AND SEWER SYSTEM

COMPREHENSIVE ANNUAL FINANCIAL REPORT
**FOR THE FISCAL YEAR ENDED JUNE 30, 2019**

A Component Unit of
The City of New York

Delaware Aqueduct Bypass Tunnel

# OUR MISSION

**THE NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY ("NYW") IS A PUBLIC BENEFIT CORPORATION CREATED IN 1985 PURSUANT TO THE NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY ACT.**

**NYW'S PURPOSE IS TO FINANCE THE CAPITAL NEEDS OF THE WATER AND SEWER SYSTEM OF THE CITY OF NEW YORK (THE "SYSTEM") WHICH IS OPERATED BY THE NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION.**

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# INTRODUCTION

# LETTER OF TRANSMITTAL

## TO THE

**Members of the Board of the New York City Municipal Water Finance Authority**

**Members of the New York City Water Board**

**The Commissioner of the New York City Department of Environmental Protection**

NOVEMBER 20, 2019

We are pleased to submit to you this Comprehensive Annual Financial Report ("CAFR") of the New York City Water and Sewer System (the "System") for the year ended June 30, 2019. The financial section of this CAFR includes management's discussion and analysis, the general-purpose financial statements and the combining financial statements and schedules, as well as the independent auditors' report on these financial statements.

The System is responsible for the accuracy, completeness, and fairness of the presentation, including all disclosures. The management's discussion and analysis provide an overview of the System's financial results.

The reporting entity consists of two separate and independent corporate bodies that are combined for reporting purposes: the New York City Municipal Water Finance Authority (the "Authority") and the New York City Water Board (the "Water Board"). In addition, the New York City Department of Environmental Protection ("DEP") operates the System. The passage of the New York City Municipal Finance Authority Act of 1984 (the "Act") by the New York State Legislature authorized this financing and operating relationship. The System is a component unit of the City of New York (the "City") for financial reporting purposes.

The Authority is authorized to issue bonds and other debt instruments for construction of and improvements to the System. The Authority also has the power to refund its bonds and notes. The Authority is administered by a Board of Directors composed of seven members, four of whom serve ex-officio, two of whom are appointed by the Mayor of the City, and one of whom is appointed by the Governor of the State of New York (the "State"). The staff of the Authority operates under the direction of its Executive Director.

The Water Board leases the System from the City, sets rates, and collects the System's revenue. The Lease Agreement dated July 1, 1985 (the "Lease"), provides for a lease term until all the bonds of the Authority are paid in full, or provision for payment has been made. The Water Board is obligated to first allocate the revenues of the System to debt service on the Authority's bonds and to the Authority's expense budget, after which revenues are allocated to the Water Board's expenses, DEP's cost of operating and maintaining the System, and to the rental payment paid to the City, if requested, under the terms of the Lease. The Lease requires the Water Board to make the rental payment to the City, if requested, which is no more than the greater of: i) principal and interest for the fiscal year on the City general obligation bonds issued for water and sewer purposes, or ii) fifteen percent of principal and interest on the Authority's debt for the fiscal year. In last three fiscal years 2017, 2018 and 2019, the City did not request a rental payment. The Water Board consists of seven members who are appointed by the Mayor. The Act requires that at least one member have experience in the science of water resource development. Members of the Water Board cannot be members of the Board of Directors of the Authority. The Mayor appoints the Chairman. The staff of DEP supports the operations of the Water Board under the direction of the Water Board's Executive Director.

The operation and maintenance of the water and sewer system is performed by DEP. DEP is managed by a Commissioner who is appointed by the Mayor and oversees a workforce of over 5,600 people assigned to the system. DEP works to protect the environmental welfare and health of the City's residents and natural resources, manages the City's water supply, treatment, transmission and distribution system, and collects, treats, and disposes of waste and storm water. DEP supplies water and sewer service to the Boroughs of the Bronx, Brooklyn, Manhattan, Queens and Staten Island, an area of over 300 square miles, and serves over 8.4 million people. The City is also required by state law to sell water in counties where its water supply facilities are located. The System currently provides water to approximately 1 million people located in Westchester, Putnam, Orange, and Ulster Counties.

The System provides an average of approximately one billion gallons of water per day. Water consumption has decreased since 1980 when an average of approximately 1.6 billion gallons per day was provided by the water system, at a time when the population of the City was 7.1 million. DEP maintains a system of dams, reservoirs, aqueducts, and water tunnels in addition to approximately 6,800 miles of water mains. DEP also maintains approximately 7,500 miles of sewers that collect and transport waste and storm water for treatment at the City's 14 wastewater treatment plants. Additionally, the System operates four major combined sewer overflow retention facilities, wastewater pump stations, laboratories, sludge dewatering facilities, and inner-harbor vessels, which transport sludge between facilities. The System collects and treats an average of approximately 1.2 billion gallons per day of sewage. Sewer service is provided to virtually the entire City, except for parts of the Borough of Staten Island and the Borough of Queens community of Breezy Point. Sewer service is also provided to certain upstate communities in the System's watershed areas.

## CREDIT RATINGS

The Authority's bonds are highly rated by three rating agencies. The Authority's ratings reflect the credit strengths resulting from the strong legal protections provided to bondholders and structural features, which provide a gross pledge of the System revenue to bondholders for debt payments. Standard and Poor's Ratings Services rates the Authority's first (general) resolution debt "AAA", their highest rating. The Authority's second general resolution debt is rated "AA+" by Standard and Poor's. Fitch Ratings and Moody's Investors Service rate both the Authority's first and second general resolution debt "AA+" and "Aa1", respectively.

New York State Environmental Facilities Corporation ("EFC") Clean Water and Drinking Water Revolving Funds Revenue Bonds, issued for eligible System projects are rated "AAA" from all three rating agencies. EFC's subordinated state revolving fund bonds are also rated "AAA" from all three rating agencies. The bonds that the Authority places with EFC are an element of security for EFC's bonds, but are unrated second general resolution bonds of the Authority.

## INTERNAL CONTROLS

The managements of the Water Board and the Authority are responsible for establishing and maintaining an internal control structure designed to provide reasonable, but not absolute, assurance that the assets of the System are protected from loss, theft or misuse, and that accounting policies are complied with and the preparation of financial statements conform with accounting principles generally accepted in the United States of America. 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. Internal control cannot provide absolute assurance of achieving financial reporting objectives due to its inherent limitations. Internal controls involve human diligence and compliance; it is subject to human failures and may be circumvented. Because of such limitations, the Authority and the Water Board have designed into the process safeguards to reduce, though not eliminate, this risk.

DEP is subject to the internal control directives and memorandums that originate from the New York City Comptroller's Office. These directives establish internal controls and accountability, which safeguard the City's assets. In addition, DEP is subject to audit by the City Comptroller's Office, whose auditors periodically audit the City's agencies adherence to internal control policies and procedures.

## BUDGETARY CONTROLS

The Water Board and the Authority maintain separate control structures for their specific areas of responsibility. The Water Board and the Authority establish separate operating budgets approved by their respective boards.

## CAPITAL PROGRAM GOALS

The goals of the System's capital program are:

- To maintain the quality of the water in the City's watersheds and, where necessary, treat the supply to ensure its high quality;
- To maintain and improve the transmission and distribution capacity and the condition of the City's water supply system;
- To improve the quality of the surrounding waters by upgrading the City's sewage treatment facilities and by reducing pollution caused by combined sewer overflows; and
- To contain sanitary sewage and prevent flooding by replacing failing sewers and extending service to underserved areas of the City.

DEP's capital and operation and maintenance budgets are appropriated through the City's annual budgets. The City also maintains an encumbrance accounting system as another technique of accomplishing budgetary control. The Authority and the Water Board adopt their budgets conterminously with the City's operating budget cycle.

## CAPITAL IMPROVEMENT PROGRAM AND FINANCING PROGRAM

The City updates its Ten Year Capital Strategy (the "Strategy") every two years. The City released the Strategy in April 2019. The Strategy included the projected contractual commitments for capital improvements to the System for fiscal years 2020 through 2029. In fiscal year 2021, the City will update the Strategy. The City's current capital plan, which covers fiscal years 2020 through 2023, was published on October 25, 2019. It is updated three times each fiscal year and the October 2019 release supersedes the Strategy for fiscal years 2020 through 2023. The Strategy, together with the current capital plan, comprises the capital improvement program (the "CIP").

The CIP is designed to maintain a satisfactory level of service and improve the operation of the System. The CIP establishes long-range programmatic goals for the System and reflects a review of the present condition and long-term needs of the plants and equipment constituting the System. The CIP also incorporates the System's requirements for meeting legal mandates, the present replacement cycle for System facilities, extensions to the present service area, and programs to enhance and optimize the operation and dependability of the System.

Additionally, DEP has been engaged in an ongoing review of the effects of climate change on the System, including the impact of rising sea levels and changes to the intensity and frequency of precipitation events throughout the System. DEP is in the process of implementing climate resiliency projects, which include both stand-alone resiliency projects and the integration of resiliency protection into DEP's ongoing investments. Such projects include structural upgrades, and improvements to the Ashokan Reservoir, improvement to wastewater treatment assets to protect them from flooding, and resiliency projects along the East River. DEP expects that additional resiliency projects will be identified and implemented in the coming years.

The total capital commitments projected to be provided from the System funds is $19.9 billion for the 10-year period from fiscal year 2020 through 2029. The capital commitments shown in each year represent capital contracts authorized to be entered into each year that will be paid from the City funds and reimbursed by the Authority, largely from bond proceeds. Actual expenditures from such capital contracts and the issuance of the Authority's bonds to fund such expenditures occur in the current and subsequent years. The following table reflects the CIP as of October 2019. For a number of reasons, including unforeseen cost inflation and changes in plans, actual costs may vary from the CIP set forth in the table. The CIP is divided into five project types, each discussed below.

## CAPITAL IMPROVEMENT PROGRAM

($ IN 000'S)

| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **WATER SUPPLY AND TRANSMISSION** | 342,029 | 185,017 | 320,747 | 197,396 | 143,000 | 953,608 | 201,500 | – | – | 1,500 | **$ 2,344,797** |
| **WATER DISTRIBUTION** | 490,579 | 604,945 | 562,486 | 804,221 | 395,749 | 190,801 | 172,601 | 676,526 | 359,955 | 239,830 | **$ 4,497,693** |
| **WATER POLLUTION CONTROL** | 965,636 | 1,357,752 | 788,025 | 979,647 | 1,352,932 | 634,723 | 871,738 | 327,699 | 224,307 | 349,943 | **$ 7,852,402** |
| **SEWERS** | 562,793 | 694,062 | 821,175 | 633,229 | 381,722 | 387,814 | 218,613 | 204,954 | 311,345 | 314,774 | **$ 4,530,481** |
| **EQUIPMENT** | 117,426 | 81,881 | 89,501 | 68,149 | 109,125 | 135,744 | 23,200 | 22,000 | 20,000 | 20,000 | **$ 687,026** |
| **TOTAL CITY FUNDS** | **$ 2,478,463** | **$ 2,923,657** | **$ 2,581,934** | **$ 2,682,642** | **$ 2,382,528** | **$ 2,302,690** | **$ 1,487,652** | **$ 1,231,179** | **$ 915,607** | **$ 926,047** | **$ 19,912,399** |

## WATER SUPPLY AND TRANSMISSION

This component of the CIP includes approximately $1 billion for Stage II of the City's Water Tunnel No. 3 and upgrades at the Hillview Reservoir. The Hillview Reservoir upgrades include new chemical addition facilities and flow control improvements. In May 2019, the federal court approved a federal Consent Decree that requires DEP to cover the Hillview Reservoir by 2049. The CIP does not include funding to construct a cover.

Stage II of the City's Water Tunnel No. 3 extends from the end of Stage I to supply Queens, Brooklyn and the Richmond Tunnel servicing Staten Island, and from the valve chamber at Central Park into Lower Manhattan. Water Tunnel No. 3 will augment the transmission capacity from the watersheds into the City, permit the inspection and rehabilitation of Tunnels No. 1 and 2, and provide delivery alternatives to the City in the event of disruption in Tunnels No. 1 or 2, which were put into operation in 1917 and 1936, respectively. Stage I of Tunnel No. 3 commenced operation in July 1998. The Manhattan leg of Stage II was completed and activated in October 2013. The tunnel and most of the infrastructure work for the Brooklyn/Queens segment of Stage II are complete, with two final shafts to be designed and constructed. Construction of the shafts is expected to begin in 2020. Designs are also underway to connect the Brooklyn/Queens segment to the Richmond Downtake Chamber, which will provide water from Tunnel No. 3 to Staten Island.

The CIP also includes approximately $1.3 billion for the Kensico-Eastview Connection, which was previously referred to as "Stage III of the City's Water Tunnel No. 3". The Kensico-Eastview Connection will connect the Kensico Reservoir to the Catskill/Delaware ultraviolet facility, which is necessary to provide redundancy in the water supply system.

The CIP includes $33.9 million for water conveyance projects. Funds included in the CIP for conveyance include DEP's Water for the Future program, which consists of repair and replacement of the Rondout-West Branch Tunnel of the Delaware Aqueduct, as well as water supply augmentation projects required to ensure an adequate water supply to the City during the shut-down of the tunnel starting in 2022. Water supply augmentation includes the rehabilitation of the Catskill Aqueduct and a water demand management program to reduce the City water consumption. Shaft construction for the bypass tunnel is underway and funds for construction were committed in prior years.

## WATER DISTRIBUTION AND TREATMENT

The System's drinking water is among the best in the country. The CIP includes approximately $4.5 billion for the protection, expansion, and distribution of the City's water supply, including nearly $1.8 billion for trunk and distribution water main replacements and extensions. Additionally, $910.2 million for the dam safety program, including the reconstruction of Gilboa Dam, improvements at the Ashokan Reservoir, including upgrading and stabilizing the thirteen dikes and dams to bring them up to modern standards.

The program also calls for approximately $1.4 billion to be committed to on-going water quality preservation and protection. To ensure its continuing quality and to comply with federal and state standards, DEP is pursuing a comprehensive program to protect the relatively pristine Catskill and Delaware watersheds. DEP continues to acquire and manage environmentally sensitive property in the upstate watershed and undertake other ongoing projects in partnership with watershed residents, as part of the Filtration Avoidance Determination ("FAD") issued by the U.S. Environmental Protection Agency ("USEPA"). The FAD allows the City to avoid filtering water from the Catskill and Delaware systems. In July 2007, USEPA issued, for the first time, a 10-year FAD to the City, extending to 2017. The New York State Department of Health issued a midterm revision of the FAD in May 2014. In December 2017, the New York State Department of Health issued a new 10-year FAD. The estimated remaining cost of complying with the 2017 FAD is $346 million, of which $235 million is funded in the CIP. USEPA has previously issued a series of FADs to the City for shorter terms, since 1993.

## WATER POLLUTION CONTROL

To improve the quality of the City's estuaries and surrounding waterways and to comply with federal Clean Water Act mandates, approximately $7.9 billion is included in the CIP for water pollution control programs. Investments in water pollution control are primarily responsible for the improvements to water quality in New York Harbor and the Jamaica Bay watershed.

The CIP allocates $4.9 billion for the replacement or reconstruction of components at the City's wastewater treatment facilities to ensure their continuous and reliable operations. The plant upgrades, including the retrofitting of six plants to achieve additional nitrogen treatment and upgrades at the Newtown Creek plant to improve plant operations, have been completed. Two additional plants have not yet been retrofitted.

DEP's CIP also includes nearly $2.9 billion for mandated projects, which will reduce combined sewer overflow ("CSO"). CSOs are currently a source of pollution in the waterways surrounding the City. CSO events occur during and after heavy rainstorms, when the flow of wastewater and storm water in the sewers exceeds the treatment capacity of a wastewater treatment plant and enters surrounding waterways untreated. In September 2010, DEP released a green infrastructure plan presenting an alternative approach to reducing CSOs. The plan uses a mix of green infrastructure to prevent storm water from reaching the sewers and cost-effective traditional infrastructure that will reduce sewer overflows into waterways. On March 8, 2012, DEP signed a groundbreaking agreement with the New York State Department of Environmental Conservation to reduce CSOs, which incorporated the goals of this innovative plan. DEP submitted ten out of the required by the agreement eleven CSO long-term control plans to ensure the water bodies comply with Clean Water Act requirements, and received approval for nine of the submitted plans.

## SEWERS

Approximately $4.5 billion is projected in the CIP to be committed to replace existing sewers in areas requiring increased capacity, to extend sewers to unserved or underserved areas, and to replace failing, flawed, or collapsed sewer mains.

## EQUIPMENT

Programs in this category of the CIP include water meter installation, automated meter reading systems, the procurement of vehicles and equipment, management information systems, and utility relocation for sewers and water mains. A total of $687.0 million is included in the CIP for these projects.

Approximately 96% of total accounts and 75% of total revenues, are billed on metered basis. The automated meter reading system transmits water usage information by radio signal to DEP. DEP has installed over 828,000 transmitters, representing 98% of DEP's installation target. All customers whose accounts have been upgraded for automated meter reading can now access details of their water usage through DEP's website.

## INDEPENDENT AUDIT

Section 6.11 (b) of the Financing Agreement by and among the City, the Authority, and the Water Board dated as of July 1, 1985, requires that the Authority shall submit to the Mayor, the Comptroller and the Director of Management and Budget of the City, audited annual financial statements of the Authority and the Water Board. The financial section of the 2019 Comprehensive Annual Financial Report begins with the report of our independent auditors, Marks Paneth LLP. This report expresses an unmodified opinion as to the fairness of the presentation of our financial statements.

## AWARD

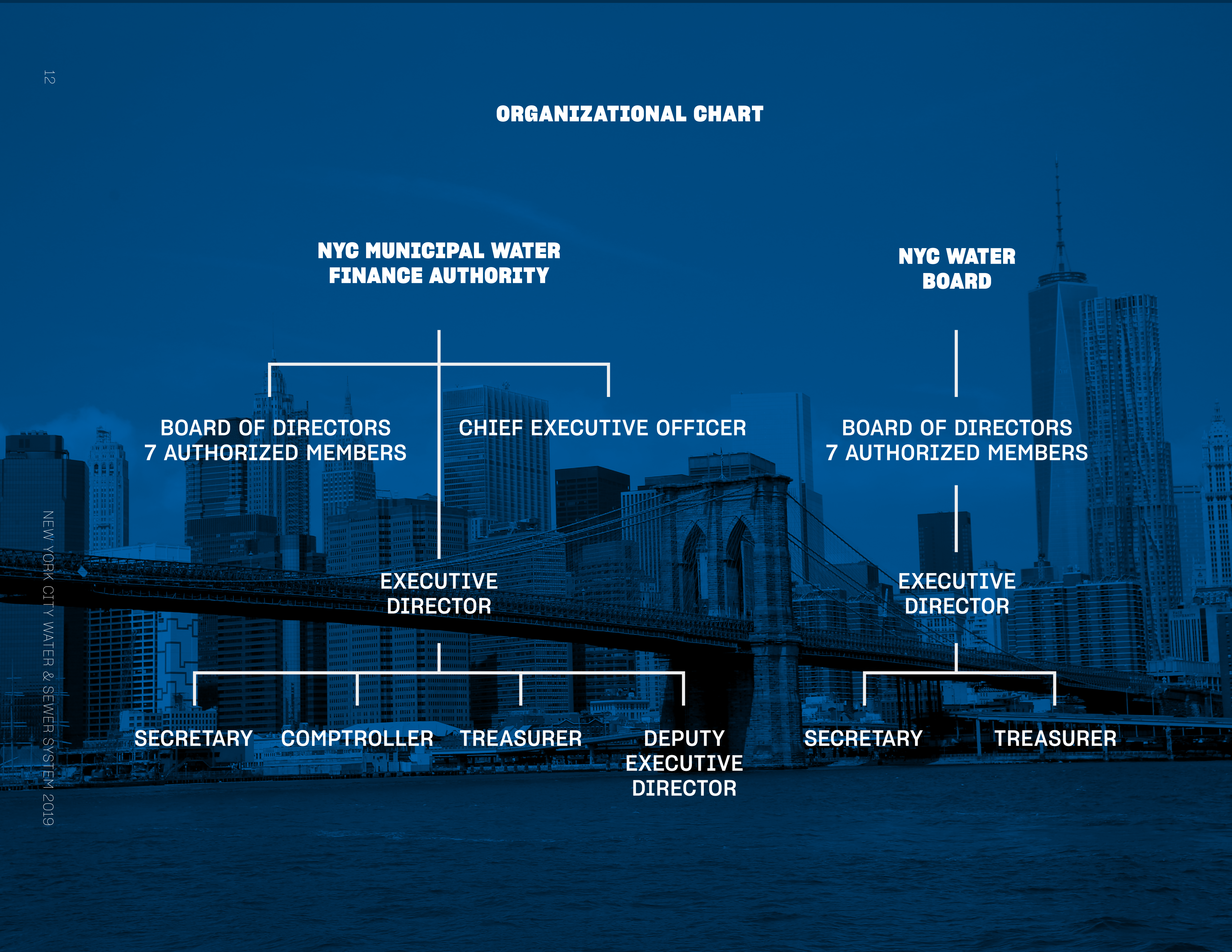
Government Finance Officers Association of the United States and Canada ("GFOA") awarded a Certificate of Achievement for Excellence in Financial Reporting to New York City Water and Sewer System for its comprehensive annual financial report for the fiscal year ended June 30, 2018. This was the 23rd consecutive year that the government has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current comprehensive annual financial report continues to meet the Certificate of Achievement Program's requirements and we are submitting it to GFOA to determine its eligibility for another certificate.

Respectfully submitted,

OLGA CHERNAT
**EXECUTIVE DIRECTOR**

ROBERT L. BALDUCCI
**COMPTROLLER**


ORGANIZATIONAL CHART
NYC MUNICIPAL WATER FINANCE AUTHORITY
BOARD OF DIRECTORS 7 AUTHORIZED MEMBERS
CHIEF EXECUTIVE OFFICER
EXECUTIVE DIRECTOR
SECRETARY
COMPTROLLER
TREASURER
DEPUTY EXECUTIVE DIRECTOR
NYC WATER BOARD
BOARD OF DIRECTORS 7 AUTHORIZED MEMBERS
EXECUTIVE DIRECTOR
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TREASURER

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Government Finance Officers Association

# Certificate of Achievement for Excellence in Financial Reporting

Presented to

**New York City**

**Water and Sewer System**

**New York**

For its Comprehensive Annual
Financial Report
for the Fiscal Year Ended

**June 30, 2018**

Christopher P. Morrill

Executive Director/CEO

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**NAMECA SHARMA**, Assistant Comptroller

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## NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

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**JOSEPH MURIN**, Chief Financial Officier

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**ELISSA STEIN CUSHMAN**, General Counsel

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### WATER AND SEWER OPERATIONS

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### SUSTAINABILITY

**ANGELA LICATA**, Deputy Commissioner

### POLICE AND SECURITY

**KEVIN T. MCBRIDE**, Deputy Commissioner

### ENGINEERING DESIGN AND CONSTRUCTION

**ANA BARRIO**, Deputy Commissioner

### ORGANIZATIONAL DEVELOPMENT AND HUMAN RESOURCES

**ZOE ANN CAMPBELL**, Deputy Commissioner

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**PAUL V. RUSH, P.E.**, Deputy Commissioner

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**CECIL MCMASTER**, Chief Information Officer

### PUBLIC AFFAIRS & COMMUNICATIONS

**MICHAEL DELOACH**, Deputy Commissioner

# FINANCIAL

Marks Paneth LLP
685 Third Avenue
New York, NY 10017
P 212.503.8800
F 212.370.3759
www.markspaneth.com

MARKS PANETH
ACCOUNTANTS & ADVISORS

# INDEPENDENT AUDITORS' REPORT

To the Members of the Joint Audit Committee of the
New York City Municipal Water Finance Authority and
New York City Water Board

We have audited the accompanying combining financial statements of the New York City Municipal Water Finance Authority and the New York City Water Board, which collectively comprise the New York City Water and Sewer System (the "System"), a component unit of The City of New York, which comprise the combining statements of net position (deficit) as of June 30, 2019 and 2018, and the related combining statements of revenues, expenses and changes in net position (deficit) and cash flows for the years then ended, and the related notes to the combining financial statements.

***Management's Responsibility for the Combining Financial Statements***

Management is responsible for the preparation and fair presentation of these combining 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 the combining financial statements that are free from material misstatement, whether due to fraud or error.

***Auditors' Responsibility***

Our responsibility is to express an opinion on these combining financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the combining financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the combining financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the combining 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 combining 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 combining financial statements.

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

Morison KSi
Independent member

***Opinion***

In our opinion, the combining financial statements referred to above present fairly, in all material respects, the financial position of the New York City Municipal Water Finance Authority and the New York City Water Board as of June 30, 2019 and 2018, and the changes in their financial position and their 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 on pages 19 through 28, the schedule of changes for total OPEB liability and related ratios on page 77, the schedule of the System's proportionate share of the net pension liability on page 78, and the schedule of the System's pension contributions on page 78 be presented to supplement the basic combining financial statements. Such information, although not a part of the basic combining 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 combining 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 combining financial statements, and other knowledge we obtained during our audits of the basic combining financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

***Other Information***

Our audits were conducted for the purpose of forming an opinion on the basic combining financial statements as a whole. The introductory and statistical sections are presented for purposes of additional analysis and are not a required part of the basic combining financial statements. The introductory and statistical sections have not been subjected to the auditing procedures applied in the audits of the basic combining financial statements and, accordingly, we do not express an opinion or provide any assurance on them.

Marks Paneth LLP

New York, NY
October 15, 2019

MARKS PANETH
ACCOUNTANTS & ADVISORS

# MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

## OVERVIEW OF THE FINANCIAL STATEMENTS

The following is an overview of the financial activities of the New York City Water and Sewer System (the "System") as of and for the fiscal years ended June 30, 2019 and 2018. The System is a joint operation consisting of two legally separate and independent entities, the New York City Municipal Water Finance Authority (the "Authority") and the New York City Water Board (the "Water Board"). The System is a component unit of the City of New York (the "City").

The financial statements consist of four parts (1) management's discussion and analysis (this section), (2) the basic financial statements, (3) the notes to the financial statements and (4) required supplementary information.

The basic financial statements of the System, which include the combining statements of net position (deficit), the combining statements of revenues, expenses and changes in net position (deficit) and the combining statements of cash flows, are presented for the purposes of displaying entity-wide information in accordance with Governmental Accounting Standards Board ("GASB") requirements. These financial statements are prepared using the economic resources measurement focus and the accrual basis of accounting. Accordingly, revenues are recognized when earned, and expenses are recorded when a liability is incurred, regardless of the timing of the related cash flows.

# FINANCIAL ANALYSIS AND RESULTS OF OPERATIONS

The following summarizes the activities of the System for the fiscal years 2019, 2018, and 2017 (in thousands):

| | 2019 | 2018 | RESTATED (a) 2017 | VARIANCE 2019 vs 2018 | VARIANCE 2018 vs 2017 |
|---|---|---|---|---|---|
| **REVENUES** | | | | | |
| **OPERATING REVENUES:** | | | | | |
| Water supply and distribution | $ 1,416,713 | $ 1,346,045 | $ 1,407,328 | $ 70,668 | $ (61,283) |
| Sewer collection and treatment | 2,252,574 | 2,140,214 | 2,237,652 | 112,360 | (97,438) |
| Bad debt expense | 852 | (18,259) | (2,620) | 19,111 | (15,639) |
| Other operating revenues | 149,660 | 187,308 | 186,355 | (37,648) | 953 |
| **TOTAL OPERATING REVENUES** | **3,819,799** | **3,655,308** | **3,828,715** | **164,491** | **(173,407)** |
| **NON-OPERATING REVENUES:** | | | | | |
| Subsidy income | 176,346 | 175,620 | 166,715 | 726 | 8,905 |
| Investment income | 91,712 | 28,809 | 4,178 | 62,903 | 24,631 |
| **TOTAL NON-OPERATING REVENUES** | **268,058** | **204,429** | **170,893** | **63,629** | **33,536** |
| **TOTAL REVENUES** | **4,087,857** | **3,859,737** | **3,999,608** | **228,120** | **(139,871)** |
| **EXPENSES** | | | | | |
| Operations and maintenance | 1,469,601 | 1,389,954 | 1,385,446 | 79,647 | 4,508 |
| Other operating expenses | 76,051 | 84,983 | 56,116 | (8,932) | 28,867 |
| General and administrative | 52,504 | 55,493 | 50,749 | (2,989) | 4,744 |
| Depreciation and amortization | 908,355 | 1,042,968 | 930,482 | (134,613) | 112,486 |
| Capital distribution | 110,750 | 22,789 | 45,789 | 87,961 | (23,000) |
| Net loss on retirement of capital assets | 2,423 | 48,609 | 44,452 | (46,186) | 4,157 |
| Loss/(gain) on defeasance | 26,058 | 14,991 | (4,808) | 11,067 | 19,799 |
| Interest expense and cost of issuance | 1,198,849 | 1,190,802 | 1,176,402 | 8,047 | 14,400 |
| **TOTAL EXPENSES** | **3,844,591** | **3,850,589** | **3,684,628** | **(5,998)** | **165,961** |
| Net gain (loss) before capital contributions | 243,266 | 9,148 | 314,980 | 234,118 | (305,832) |
| Capital Contributions | 12,448 | 19,642 | 6,225 | (7,194) | 13,417 |
| **CHANGE IN NET POSITION (DEFICIT)** | **255,714** | **28,790** | **321,205** | **226,924** | **(292,415)** |
| Net Position - Beginning | 1,083,743 | 1,054,953 | 733,748 | 28,790 | 321,205 |
| **NET POSITION - ENDING** | **$ 1,339,457** | **$ 1,083,743** | **$ 1,054,953** | **$ 255,714** | **$ 28,790** |

(a) The restatement in fiscal year 2017 is the result of the System's implementing GASB 83, *Certain Asset Retirement Obligations*.

# OPERATING REVENUES

Operating revenues are comprised of water supply and distribution, sewer collection and treatment, bad debt expense, and other operating revenues.

## 2019–2018

Operating revenues increased by $165 million or 4.5% compared to fiscal year 2018. This increase was partly due to a 2.36% rate increase adopted by the Water Board for fiscal year 2019. It also reflects a one-time credit issued by the Water Board to certain customers, which lowered revenues in fiscal year 2018, as further described below.

## 2018–2017

Operating revenues decreased by $173 million largely due to the following: (i) a one-time credit issued to residential properties holders with three or fewer units totaling $121 million and (ii) credits issued to multifamily residential properties subject to rental affordability agreements, credits to senior homeowners, and credits for leak forgiveness totaling $19.3 million.

# OTHER OPERATING REVENUES

The following further details other operating revenues for fiscal years 2019, 2018, and 2017 (in thousands):

| | | | | VARIANCE | |
|---|---|---|---|---|---|
| | 2019 | 2018 | 2017 | 2019 vs 2018 | 2018 vs 2017 |
| Upstate water fees | $ 66,180 | $ 79,688 | $ 85,410 | $ (13,508) | $ (5,722) |
| Late payment fees | 38,842 | 54,020 | 45,859 | (15,178) | 8,161 |
| Change in residual interest in sold liens | (11,752) | (2,034) | 2,274 | (9,718) | (4,308) |
| Connection fees and permits | 18,682 | 19,588 | 19,979 | (906) | (391) |
| Service line protection program | 37,708 | 36,046 | 32,833 | 1,662 | 3,213 |
| **TOTAL OTHER OPERATING REVENUES** | **$ 149,660** | **$ 187,308** | **$ 186,355** | **$ (37,648)** | **$ 953** |

## 2019–2018

Upstate water fees declined by $13.5 million due to lower sales of water charged at both the entitlement and excess rates, in particular the further reduction of excess water revenues from the City of Newburgh.

Late payment fees decreased by $15.2 million compared to fiscal year 2018 due to fewer payments made for delinquent accounts. This amount fluctuates depending on the timeliness of customer payment.

The change in residual interest in sold liens decreased by $9.7 million compared to fiscal year 2018. This was due to fewer residual liens from previous lien sales residing with the Lien Trust.

The amounts received for the service line protection program increased by $1.7 million. The number of effective policies increased from approximately 270,000 on June 30, 2018, to approximately 274,000 by the end of fiscal year 2019.

## 2018–2017

Upstate water fees declined due to lower sales of water charged at both the entitlement and excess rates, in particular the reduction of excess water revenues from the City of Newburgh.

Fiscal year 2018 late payment fees returned to a typical range. In fiscal year 2017, late payment fees were reduced by a billing adjustment made mid-year to certain accounts relating to a change in interest rate. This lowered the total amount of late payment charges for fiscal year 2017. This amount fluctuates depending on the timeliness of customer payment.

The change in residual interest in sold liens decreased by $4.3 million compared to fiscal year 2017. This was due to fewer residual liens from previous lien sales residing with the Lien Trust.

The amounts received for the service line protection program increased by $3.2 million. The number of effective policies increased from approximately 254,000 on July 1, 2017 to approximately 270,000 by the end of fiscal year 2018.

## NON-OPERATING REVENUES

Non-operating revenues are comprised of subsidy income and investment income.

### 2019–2018

Investment income increased by $63 million compared to fiscal year 2018. The increase was due to $19.2 million of unrealized gains on both investments and forward purchase agreements in fiscal year 2019, compared to a loss of $24.4 million in fiscal year 2018, higher interest rates on invested assets and a minimal increase in arbitrage rebate payments, which is recorded as an offset to investment income.

### 2018–2017

Investment income increased by $24.6 million compared to fiscal year 2017. The increase was due to higher interest rates on invested assets and a decrease in arbitrage rebate payments, which is recorded as an offset to investment income.

## OPERATING EXPENSES

Operating expenses are comprised of operations and maintenance, general and administrative, depreciation and amortization expense, and other operating expenses.

### 2019–2018

Total operations and maintenance expense increased by $79.6 million or 5.7% compared to fiscal year 2018. This is due primarily to an increase in the wastewater operating cost.

Depreciation and amortization expense decreased by $135 million compared to fiscal year 2018. In fiscal year 2018, a total of $3.7 billion of completed projects were removed from construction in progress into depreciable assets utility plant in service which resulted in the higher depreciation expense in fiscal year 2018, and along with asset retirements and adjustments, leveled out in fiscal year 2019.

### 2018–2017

Other operating expenses increased by $28.9 million compared to fiscal year 2017. The Department of Environmental Protection (“DEP”) pollution remediation obligations went up by approximately $8.0 million in fiscal year 2018 due to several projects, including the reconstruction of facilities lighting at the North River Wastewater Treatment Plant (“WWTP”), Main Sewage Pump upgrades at the Bowery Bay WWTP, the activation of the City Tunnel No. 3, Stage 2, and asbestos removal at various DEP facilities. The filtration avoidance determination (“FAD”) expense increased in fiscal year 2018 compared to fiscal year 2017. This increase was due to the wastewater management program with various New York upstate counties for maintaining and enhancing water quality.

In fiscal year 2018, depreciation expense increased due to the addition of $3.7 billion of new depreciable assets placed in service.

# NON-OPERATING EXPENSES

Non-operating expenses are comprised of interest expense, loss on defeasance, cost of issuance, net loss on retirement of capital assets, and capital distribution.

## 2019–2018

Capital distribution increased by $88.0 million in fiscal year 2019. This was due to the System acquiring more land around the reservoirs and in the Gowanus Canal area and then granting them to the City.

Interest expense and cost of issuance increased by $8.0 million. This increase was primarily due to the issuance of additional debt.

Fiscal year 2019 cash defeasance resulted in an accounting loss of $26.1 million. This represents the difference between the carrying value of the defeased bonds and the amount transferred to fund the escrow account (using current resources) to defease the bonds. This loss was reported in the Systems' combining statement of revenues, expenses and changes in net position (deficit) (see Note 9).

## 2018–2017

Net loss on retirement of capital assets increased by $4.2 million due to the disposition of assets with carrying values greater than those in fiscal year 2017. This amount fluctuates depending on the amount of fixed asset disposed.

Interest expense and cost of issuance increased by $14.4 million. This increase was primarily due to the issuance of additional debt.

Fiscal year 2018 cash defeasance resulted in an accounting loss of $15.0 million. This represents the difference between the carrying value of the defeased bonds and the amount transferred to fund the escrow account (using current resources) to defease the bonds. This loss was reported in the Systems' combining statement of revenues, expenses and changes in net position (deficit) (see Note 9).

# CHANGE IN NET POSITION (DEFICIT)

## 2019–2018

The change in net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, and capital contributions. The change in net position (deficit) increased by $227 million in fiscal year 2019.

## 2018–2017

The change in net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, and capital contributions. The change in net position (deficit) decreased by $292 million in fiscal year 2018.

# ENDING NET POSITION (DEFICIT)

## 2019–2018

The ending net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, capital contributions, and beginning balance of net position (deficit). Ending net position (deficit) increased by $256 million in fiscal year 2019.

## 2018–2017

The ending net position (deficit) represents the net total of operating revenue and expenses, non-operating revenues and expenses, capital contributions, and beginning balance of net position (deficit). Ending net position (deficit) increased by $28.8 million in fiscal year 2018.

The following is a summary of the System's assets, deferred outflows of resources, liabilities, deferred inflows of resources and net position (deficit) as of June 30 (in thousands):

| | | | RESTATED (a) | VARIANCE | |
|---|---|---|---|---|---|
| | **2019** | **2018** | **2017** | **2019 vs 2018** | **2018 vs 2017** |
| Current assets | $ 2,891,584 | $ 3,274,730 | $ 3,497,079 | $ (383,146) | $ (222,349) |
| Residual interest in sold liens | 61,822 | 73,574 | 75,607 | (11,752) | (2,033) |
| Capital assets | 30,975,053 | 30,063,299 | 29,536,272 | 911,754 | 527,027 |
| **TOTAL ASSETS** | **33,928,459** | **33,411,603** | **33,108,958** | **516,856** | **302,645** |
| **DEFERRED OUTFLOWS OF RESOURCES:** | | | | | |
| Accumulated decrease in fair value of hedging derivative | 107,158 | 76,115 | 100,438 | 31,043 | (24,323) |
| Deferred changes in net pension liability | (385) | (353) | (184) | (32) | (169) |
| Unamortized asset retirement obligation | 13,855 | 15,454 | 16,752 | (1,599) | (1,298) |
| Deferred changes in OPEB liability | 532 | 31 | – | 501 | 31 |
| **TOTAL DEFERRED OUTFLOWS OF RESOURCES** | **121,160** | **91,247** | **117,006** | **29,913** | **(25,759)** |
| **TOTAL ASSETS AND DEFERRED OUTFLOWS OF RESOURCES** | **$ 34,049,619** | **$ 33,502,850** | **$ 33,225,964** | **$ 546,769** | **$ 276,886** |
| Current liabilities | $ 1,371,692 | $ 1,251,166 | $ 1,369,149 | $ 120,526 | $ (117,983) |
| Long-term liabilities | 31,325,449 | 31,158,544 | 30,785,167 | 166,905 | 373,377 |
| **TOTAL LIABILITIES** | **32,697,141** | **32,409,710** | **32,154,316** | **287,431** | **255,394** |
| **DEFERRED INFLOWS OF RESOURCES:** | | | | | |
| Deferred changes in net pension liability | 34 | 37 | 11 | (3) | 26 |
| Deferred changes in OPEB liability | 598 | 349 | 291 | 249 | 58 |
| Unamortized deferred bond refunding costs | 12,389 | 9,011 | 16,393 | 3,378 | (7,382) |
| **TOTAL DEFERRED INFLOWS OF RESOURCES** | **13,021** | **9,397** | **16,695** | **3,624** | **(7,298)** |
| **NET POSITION (DEFICIT):** | | | | | |
| Net investment in capital assets | 437,786 | 116,124 | (204,403) | 321,662 | 320,527 |
| Restricted for debt service | 1,624,802 | 1,501,529 | 1,781,994 | 123,273 | (280,465) |
| Restricted for operations and maintenance | 260,102 | 247,304 | 237,746 | 12,798 | 9,558 |
| Unrestricted (deficit) | (983,233) | (781,214) | (760,384) | (202,019) | (20,830) |
| **TOTAL NET POSITION (DEFICIT)** | **1,339,457** | **1,083,743** | **1,054,953** | **255,714** | **28,790** |
| **TOTAL LIABILITIES, DEFERRED INFLOWS OF RESOURCES, AND NET POSITION (DEFICIT)** | **$ 34,049,619** | **$ 33,502,850** | **$ 33,225,964** | **$ 546,769** | **$ 276,886** |

(a) The restatement in fiscal year 2017 is the result of the System's implementing GASB 83, *Certain Asset Retirement Obligations.*

## CURRENT ASSETS

Current assets are comprised of restricted cash and cash equivalents, restricted investments, accrued interest and subsidy receivable, receivable from the City of New York, and accounts receivable.

### 2019–2018

Current assets decreased by $383 million or 12%. Restricted investments, including restricted cash and cash equivalents, decreased by $302 million primarily in the construction fund. Construction fund balances fluctuate due to the timing of bonds issuances and payments to the City for capital costs. Net receivable decreased by $56 million and receivable from the City decreased by $20 million.

## DEFERRED OUTFLOWS OF RESOURCES

Deferred outflows of resources are comprised of accumulated decrease in fair value of hedging derivative, deferred changes in net pension liability, unamortized asset retirement obligations, and deferred changes in OPEB liability.

### 2019–2018

Deferred outflows from hedging increased by $31.0 million or 41% compared to fiscal year 2018 due to a decline in the fair value of the hedging derivative instrument.

### 2018–2017

Accumulated decrease in fair value of hedging derivative decreased by $24.3 million or 24.2% compared to fiscal year 2017 because of an increase in the fair value of the hedging derivative instruments.

## CURRENT LIABILITIES

Current liabilities are comprised of accounts payable, interest payable, revenue received in advance, current portion of bonds and notes payable, payable to the City of New York, and service credits on customer accounts.

### 2019–2018

Current liabilities increased by $121 million or 9.6% compared to fiscal year 2018. This was primarily due to an increase of $120 million payable to the City, an increase of $58 million in the current portion of bonds and notes payable, which was offset by a decrease of $43 million of revenue received in advance and a decrease of $19 million of service credits on customer accounts.

### 2018–2017

Current liabilities decreased by $118 million or 8.6% compared to fiscal year 2017. This was primarily due to a decrease in the current portion of bonds and notes payable.

## LONG-TERM LIABILITIES

Long-term liabilities are comprised of bonds and notes payable, pollution remediation obligation, interest rate swap agreement – net, revenue requirements payable to the Authority, net pension liability, net OPEB liability, and other long-term liability.

### 2019–2018

Long-term liabilities increased by $167 million or 0.5% primarily due to the issuance of new debt to fund capital projects offset by the defeasance of debt using current revenues.

## 2018–2017

Long-term liabilities increased by $373 million or 1.2% primarily due to the issuance of new debt to fund capital projects.

# CAPITAL ASSETS

The System's capital assets include buildings, machinery and equipment, vehicles, water supply and wastewater treatment systems, and water distribution and sewage collection systems, as well as utility construction.

The Authority issues debt to pay for the capital improvements to the System and related costs. Costs related to the System's filtration avoidance determination, including land acquisition in the upstate watershed area and certain costs associated with pollution remediation, are financed with debt but are not recorded as the System assets on the combining statements of net position (deficit). The cumulative amount of expenses not capitalized as assets as of June 30, 2019 was $1.6 billion. These costs or distributions are expensed in the System's combining statements of revenues, expenses, and changes in net position (deficit) in the years incurred. The land purchased is granted to the City and becomes the City's capital asset because it is not subject to the method of capitalization under which the System reports its capital assets.

Capital assets as of June 30, are detailed as follows (in thousands):

| | | | | VARIANCE | |
|---|---|---|---|---|---|
| | **2019** | **2018** | **2017** | **2019 vs 2018** | **2018 vs 2017** |
| **NONDEPRECIABLE ASSETS:** | | | | | |
| Utility construction in progress | $ 4,717,989 | $ 3,394,126 | $ 5,475,307 | $ 1,323,863 | $ (2,081,181) |
| **DEPRECIABLE ASSETS:** | | | | | |
| Utility plant in service: | | | | | |
| Buildings | 35,821 | 35,767 | 34,936 | 54 | 831 |
| Machinery and equipment | 4,893,559 | 4,826,881 | 3,940,877 | 66,678 | 886,004 |
| Vehicles | 263,639 | 250,359 | 246,899 | 13,280 | 3,460 |
| Water supply and distribution and wastewater treatment and sewage collection systems | 36,749,341 | 36,345,548 | 33,670,666 | 403,793 | 2,674,882 |
| **TOTAL UTILITY PLANT IN SERVICE** | **41,942,360** | **41,458,555** | **37,893,378** | **483,805** | **3,565,177** |
| **LESS ACCUMULATED DEPRECIATION FOR:** | | | | | |
| Buildings | 29,602 | 28,003 | 26,455 | 1,599 | 1,548 |
| Machinery and equipment | 2,369,280 | 2,120,838 | 1,872,243 | 248,442 | 248,595 |
| Vehicles | 112,509 | 101,819 | 94,025 | 10,690 | 7,794 |
| Water supply and distribution and wastewater treatment and sewage collection systems | 13,173,905 | 12,538,722 | 11,839,690 | 635,183 | 699,032 |
| **TOTAL ACCUMULATED DEPRECIATION** | **15,685,296** | **14,789,382** | **13,832,413** | **895,914** | **956,969** |
| **TOTAL UTILITY PLANT IN SERVICE – NET** | **26,257,064** | **26,669,173** | **24,060,965** | **(412,109)** | **2,608,208** |
| **TOTAL CAPITAL ASSETS – NET** | **$ 30,975,053** | **$ 30,063,299** | **$ 29,536,272** | **$ 911,754** | **$ 527,027** |

## 2019–2018

Total gross additions to non-depreciable assets utility construction in progress were $1.8 billion and a total of $497 million of completed projects were moved from construction in progress into depreciable assets utility plant in service. This resulted in a $1.3 billion increase in construction in progress, representing a 39% net increase compared to fiscal year 2018. Total capital assets, net of depreciation, increased by $912 million, a 3% increase from fiscal year 2018 (see Note 3).

## 2018–2017

Total gross additions to non-depreciable assets utility construction in progress were $1.6 billion and a total of $3.7 billion of completed projects were moved from construction in progress into depreciable assets utility plant in service. This resulted in a $2.1 billion reduction in construction in progress, representing a 38% net decrease compared to fiscal year 2017. The System completed the construction of the Croton filtration plant at a cost of $2.4 billion, the Gowanus Canal facilities upgrade of $204 million, carbon addition facilities at various treatment plants of $121 million, supervisory control and data acquisition system at various treatment plants of $92.0 million, Catskills Delaware shaft 4 interconnection of $40.0 million, Tallman Island wet weather sewage flow maximization of $30.0 million and various other projects. Total capital assets, net of depreciation increased by $527 million, a 2% increase from fiscal year 2017 (see Note 3).

# DEBT ADMINISTRATION

The debt program of the Authority includes commercial paper notes and long-term debt issued to the public, as well as bond anticipation notes ("BANs") and interest-subsidized bonds issued to the New York State Environmental Facilities Corporation ("EFC"). Commercial program notes and BANs are interim financing instruments. In fiscal year 2019 and 2018, the Authority has not issued any commercial paper notes, relying instead on bond and BAN proceeds to reimburse the City for payments made for water and sewer capital projects. The Authority periodically issues long-term debt to retire outstanding commercial paper notes and BANs. The Authority also issues refunding bonds to refinance higher coupon debt and defeases debt using current revenues.

As of June 30, 2019, the total outstanding debt of the System was $30.0 billion, which, other than $28 million of BANs, was comprised of adjustable rate and fixed-rate long-term bonds.

The following table summarize debt program activities for the fiscal year ending June 30, 2019 (in thousands):

| | OUTSTANDING PRINCIPAL BALANCE AT JUNE 30, 2018 | ISSUED | PRINCIPAL RETIRED | PRINCIPAL DEFEASED | OUTSTANDING PRINCIPAL BALANCE AT JUNE 30, 2019 |
|---|---|---|---|---|---|
| First Resolution Bonds | $ 1,928,706 | $ – | $ (47,940) | $ (300,000) | $ 1,580,766 |
| Second Resolution Bonds | 27,870,962 | 2,859,504 | (376,854) | (1,916,070) | 28,437,542 |
| Second Resolution BANs | 215,734 | 324,824 | – | (512,960) | 27,598 |
| **TOTAL BONDS PAYABLE** | **$ 30,015,402** | **$ 3,184,328** | **$ (424,794)** | **$ (2,729,030)** | **$ 30,045,906** |

The following table summarize debt program activities for the fiscal year ending June 30, 2018 (in thousands):

| | OUTSTANDING PRINCIPAL BALANCE AT JUNE 30, 2017 | ISSUED | PRINCIPAL RETIRED | PRINCIPAL DEFEASED | OUTSTANDING PRINCIPAL BALANCE AT JUNE 30, 2018 |
|---|---|---|---|---|---|
| First Resolution Bonds | $ 2,429,956 | $ – | $ (15,430) | $ (485,820) | $ 1,928,706 |
| Second Resolution Bonds | 27,241,067 | 2,941,846 | (381,086) | (1,930,865) | 27,870,962 |
| Second Resolution BANs | 359,375 | 571,767 | – | (715,408) | 215,734 |
| **TOTAL BONDS PAYABLE** | **$ 30,030,398** | **$ 3,513,613** | **$ (396,516)** | **$ (3,132,093)** | **$ 30,015,402** |

In fiscal year 2019, the Authority issued $2.1 billion of water and sewer system revenue bonds to the public, including $1.1 billion of refunding bonds and $985 million of new money bonds. Additionally, the Authority issued $485 million of new money and $320 million of refunding water and sewer system revenue bonds to EFC. The Authority used new money bond proceeds to finance capital improvements to the System, to provide long-term financing of BANs that previously financed capital improvements to the System, and to pay for bond issuance costs.

During fiscal year 2019, the Authority issued $1.4 billion of bonds to refund $1.6 billion of outstanding bonds. These refundings resulted in an accounting gain of $6.0 million. The Authority reduced its aggregate debt service for principal and interest by $431 million and obtained an economic benefit (present value savings) of $326 million.

During fiscal year 2019, the Authority legally defeased $639 million of outstanding bonds using current resources. This resulted in an accounting loss of $25 million and a gross debt service savings of $1.3 billion.

In fiscal year 2018, the Authority issued $2.3 billion of water and sewer system revenue bonds to the public, including $1.4 billion of refunding bonds and $833 million of new money bonds. Additionally, the Authority issued $669 million of new money water and sewer system revenue bonds to EFC. The Authority used new money bond proceeds to finance capital improvements to the System, to provide long-term financing of BANs that previously financed capital improvements to the System, and to pay for bond issuance costs (see Note 9).

During fiscal year 2018, the Authority legally defeased $769 million of outstanding bonds using current resources. This resulted in an accounting loss of $15.0 million and a gross debt service savings of $1.7 billion (see Note 9).

## REQUEST FOR INFORMATION

This financial report is provided as an overview of the System's finances. Questions concerning any of the information in this report or requests for additional information should be directed to Investor Relations, New York City Municipal Water Finance Authority, 255 Greenwich Street, New York, New York 10007 or to NYWInvestors@omb.nyc.gov.

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# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2019

| ASSETS AND DEFERRED OUTFLOWS OF RESOURCES | WATER BOARD | NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY | ELIMINATIONS | TOTAL |
|---|---|---|---|---|
| | | (IN THOUSANDS) | | |
| **ASSETS:** | | | | |
| **CURRENT ASSETS:** | | | | |
| Restricted cash and cash equivalents | $ 15,664 | $ 1,306,377 | $ – | $ 1,322,041 |
| Restricted investments | 256,702 | 574,615 | – | 831,317 |
| Accrued interest and subsidy receivable | 2 | 7,387 | – | 7,389 |
| Accounts receivable: | | | | |
| Billed – less allowance for uncollectable water and sewer receivables of $403,455 | 381,973 | – | – | 381,973 |
| Unbilled – less allowance for uncollectable water and sewer receivables of $27,618 | 348,864 | – | – | 348,864 |
| **TOTAL CURRENT ASSETS** | **1,003,205** | **1,888,379** | **-** | **2,891,584** |
| **NON-CURRENT ASSETS:** | | | | |
| Utility plant in service – less accumulated depreciation of $15,685,296 | 26,257,064 | – | – | 26,257,064 |
| Utility plant construction | 4,717,989 | – | – | 4,717,989 |
| **TOTAL CAPITAL ASSETS** | **30,975,053** | **-** | **-** | **30,975,053** |
| Residual interest in sold liens | 61,822 | – | – | 61,822 |
| Revenue required to be billed by and received from the Water Board | – | 11,199,913 | (11,199,913) | – |
| **TOTAL NON-CURRENT ASSETS** | **31,036,875** | **11,199,913** | **(11,199,913)** | **31,036,875** |
| **TOTAL ASSETS** | **32,040,080** | **13,088,292** | **(11,199,913)** | **33,928,459** |
| **DEFERRED OUTFLOWS OF RESOURCES:** | | | | |
| Accumulated decrease in fair value of hedging derivative | – | 107,158 | – | 107,158 |
| Deferred changes in net pension liability | – | (385) | – | (385) |
| Unamortized asset retirement obligations | 13,855 | – | – | 13,855 |
| Deferred changes in OPEB liability | – | 532 | – | 532 |
| **TOTAL DEFERRED OUTFLOWS OF RESOURCES** | **13,855** | **107,305** | **-** | **121,160** |
| **TOTAL ASSETS AND DEFERRED OUTFLOWS OF RESOURCES** | **$ 32,053,935** | **$ 13,195,597** | **$ (11,199,913)** | **$ 34,049,619** |

See notes to combining financial statements.

(Continued)

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2019

| LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT) | NEW YORK CITY WATER BOARD | NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY | ELIMINATIONS | TOTAL |
|---|---|---|---|---|
| | (IN THOUSANDS) | | | |
| **LIABILITIES:** | | | | |
| **CURRENT LIABILITIES:** | | | | |
| Accounts payable | $ 10,758 | $ 6,172 | $ – | $ 16,930 |
| Interest payable | – | 53,514 | – | 53,514 |
| Revenue received in advance | 15,384 | – | – | 15,384 |
| Current portion of bonds and notes payable | – | 509,299 | – | 509,299 |
| Payable to the City of New York | 19,905 | 695,328 | – | 715,233 |
| Service credits on customer accounts | 61,332 | – | – | 61,332 |
| **TOTAL CURRENT LIABILITIES** | **107,379** | **1,264,313** | **-** | **1,371,692** |
| **LONG-TERM LIABILITIES:** | | | | |
| Bonds and notes payable | – | 31,162,950 | – | 31,162,950 |
| Pollution remediation obligation | 33,021 | – | – | 33,021 |
| Interest rate swap agreement – net | – | 107,158 | – | 107,158 |
| Revenue requirements payable to the Authority | 11,199,913 | – | (11,199,913) | – |
| Net pension liability | – | 393 | – | 393 |
| Net OPEB liability | – | 1,828 | – | 1,828 |
| Other long-term liability | 17,850 | 2,249 | – | 20,099 |
| **TOTAL LONG-TERM LIABILITIES** | **11,250,784** | **31,274,578** | **(11,199,913)** | **31,325,449** |
| **TOTAL LIABILITIES** | **11,358,163** | **32,538,891** | **(11,199,913)** | **32,697,141** |
| **DEFERRED INFLOWS OF RESOURCES:** | | | | |
| Unamortized deferred bond refunding costs | – | 12,389 | – | 12,389 |
| Deferred changes in net pension liability | – | 34 | – | 34 |
| Deferred changes in OPEB liability | – | 598 | – | 598 |
| **TOTAL DEFERRED INFLOWS OF RESOURCES** | **-** | **13,021** | **-** | **13,021** |
| **NET POSITION (DEFICIT):** | | | | |
| Net investment in capital assets | 30,975,053 | (30,537,267) | – | 437,786 |
| Restricted for debt service | – | 1,624,802 | – | 1,624,802 |
| Restricted for operations and maintenance | 260,102 | – | – | 260,102 |
| Unrestricted (deficit) | (10,539,383) | 9,556,150 | – | (983,233) |
| **TOTAL NET POSITION (DEFICIT)** | **20,695,772** | **(19,356,315)** | **-** | **1,339,457** |
| **TOTAL LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT)** | **$ 32,053,935** | **$ 13,195,597** | **$ (11,199,913)** | **$ 34,049,619** |

See notes to combining financial statements.

(Concluded)

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2018

| ASSETS AND DEFERRED OUTFLOWS OF RESOURCES | | WATER BOARD | | NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY | | ELIMINATIONS | | TOTAL |
|---|---|---|---|---|---|---|---|---|
| | | | | (IN THOUSANDS) | | | | |
| **ASSETS:** | | | | | | | | |
| **CURRENT ASSETS:** | | | | | | | | |
| Restricted cash and cash equivalents | $ | 9,007 | $ | 1,265,802 | $ | – | $ | 1,274,809 |
| Restricted investments | | 247,302 | | 932,776 | | – | | 1,180,078 |
| Accrued interest and subsidy receivable | | – | | 13,389 | | – | | 13,389 |
| Accounts receivable: | | | | | | | | |
| Billed – less allowance for uncollectable water and sewer receivables of $404,018 | | 429,663 | | – | | – | | 429,663 |
| Unbilled – less allowance for uncollectable water and sewer receivables of $27,907 | | 356,581 | | – | | – | | 356,581 |
| Receivable from the City of New York | | 20,210 | | – | | – | | 20,210 |
| **TOTAL CURRENT ASSETS** | | **1,062,763** | | **2,211,967** | | **-** | | **3,274,730** |
| **NON-CURRENT ASSETS:** | | | | | | | | |
| Utility plant in service – less accumulated depreciation of $14,789,382 | | 26,669,173 | | – | | – | | 26,669,173 |
| Utility plant construction | | 3,394,126 | | – | | – | | 3,394,126 |
| **TOTAL CAPITAL ASSETS** | | **30,063,299** | | **-** | | **-** | | **30,063,299** |
| Residual interest in sold liens | | 73,574 | | – | | – | | 73,574 |
| Revenue required to be billed by and received from the Water Board | | – | | 11,588,295 | | (11,588,295) | | – |
| **TOTAL NON-CURRENT ASSETS** | | **30,136,873** | | **11,588,295** | | **(11,588,295)** | | **30,136,873** |
| **TOTAL ASSETS** | | **31,199,636** | | **13,800,262** | | **(11,588,295)** | | **33,411,603** |
| **DEFERRED OUTFLOWS OF RESOURCES:** | | | | | | | | |
| Accumulated decrease in fair value of hedging derivative | | – | | 76,115 | | – | | 76,115 |
| Deferred changes in net pension liability | | – | | (353) | | – | | (353) |
| Unamortized asset retirement obligations | | 15,454 | | – | | – | | 15,454 |
| Deferred changes in OPEB liability | | – | | 31 | | – | | 31 |
| **TOTAL DEFERRED OUTFLOWS OF RESOURCES** | | **15,454** | | **75,793** | | **-** | | **91,247** |
| **TOTAL ASSETS AND DEFERRED OUTFLOWS OF RESOURCES** | **$** | **31,215,090** | **$** | **13,876,055** | **$** | **(11,588,295)** | **$** | **33,502,850** |

See notes to combining financial statements.

(Continued)

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF NET POSITION (DEFICIT)

JUNE 30, 2018

| LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT) | WATER BOARD | NEW YORK CITY MUNICIPAL WATER FINANCE AUTHORITY | ELIMINATIONS | TOTAL |
|---|---|---|---|---|
| | | (IN THOUSANDS) | | |
| **LIABILITIES:** | | | | |
| **CURRENT LIABILITIES:** | | | | |
| Accounts payable | $ 6,871 | $ 5,719 | $ – | $ 12,590 |
| Interest payable | – | 53,203 | – | 53,203 |
| Revenue received in advance | 58,537 | – | – | 58,537 |
| Current portion of bonds and notes payable | – | 451,477 | – | 451,477 |
| Payable to the City of New York | – | 595,020 | – | 595,020 |
| Service credits on customer accounts | 80,339 | – | – | 80,339 |
| **TOTAL CURRENT LIABILITIES** | **145,747** | **1,105,419** | **-** | **1,251,166** |
| **LONG-TERM LIABILITIES:** | | | | |
| Bonds and notes payable | – | 31,023,455 | – | 31,023,455 |
| Pollution remediation obligation | 37,561 | – | – | 37,561 |
| Interest rate swap agreement – net | – | 76,115 | – | 76,115 |
| Revenue requirements payable to the Authority | 11,588,295 | – | (11,588,295) | – |
| Net pension liability | – | 516 | – | 516 |
| Net OPEB liability | – | 1,457 | – | 1,457 |
| Other long-term liability | 18,051 | 1,389 | – | 19,440 |
| **TOTAL LONG-TERM LIABILITIES** | **11,643,907** | **31,102,932** | **(11,588,295)** | **31,158,544** |
| **TOTAL LIABILITIES** | **11,789,654** | **32,208,351** | **(11,588,295)** | **32,409,710** |
| **DEFERRED INFLOWS OF RESOURCES:** | | | | |
| Unamortized deferred bond refunding costs | – | 9,011 | – | 9,011 |
| Deferred changes in net pension liability | – | 37 | – | 37 |
| Deferred changes in OPEB liability | – | 349 | – | 349 |
| **TOTAL DEFERRED INFLOWS OF RESOURCES** | **-** | **9,397** | **-** | **9,397** |
| **NET POSITION (DEFICIT):** | | | | |
| Net investment in capital assets | 30,063,299 | (29,947,175) | – | 116,124 |
| Restricted for debt service | – | 1,501,529 | – | 1,501,529 |
| Restricted for operations and maintenance | 247,304 | – | – | 247,304 |
| Unrestricted (deficit) | (10,885,167) | 10,103,953 | – | (781,214) |
| **TOTAL NET POSITION (DEFICIT)** | **19,425,436** | **(18,341,693)** | **-** | **1,083,743** |
| **TOTAL LIABILITIES, DEFERRED INFLOWS OF RESOURCES AND NET POSITION (DEFICIT)** | **$ 31,215,090** | **$ 13,876,055** | **$ (11,588,295)** | **$ 33,502,850** |

See notes to combining financial statements.

(Concluded)

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION (DEFICIT)

FOR THE YEAR ENDED JUNE 30, 2019

| | NEW YORK CITY | | |
|---|---|---|---|
| | WATER BOARD | MUNICIPAL WATER FINANCE AUTHORITY | TOTAL |
| | | (IN THOUSANDS) | |
| **OPERATING REVENUES:** | | | |
| Water supply and distribution | $ 1,416,713 | $ - | $ 1,416,713 |
| Sewer collection and treatment | 2,252,574 | - | 2,252,574 |
| Bad debt expense | 852 | - | 852 |
| Other operating revenues | 149,660 | - | 149,660 |
| **TOTAL OPERATING REVENUES** | **3,819,799** | **-** | **3,819,799** |
| **OPERATING EXPENSES:** | | | |
| Operations and maintenance | 1,469,601 | - | 1,469,601 |
| General and administrative | 4,580 | 47,924 | 52,504 |
| Other operating expenses | 76,051 | - | 76,051 |
| Depreciation and amortization expense | 908,355 | - | 908,355 |
| **TOTAL OPERATING EXPENSES** | **2,458,587** | **47,924** | **2,506,511** |
| **OPERATING INCOME (LOSS)** | **1,361,212** | **(47,924)** | **1,313,288** |
| **NON-OPERATING REVENUES (EXPENSES):** | | | |
| Interest expense | - | (1,180,801) | (1,180,801) |
| Loss on defeasance | - | (26,058) | (26,058) |
| Cost of issuance | - | (18,048) | (18,048) |
| Net loss on retirement and impairment of capital assets | (2,423) | - | (2,423) |
| Subsidy income | - | 176,346 | 176,346 |
| Capital distributions | (110,750) | - | (110,750) |
| Investment income | 9,849 | 81,863 | 91,712 |
| **NET INCOME (LOSS) BEFORE CAPITAL CONTRIBUTIONS** | **1,257,888** | **(1,014,622)** | **243,266** |
| Capital contributions | 12,448 | - | 12,448 |
| **CHANGE IN NET POSITION (DEFICIT)** | **1,270,336** | **(1,014,622)** | **255,714** |
| NET POSITION (DEFICIT) - Beginning of year | 19,425,436 | (18,341,693) | 1,083,743 |
| **NET POSITION (DEFICIT) - END OF YEAR** | **$ 20,695,772** | **$ (19,356,315)** | **$ 1,339,457** |

See notes to combining financial statements.

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF REVENUES, EXPENSES AND CHANGES IN NET POSITION (DEFICIT)

FOR THE YEAR ENDED JUNE 30, 2018

| | | NEW YORK CITY | | | | |
|---|---|---|---|---|---|---|
| | | WATER BOARD | | MUNICIPAL WATER FINANCE AUTHORITY | | TOTAL |
| | | | | (IN THOUSANDS) | | |
| **OPERATING REVENUES:** | | | | | | |
| Water supply and distribution | $ | 1,346,045 | $ | – | $ | 1,346,045 |
| Sewer collection and treatment | | 2,140,214 | | – | | 2,140,214 |
| Bad debt expense | | (18,259) | | – | | (18,259) |
| Other operating revenues | | 187,308 | | – | | 187,308 |
| **TOTAL OPERATING REVENUES** | | **3,655,308** | | **-** | | **3,655,308** |
| **OPERATING EXPENSES:** | | | | | | |
| Operations and maintenance | | 1,389,954 | | – | | 1,389,954 |
| General and administrative | | 5,661 | | 49,832 | | 55,493 |
| Other operating expenses | | 84,983 | | – | | 84,983 |
| Depreciation and amortization expense | | 1,042,968 | | – | | 1,042,968 |
| **TOTAL OPERATING EXPENSES** | | **2,523,566** | | **49,832** | | **2,573,398** |
| **OPERATING INCOME (LOSS)** | | **1,131,742** | | **(49,832)** | | **1,081,910** |
| **NON-OPERATING REVENUES (EXPENSES):** | | | | | | |
| Interest expense | | – | | (1,171,567) | | (1,171,567) |
| Loss on defeasance | | – | | (14,991) | | (14,991) |
| Cost of issuance | | – | | (19,235) | | (19,235) |
| Net loss on retirement and impairment of capital assets | | (48,609) | | – | | (48,609) |
| Subsidy income | | – | | 175,620 | | 175,620 |
| Capital distributions | | (22,789) | | – | | (22,789) |
| Investment income | | 5,923 | | 22,886 | | 28,809 |
| **NET INCOME (LOSS) BEFORE CAPITAL CONTRIBUTIONS** | | **1,066,267** | | **(1,057,119)** | | **9,148** |
| Capital contributions | | 19,642 | | – | | 19,642 |
| **CHANGE IN NET POSITION (DEFICIT)** | | **1,085,909** | | **(1,057,119)** | | **28,790** |
| NET POSITION (DEFICIT) – Beginning of year | | 18,339,527 | | (17,284,574) | | 1,054,953 |
| **NET POSITION (DEFICIT) – END OF YEAR** | **$** | **19,425,436** | **$** | **(18,341,693)** | **$** | **1,083,743** |

See notes to combining financial statements.

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2019

| | NEW YORK CITY | | |
|---|---|---|---|
| | **WATER BOARD** | **MUNICIPAL WATER FINANCE AUTHORITY** | **TOTAL** |
| | | **(IN THOUSANDS)** | |
| **CASH FLOWS FROM OPERATING ACTIVITIES:** | | | |
| Receipts from customers | $ 3,824,799 | $ - | $ 3,824,799 |
| Payments for operations and maintenance | (1,462,395) | - | (1,462,395) |
| Payments for administration | (1,027) | (47,865) | (48,892) |
| **NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES** | **2,361,377** | **(47,865)** | **2,313,512** |
| **CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:** | | | |
| Proceeds from issuing bonds, notes and other borrowings - net of issuance costs | - | 3,463,013 | 3,463,013 |
| Receipts from contribution made by other organization | 292 | - | 292 |
| Acquisition and construction of capital assets | - | (1,867,102) | (1,867,102) |
| Payments by the Water Board to the Authority | (2,355,459) | 2,355,459 | - |
| Repayments of bonds, notes and other borrowings | - | (3,193,878) | (3,193,878) |
| Interest paid on bonds, notes and other borrowings | - | (1,116,389) | (1,116,389) |
| **NET CASH PROVIDED BY (USED IN) CAPITAL AND RELATED FINANCING ACTIVITIES** | **(2,355,167)** | **(358,897)** | **(2,714,064)** |
| **CASH FLOWS FROM INVESTING ACTIVITIES:** | | | |
| Sales and maturities of investments | 287,087 | 404,270 | 691,357 |
| Purchases of investments | (293,999) | (26,945) | (320,944) |
| Interest on investments | 7,359 | 70,012 | 77,371 |
| **NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES** | **447** | **447,337** | **447,784** |
| **NET INCREASE IN CASH AND CASH EQUIVALENTS** | **6,657** | **40,575** | **47,232** |
| CASH AND CASH EQUIVALENTS - Beginning of year | 9,007 | 1,265,802 | 1,274,809 |
| **CASH AND CASH EQUIVALENTS - END OF YEAR** | **$ 15,664** | **$ 1,306,377** | **$ 1,322,041** |

See notes to combining financial statements.

(Continued)

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2019

| | NEW YORK CITY | | |
|---|---|---|---|
| | **WATER BOARD** | **MUNICIPAL WATER FINANCE AUTHORITY** | **TOTAL** |
| | **(IN THOUSANDS)** | | |
| **RECONCILIATION OF OPERATING INCOME / (LOSS) TO NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES:** | | | |
| Operating income (loss) | $ 1,361,212 | $ (47,924) | $ 1,313,288 |
| Adjustments to reconcile operating income (loss) to net cash provided by (used in) operating activities: | | | |
| Amortization | 1,446 | – | 1,446 |
| Depreciation | 906,909 | – | 906,909 |
| Other operating expenses paid for with bond proceeds | 38,969 | – | 38,969 |
| Pollution remediation expense | 8,712 | – | 8,712 |
| Changes in assets and liabilities: | | | |
| Pollution remediation liability | (4,539) | – | (4,539) |
| Receivables – net | 55,406 | – | 55,406 |
| Receivable from the City | 40,115 | – | 40,115 |
| Residual interest in sold liens | 11,752 | – | 11,752 |
| Accounts payable | 3,553 | 59 | 3,612 |
| Revenues received in advance | (43,153) | – | (43,153) |
| Refunds payable | (19,005) | – | (19,005) |
| **NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES** | **$ 2,361,377** | **$ (47,865)** | **$ 2,313,512** |

**The following are the noncash capital and related financing activities (in thousands):**

Interest expense includes the amortization of net (premium) and discount in the amount of $108,682 at June 30, 2019.

Capital expenditures in the amount of $695,328 had been incurred but not paid at June 30, 2019.

The Water Board received federal, state, and other capital contributions of $12,156 in fiscal year 2019.

See notes to combining financial statements. (Concluded)

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2018

| | NEW YORK CITY | | |
|---|---|---|---|
| | WATER BOARD | MUNICIPAL WATER FINANCE AUTHORITY | TOTAL |
| | | (IN THOUSANDS) | |
| **CASH FLOWS FROM OPERATING ACTIVITIES:** | | | |
| Receipts from customers | $ 3,602,297 | $ – | $ 3,602,297 |
| Payments for operations and maintenance | (1,411,311) | – | (1,411,311) |
| Payments for administration | (2,042) | (50,201) | (52,243) |
| **NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES** | **2,188,944** | **(50,201)** | **2,138,743** |
| **CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES:** | | | |
| Proceeds from issuing bonds, notes and other borrowings – net of issuance costs | – | 3,858,636 | 3,858,636 |
| Receipts from contribution made by other organization | 292 | – | 292 |
| Acquisition and construction of capital assets | – | (1,592,121) | 1,592,121 |
| Payments by the Water Board to the Authority | (2,187,383) | 2,187,383 | – |
| Repayments of bonds, notes and other borrowings | – | (3,582,676) | (3,582,676) |
| Interest paid on bonds, notes and other borrowings | – | (1,113,958) | (1,113,958) |
| **NET CASH PROVIDED BY (USED IN) CAPITAL AND RELATED FINANCING ACTIVITIES** | **(2,187,091)** | **(242,736)** | **(2,429,827)** |
| **CASH FLOWS FROM INVESTING ACTIVITIES:** | | | |
| Sales and maturities of investments | 197,049 | 287,336 | 484,385 |
| Purchases of investments | (205,582) | (368,337) | (573,919) |
| Interest on investments | 4,496 | 39,189 | 43,685 |
| **NET CASH PROVIDED BY (USED IN) INVESTING ACTIVITIES** | **(4,037)** | **(41,812)** | **(45,849)** |
| **NET DECREASE IN CASH AND CASH EQUIVALENTS** | **(2,184)** | **(334,749)** | **(336,933)** |
| CASH AND CASH EQUIVALENTS – Beginning of year | 11,191 | 1,600,551 | 1,611,742 |
| **CASH AND CASH EQUIVALENTS – END OF YEAR** | **$ 9,007** | **$ 1,265,802** | **$ 1,274,809** |

See notes to combining financial statements.

(Continued)

# NEW YORK CITY WATER AND SEWER SYSTEM
# COMBINING STATEMENTS OF CASH FLOWS

FOR THE YEAR ENDED JUNE 30, 2018

| | | | | NEW YORK CITY | | |
|---|---|---|---|---|---|---|
| | | WATER BOARD | | MUNICIPAL WATER FINANCE AUTHORITY | | TOTAL |
| | | | | (IN THOUSANDS) | | |
| **RECONCILIATION OF OPERATING INCOME / (LOSS) TO NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES:** | | | | | | |
| Operating income (loss) | $ | 1,131,742 | $ | (49,832) | $ | 1,081,910 |
| Adjustments to reconcile operating income (loss) to net cash provided by (used in) operating activities: | | | | | | |
| Amortization | | 1,299 | | – | | 1,299 |
| Depreciation | | 1,041,669 | | – | | 1,041,669 |
| Other operating expenses paid for with bond proceeds | | 34,280 | | – | | 34,280 |
| Pollution remediation expense | | 6,979 | | – | | 6,979 |
| Changes in assets and liabilities: | | | | | | |
| Pollution remediation liability | | 8,061 | | – | | 8,061 |
| Receivables – net | | (54,343) | | – | | (54,343) |
| Receivable from the City | | 14,305 | | – | | 14,305 |
| Residual interest in sold liens | | 2,034 | | – | | 2,034 |
| Accounts payable | | 3,620 | | (369) | | 3,251 |
| Revenues received in advance | | (11,024) | | – | | (11,024) |
| Refunds payable | | 10,322 | | – | | 10,322 |
| **NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES** | **$** | **2,188,944** | **$** | **(50,201)** | **$** | **2,138,743** |

**The following are the noncash capital and related financing activities (in thousands):**

Interest expense includes the amortization of net (premium) and discount in the amount of $92,719 at June 30, 2018.

Capital expenditures in the amount of $595,020 had been incurred but not paid at June 30, 2018.

The Water Board received federal, state, and other capital contributions of $19,350 in fiscal year 2018.

See notes to combining financial statements.

(Concluded)

# NOTES TO COMBINING FINANCIAL STATEMENTS
## AS OF AND FOR THE YEARS ENDED JUNE 30, 2019 AND 2018

## 1. ORGANIZATION

The New York City Water and Sewer System (the "System") provides water supply, treatment and distribution, and sewage collection, treatment, and disposal for the citizenry of the City of New York (the "City"). The System, as presented in the accompanying combining financial statements, began operations on July 1, 1985 and is a joint operation consisting of two legally separate and independent entities: the New York City Municipal Water Finance Authority (the "Authority") and the New York City Water Board (the "Water Board"). The Authority is a public benefit corporation created in accordance with the New York City Municipal Water Finance Act (the "Act"), duly enacted into law as Chapter 513 of the laws of 1984 of the State of New York (the "State"), as amended by Chapter 514 of the laws of 1984 of the State of New York. The Water Board was created by Chapter 515 of the laws of 1984 of the State of New York. The Act also empowers the Authority to issue debt to finance the cost of capital improvements to the System and to refund any and all outstanding bonds and general obligation bonds that the City issued for water and sewer purposes. The Act empowers the Water Board to lease the System from the City and to set and collect water rates, fees, rents and other charges for use of, or for services furnished, rendered, or made available by, the System to generate enough revenue to pay debt service on the Authority's debt and to place the System on a self-sustaining basis.

The Financing Agreement by and among the City of New York, the New York City Municipal Water Finance Authority and the New York City Water Board dated as of July 1, 1985 (the "Agreement") provides that the Authority will issue bonds to finance the cost of capital investment and related costs of the System. It also sets forth the funding priority for debt service costs of the Authority, operating costs of the System, and the rental payment to the City.

The physical operation and capital improvements of the System are performed by the City's Department of Environmental Protection ("DEP") subject to contractual agreements with the Authority and the Water Board.

In accordance with Governmental Accounting Standards Board ("GASB") standards, the Water Board and the Authority are considered to be part of the same reporting entity (the "System") since they are fiscally interdependent. Accordingly, the accompanying combining financial statements for the System present the individual financial statements of the Water Board and the Authority as major funds. In addition, the accompanying combining financial statements present a total column, which represents the entity-wide financial statements of the System. Transactions and balances between the Water Board and the Authority are eliminated in the entity-wide combining financial statements.

## 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accompanying financial statements of the System have been prepared on the accrual basis of accounting. Revenues are recognized when earned and expenses are recognized when incurred. Other significant accounting policies are:

**Component Unit—** The System is a component unit of the City. The System leases the water and sewer related capital assets from the City, which is responsible for the operations, maintenance and capital improvement of the System. The System reimburses the City for costs incurred for operations and maintenance and issues debt to pay for capital improvements.

**Investments and Cash Equivalents—** Investments and cash equivalents primarily consist of securities of the United States and its agencies, guaranteed investment contracts, forward purchase agreements, and the State of New York obligations. All investments are carried at fair value with the exception of money market funds that are carried at cost plus accrued interest. For purposes of the combining statements of cash flows and combining statements of net position (deficit), the System generally considers all highly-liquid debt instruments purchased with an original maturity of three months or less to be cash equivalents.

**Restricted Assets—** Proceeds from the issuance of debt and monies set aside for debt service and operation and maintenance of the System are classified as restricted cash and cash equivalents and restricted investments in the combining statements of net position (deficit), these restrictions are based on the requirements of the applicable bond resolutions.

**Lien Sales and Residual Interest in Sold Liens—** The City periodically sells tax liens secured by water and sewer rents and surcharges, for which the Water Board receives the applicable sale proceeds. At the time of sale, the Water Board recognizes the proceeds as operating revenue and removes the related receivables. The Water Board maintains a residual interest in the liens, which represents the amount estimated to be received by the Water Board if and when liens held by the purchasing trusts generate cash flows above the amounts needed by the trusts to pay their operating costs, bondholders, and satisfy reserve requirements.

**Bond Premium and Discount and Bond Issuance Cost—** Bond premiums and discounts are capitalized and amortized over the life of the related bond issue, using the effective yield method of amortization for bond premiums and discounts. Bond premiums and discounts are presented as additions or reductions to the face amount of the long-term bonds payable on the combining statements of net position (deficit). The amortized bond premiums and discounts are an off-set to interest expense on the combining statements of revenues, expenses and changes in net position (deficit). Bond issuance costs are recognized and expensed in the period incurred, except for bond insurance premiums that are amortized over the life of the related bonds.

**Utility Plant—** Utility plant acquired through purchase or internal construction is recorded at cost, net of retirements. It is the Water Board's policy to capitalize assets with a cost of $35,000 or more and a useful life of five years or longer. Contributed utility plant is recorded at its estimated historical cost based on appraisals or other methods when historical cost information is not available, net of accumulated depreciation. Depreciation is computed using the straight-line method based upon estimated useful lives, as follows:

| ASSETS | YEARS |
|---|---|
| Buildings | 40–50 |
| Water supply and wastewater treatment systems | 15–50 |
| Water distribution and sewage collection systems | 15–75 |
| Machinery and equipment | 5–35 |
| Vehicles | 10 |

# 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Maintenance and repairs of property are charged to maintenance expense. Replacements and betterments are recorded as additions to utility plant. The System pays for certain improvements of assets that are not owned by the City or the System, as well as certain pollution remediation activities, through bond proceeds. These costs are shown as other operating expenses in the System's combining statements of revenues, expenses and changes in net position (deficit).

**Contributed Capital—** The System received federal, State and other capital contributions of $12.2 million and $19.4 million in fiscal years 2019 and 2018, respectively. These amounts are reported in the System's combining statements of revenues, expenses and changes in net position (deficit) below net income (loss) before capital contributions.

In addition, the System received $292,000 in fiscal years 2019 and 2018 respectively, from Westchester County (the "County") to compensate the System for constructing a water conduit that provides treated water to the County. The County payments are reported as capital contributions in the System's combining statements of revenues, expenses and changes in net position (deficit) below net income (loss) before capital contributions and as receipts from contribution made by other organization in the System's combining statements of cash flows.

**Operating Revenues and Operating Expenses—** Operating revenues consist of services provided to customers of the System. Revenues are reported net of allowances, discounts and refunds and are based on billing rates imposed by the Water Board and upon customers' water and sewer usage or, in some cases, characteristics of customer properties. The System records unbilled revenue at year-end based on meter readings collected as of June 30. As of June 30, 2019 and 2018, the System reported credits of $20.1 million and $141 million, respectively.

Operating expenses include, but are not limited to costs incurred for maintenance, repair, and operations of the System; administration costs of the Water Board and the Authority; and rental payments to the City, if requested. In fiscal years 2019 and 2018, the City did not request a rental payment.

**Revenues Received in Advance—** Revenues received in advance of the period to which they relate are unearned and recorded as revenue when earned. Customer account credit balances are reported as a current liability "service credits on customer accounts", and is not included in accounts receivable.

**Unamortized Deferred Bond Refunding Costs—** Deferred bond refunding costs represent the accounting gains or losses incurred in advance and current bond refundings. It is reported as deferred outflows of resources or deferred inflows of resources and is amortized over the lesser of the remaining life of the old debt or the life of the new debt. The amortized deferred bond refunding cost is an offset of interest expense on the combining statements of revenues, expenses and changes in net position (deficit).

**Use of Estimates—**The preparation of the combining financial statements in accordance with accounting principles generally accepted in the United States of America, requires management to make estimates and assumptions in determining the amounts of assets, deferred outflows of resources, liabilities, deferred inflows of resources, and disclosure of contingent liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

**Pensions—** Net pension liabilities are required to be recognized and disclosed using the accrual basis of accounting. The Authority recognizes a net pension liability for New York City Employee Retirement System Qualified Pension Plan ("NYCERS QPP" or "Pension Plan") in which it participates, which represents the Authority's proportional share of excess total pension liability over the Pension Plan assets—actuarially calculated—of a cost-sharing multiple-employer plan, measured as of the fiscal year-end.

## 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Changes in the net pension liability during the period are recorded as pension expense, or as deferred inflow of resources or deferred outflow of resources depending on the nature of the change, in the period incurred. Those changes in net pension liability that are recorded as deferred inflow of resources or deferred outflow of resources are amortized over the weighted average remaining service life of all participants in the qualified Pension Plan and recorded as a component of pension expense beginning with the period in which they are incurred. The change in the Authority's proportion of the collective net pension liability and collective deferred outflow of resources and deferred inflow of resources related to the pension since the prior measurement date is recognized in current reporting period over a closed period that is equal to the average of the expected remaining service lives of all employees provided with a pension through the Pension Plan.

For the contribution to the Pension Plan, the difference during the measurement period between the total amount of the Authority's contribution and the amount of the Authority's proportionate share of the total of such contributions from all employers and all nonemployee contributing entities is recognized in the Authority's pension expense, beginning in the current reporting period, over a closed period that is equal to the average of the expected remaining service lives of all employees provided with pension through the Pension Plan. The amount not recognized in pension expense is reported as deferred outflow of resources or deferred inflow of resources related to the pension.

Projected earnings on qualified Pension Plan investments are recognized as a component (reduction) of pension expense. Differences between projected and actual investment earnings are reported as deferred inflow of resources or deferred outflow of resources and amortized as a component of pension expense on a closed basis over a five-year period beginning with the period in which the difference occurred.

Changes in total pension liability arising from changes of benefit terms are required to be included in pension expense in the period the change is first reported in the net pension liability. The changes in the total pension liability resulting from (1) differences between expected and actual experience with regard to economic and demographic factors and (2) changes of assumptions regarding the expected future behavior of economic and demographic factors or other inputs are recognized as a deferred outflow of resources or a deferred inflow of resources related to the pension and included in the pension expense over a period equal to the average of the expected remaining service lives of all employees that are provided with benefits through the Pension Plan.

**Recent Accounting Pronouncements—** As a component unit of the City, the System implements new GASB standards in the same fiscal year as they are implemented by the City. The following are discussions of the standards requiring implementation in the current year and standards that may impact the System in future years.

- In January 2017, GASB issued Statement No. 84, *Fiduciary Activities* ("GASB 84"). The objective of GASB 84 is to improve guidance regarding the identification of fiduciary activities for accounting and financial reporting purposes and how those activities should be reported. The requirements of GASB 84 are effective for fiscal years beginning after December 15, 2018. The System has not completed the process of evaluating GASB 84, but does not expect it to have an impact on the System's combining financial statements.

- In June 2017, GASB issued Statement No. 87, *Leases* ("GASB 87"). The objective of GASB 87 is to improve accounting and financial reporting for leases by governments. This statement increases the usefulness of governments' financial statements by requiring recognition of certain lease assets and liabilities for leases that previously were classified as operating leases and recognized as deferred inflows of resources or deferred outflows of resources based on the payment provisions of the contract. It establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Under this statement, a lessee is required to recognize a lease liability and an intangible right-to-use lease asset, and a lessor is required to recognize a lease receivable and a deferred inflow of resources,

## 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

thereby enhancing the relevance and consistency of information about governments' leasing activities. The requirements of GASB 87 are effective for fiscal years beginning after December 15, 2019. The System has not completed the process of evaluating GASB 87. The System expects that GASB 87 will have an impact on its combining financial statements.

- In March 2018, GASB issued Statement No. 88, *Certain Disclosures Related to Debt, including Direct Borrowings and Direct Placements* ("GASB 88"). The objective of GASB 88 is to improve consistency in the information that is disclosed in notes to government financial statements related to debt by defining debt for the purpose of note disclosure and to establish additional note disclosure requirements related to debt obligations of governments, including direct borrowing and direct placements. The requirements of GASB 88 are effective for fiscal years beginning after June 15, 2018. The adoption of GASB 88 required the System to disclose in Note 9 information related to unused lines of credit, assets pledged as collateral for debt, terms related to certain significant events with finance related consequences and separately describe amounts of detail borrowing.

- In June 2018, GASB issued Statement No. 89, *Accounting for Interest Cost Incurred before the End of a Construction Period* ("GASB 89"). The objectives of GASB 89 are to enhance the relevance and comparability of information about capital assets and cost of borrowing for a reporting period and to simplify accounting for certain interest costs by requiring interest costs incurred before the end of a construction period to be recognized as an expense/expenditure in governmental fund and government-wide financial statements. The requirements of GASB 89 are effective for fiscal years beginning after December 15, 2019, but the System adopted it in the current fiscal year. The adoption of GASB 89 did not have an impact on the System's combining financial statements as the System does not capitalize interest cost.

- In August 2018, GASB issued Statement No. 90, *Majority Equity Interests* ("GASB 90"). GASB 90 clarifies the accounting and financial reporting requirements for a state and local government's majority equity interest in an organization that remains legally separate after acquisition. The requirements of GASB 90 are effective for fiscal years beginning after December 15, 2018. The System has not completed the process of evaluating GASB 90, but does not expect it to have an impact on the System's combining financial statements, as it has not made such acquisitions.

- In May 2019, GASB issued Statement No. 91, *Conduit Debt Obligations* ("GASB 91"). GASB 91 provides state and local government's with a single financial reporting method for conduit debt obligations by issuers. The requirements of GASB 91 are effective for fiscal years beginning after December 15, 2020, but the System adopted it in the current fiscal year. The adoption of GASB 91 did not have an impact on the System's combining financial statements, as it does not issue conduit debt.

# 3. UTILITY PLANT

The following is a summary of utility plant activity for the fiscal years ended June 30, 2019 and 2018 (in thousands):

| | BALANCE AT 6/30/2017 | ADDITIONS | DELETIONS | BALANCE AT 6/30/2018 | ADDITIONS | DELETIONS | BALANCE AT 6/30/2019 |
|---|---|---|---|---|---|---|---|
| **NONDEPRECIABLE ASSETS:** | | | | | | | |
| Utility construction in progress | $ 5,475,307 | $ 1,617,305 | $ 3,698,486 | $ 3,394,126 | $ 1,821,086 | $ 497,223 | $ 4,717,989 |
| **DEPRECIABLE ASSETS:** | | | | | | | |
| **UTILITY PLANT IN SERVICE:** | | | | | | | |
| Buildings | 34,936 | 831 | – | 35,767 | 54 | – | 35,821 |
| Machinery and equipment | 3,940,877 | 925,580 | 39,576 | 4,826,881 | 70,318 | 3,640 | 4,893,559 |
| Vehicles | 246,899 | 6,249 | 2,789 | 250,359 | 13,896 | 616 | 263,639 |
| Water supply and distribution and wastewater treatment and sewage collection systems | 33,670,666 | 2,765,826 | 90,944 | 36,345,548 | 412,955 | 9,162 | 36,749,341 |
| **TOTAL UTILITY PLANT IN SERVICE** | **37,893,378** | **3,698,486** | **133,309** | **41,458,555** | **497,223** | **13,418** | **41,942,360** |
| **LESS ACCUMULATED DEPRECIATION FOR:** | | | | | | | |
| Buildings | 26,455 | 1,548 | – | 28,003 | 1,599 | – | 29,602 |
| Machinery and equipment | 1,872,243 | 283,545 | 34,950 | 2,120,838 | 251,852 | 3,410 | 2,369,280 |
| Vehicles | 94,025 | 10,471 | 2,677 | 101,819 | 11,241 | 551 | 112,509 |
| Water supply and distribution and wastewater treatment and sewage collection systems | 11,839,690 | 746,105 | 47,073 | 12,538,722 | 642,217 | 7,034 | 13,173,905 |
| **TOTAL ACCUMULATED DEPRECIATION** | **13,832,413** | **1,041,669** | **84,700** | **14,789,382** | **906,909** | **10,995** | **15,685,296** |
| **TOTAL UTILITY PLANT IN SERVICE - NET** | **24,060,965** | **2,656,817** | **48,609** | **26,669,173** | **(409,686)** | **2,423** | **26,257,064** |
| **TOTAL CAPITAL ASSETS - NET** | **$ 29,536,272** | **$ 4,274,122** | **$ 3,747,095** | **$ 30,063,299** | **$ 1,411,400** | **$ 499,646** | **$ 30,975,053** |

# 4. DEPOSITS AND INVESTMENTS

**Cash and Cash Equivalents—** The System maintains deposits only at the depositary banks designated by the New York City Banking Commission. Further, as required by the Authority's bond resolutions, every bank, which holds the Authority's cash deposits, is required to have its principal office in the State of New York and have capital stock, surplus, and undivided earnings aggregating at least $100 million. As of June 30, 2019 and 2018, cash was comprised of bank deposits and there was no difference between the carrying amounts and bank balances.

At June 30, 2019 and 2018, the cash deposit balances were $207 million and $193 million, respectively. Of the June 30, 2019 and 2018 cash deposits, $500,000 was covered by federal depository insurance, and the remaining balance was collateralized with the securities held by the Trustee in their name.

Restricted cash and cash equivalents were comprised of the following at June 30, 2019 and 2018 (in thousands):

| | | 2019 | | 2018 |
|---|---|---|---|---|
| **RESTRICTED CASH AND CASH EQUIVALENTS:** | | | | |
| Cash | $ | 207,256 | $ | 192,724 |
| Cash equivalents | | 1,114,785 | | 1,082,085 |
| **TOTAL RESTRICTED CASH AND CASH EQUIVALENTS** | **$** | **1,322,041** | **$** | **1,274,809** |

**Custodial Credit Risk—** Custodial credit risk is the risk that, in the event of the failure of the custodian, the System may not be able to recover the value of its deposits or collateral securities that are in the possession of an outside party. Deposits are exposed to custodial credit risk if they are not covered by depository insurance and the deposits are uncollateralized, collateralized with securities held by the pledging financial institution, or collateralizes with securities held by the pledging financial institution's trust department or agent but not in the government's name. As of June 30, 2019 and 2018, the System had $207 million and $193 million, respectively, of deposit that were collateralized with securities held by the trustee's trust department in the trustee's name.

## INVESTMENTS

The System invests funds that are not immediately required for operations, debt service, or capital expenses. Funds held by the Authority are invested pursuant to the Authority's bond resolutions and in accordance with its investment guidelines, which restrict investments to obligations of, or guaranteed by, the United States of America, to certain highly rated obligations of the State of New York, to certain certificates of deposit and similar instruments issued by highly rated commercial banks, to certain highly rated corporate securities or commercial paper securities, to certain repurchase agreements with highly rated institutions, to certain investment agreements with highly rated institutions, to certain highly rated money market funds, and to certain highly rated municipal obligations. All accounts held by the Water Board are invested in accordance with the Water Board's investment guidelines, which restrict investments to obligations of, or guaranteed by, the United States of America and to certain repurchase agreements with highly rated institutions.

## 4. DEPOSITS AND INVESTMENTS (CONTINUED)

The System had the following investments at June 30, 2019 and 2018 (in thousands):

| | 2019 | | | 2018 | | |
|---|---|---|---|---|---|---|
| **INVESTMENTS** | **WATER BOARD** | **MUNICIPAL WATER FINANCE AUTHORITY** | **TOTAL** | **WATER BOARD** | **MUNICIPAL WATER FINANCE AUTHORITY** | **TOTAL** |
| U.S. Agencies securities | $ – | $ 742,221 | $ 742,221 | $ – | $ 1,166,844 | $ 1,166,844 |
| U.S. Treasury securities | 256,702 | 319,264 | 575,966 | 247,302 | 593,180 | 840,482 |
| New York State instrumentalities | – | 52,369 | 52,369 | – | 73,644 | 73,644 |
| Money Market funds | 3,400 | 444,418 | 447,818 | 2 | 59,816 | 59,818 |
| Guaranteed Investment Contracts | – | 99,070 | 99,070 | – | 96,680 | 96,680 |
| Forward Purchase Agreements | – | 28,658 | 28,658 | – | 24,695 | 24,695 |
| **TOTAL INVESTMENTS INCLUDING CASH EQUIVALENTS** | **260,102** | **1,686,000** | **1,946,102** | **247,304** | **2,014,859** | **2,262,163** |
| Less amounts reported as cash equivalents | (3,400) | (1,111,385) | (1,114,785) | (2) | (1,082,083) | (1,082,085) |
| **TOTAL INVESTMENTS** | **$ 256,702** | **$ 574,615** | **$ 831,317** | **$ 247,302** | **$ 932,776** | **$ 1,180,078** |

**Fair Value Hierarchy—** The System categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The hierarchy is based on the valuation inputs used to measure fair value of the assets. Level 1 inputs are quoted prices in an active market for identical assets; Level 2 inputs are significant other observable inputs; and Level 3 inputs are significant unobservable inputs.

The System has the following recurring fair value measurements as of June 30, 2019 and 2018 (in thousands):

- U.S. Treasury securities of $576 million and $840 million, respectively, are valued using a matrix pricing model (Level 2 inputs).
- U.S. Agencies securities of $742 million and $1.2 billion, respectively, are valued using a matrix pricing model (Level 2 inputs).
- New York State Instrumentalities of $52.4 million and $73.6 million, respectively, are valued using a matrix pricing model (Level 2 inputs).
- Money Market Funds of $448 million and $59.8 million, respectively, are valued using a matrix pricing model (Level 2 inputs).
- Guaranteed Investment Contract (“GIC”) of $99.1 million and $96.7 million, respectively, are valued using the market approach, with observable inputs and using a matrix pricing technique (Level 2 inputs).
- Forward Purchase Agreements of $28.7 million and $24.7 million, respectively, are valued using the market approach, with observable inputs and using a matrix pricing technique (Level 2 inputs).

# 4. DEPOSITS AND INVESTMENTS (CONTINUED)

- Interest Rate Derivatives of ($107) million and ($76.1) million, respectively, are valued using the income approach (Level 2 inputs).

**Credit Risk—** Both the Water Board and the Authority have Board approved investment guidelines and policies in place designed to protect principal by limiting credit risk. This is accomplished through ratings, collateral, and diversification requirements that vary according to the type of investment. Investments held by the System at June 30, 2019, and 2018 include obligations of, or guaranteed by, the United States of America, the Federal Home Loan Mortgage Corporation, the Federal Home Loan Bank, the Federal National Mortgage Association, the Federal Agriculture Mortgage Corporation, Resolution Funding Corporation, and the Federal Farm Credit Bank. Also held by the Authority are direct obligations of agencies or public authorities of the State of New York, which at the time of purchase were rated in one of the two highest rating categories. In addition, the Authority has entered into investment agreements and a guaranteed investment contract with financial institutions whose long-term debt obligations, or whose obligations under such an investment agreement or guaranteed investment contract, are guaranteed by a financial institution whose senior long-term debt obligations were rated in one of the two highest rating categories for comparable types of obligations by each rating agency at the time such agreement or contract was entered into.

**Interest Rate Risk—** Changes in interest rates impact fair value of investments. Investments by the System are not expected to be liquidated prior to maturity and investment agreements are not expected to be terminated prior to their expiration dates, thereby limiting cash flow exposure from rising interest rates.

**Concentration of Credit Risk—** Concentration of credit risk is the risk of loss attributed to the magnitude of the System's investment in a single issuer. The Authority's investment policy limits the amount the Authority may invest in any particular issuer. As of June 30, 2019, the Authority had 30% invested in Federally Guaranteed Securities, 38% in Agency Securities, 2% in State Guaranteed, 7% in Guaranteed Investment Contract, and 23% of First American Government Obligation Fund.

Segmented time distribution on investments and cash equivalents as of June 30, 2019 (in thousands):

| MATURITY DATE | | FAIR VALUE AMOUNT |
|---|---|---|
| Under 6 months | $ | 1,411,442 |
| Over 6 months to 1 year | | 19,502 |
| Over 1 year to 3 years | | 232,950 |
| Over 3 years and beyond | | 240,518 |
| Over 3 years and beyond (GIC and Forward Purchase Agreement adjustments) [1] | | 41,690 |
| **TOTAL** | **$** | **1,946,102** |

[1] Includes the fair value of $28,658 related to Forward Purchase Agreements and $13,032 related to a GIC agreement.

**Custodial Credit Risk—** With respect to investments, custodial credit risk is the risk that, in the event of the failure of the custodian, the System may not be able to recover the value of its investment or collateral securities that are in the possession of an outside party. Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of their government, and are held by either the counterparty or the counterparty's trust department or agent but not in the name of the government. All of the investments, except for the GIC, which had a fair value of $99.1 million and $96.7 million at June 30, 2019 and 2018, respectively, were not registered in the System's name. The types and amounts of investments are listed in the table on page 47.

# 5. DERIVATIVE INSTRUMENTS

As of June 30, 2019, the Authority had the following (in thousands):

| TYPE | NOTIONAL AMOUNT | EFFECTIVE DATE | MATURITY DATE | TERMS | FAIR VALUE | COUNTERPARTY CREDIT RATING (MOODY'S/S&P/FITCH) |
|---|---|---|---|---|---|---|
| **HEDGING DERIVATIVES** | | | | | | |
| Synthetic fixed rate | $ 240,600 | 10/24/07 | 6/15/36 | pay 3.439% receive 67% of 1-month LIBOR | $ (64,295) | Aa2/AA-/NR |
| Synthetic fixed rate | $ 160,400 | 10/24/07 | 6/15/36 | pay 3.439% receive 67% of 1-month LIBOR | $ (42,863) | Aa3/A+/AA- |

LIBOR: London Interbank Offered Rate Index

**Hedging Derivative Instruments—** Effective October 24, 2007, the Authority executed two interest rate exchange agreements, in conjunction with its sale of $401 million of Adjustable Rate Fiscal 2008 Series BB Second Resolution Bonds. Under these agreements, the Authority pays a fixed interest rate of 3.439% in exchange for a floating rate based on 67% of one-month LIBOR on the combined notional amount of $401 million. The agreements are with two separate counterparties: one agreement with Goldman Sachs Mitsui Marine Derivative Products in the amount of $241 million and the second agreement with Bank of America in the amount of $160 million. These agreements allowed the Authority to achieve a fixed rate cost lower than the cost of conventional fixed rate debt at the time of issuance. The Authority's obligations under these interest rate exchange agreements are payable on a parity with the related Second Resolution revenue bonds.

**Credit Risk—** The risk that the counterparty (or its guarantor) will default under its agreement and the Authority would be left with unhedged variable rate debt. To continue to be hedged, the Authority may have to pay another entity to assume the position of the defaulting counterparty while not receiving an offsetting payment from the defaulting counterparty (full or in part). The Authority seeks to limit credit risk by contracting with highly rated counterparties or requiring highly rated guarantees of the counterparty's obligations. In the event that a counterparty loses its high rating, the Authority has built in two forms of protection into its swap agreements. First, the Authority has required the counterparty to post collateral if its ratings fall below "Aa3" by Moody's and "AA-" by Standard and Poor's and the mark-to-market in the Authority's favor exceeds specified threshold amounts. Second, the Authority has the right to terminate the Interest Rate Exchange Agreement if the counterparty is downgraded below "A3" and "A-" by Moody's and S&P, respectively. In addition, the Authority monitors the credit ratings and overall financial condition of its counterparties and may exercise its right to assign the agreement to another counterparty if necessary, in its judgment, to mitigate credit risk, even in the absence of a significant credit rating downgrade.

**Termination Risk—** The counterparties can terminate the agreements upon the occurrence of certain events, when the mark-to-market value is such that the Authority would owe a termination payment to the counterparty. The counterparties may terminate the agreement only upon the occurrence of certain events, such as payment defaults by the Authority, other defaults which remain uncured for 30 days after notice, bankruptcy or insolvency of the Authority (or similar events), or a downgrade of the Authority's credit rating below "Baa2" and "BBB" by Moody's and Standard & Poor's, respectively.

**Basis Risk—** Basis risk is the risk of a mismatch between two floating rates. For example, the amount the Authority receives under an Interest Rate Exchange Agreement may be lower than the amount the Authority is required to pay on the bonds associated with the transaction, which would require the Authority to make up the shortfall.

## 5. DERIVATIVE INSTRUMENTS (CONTINUED)

**Interest Rate Risk—** Interest rate risk is the risk that changes in long-term interest rates will adversely affect the mark-to-market values of the Authority's swap instruments which may result in termination payments.

**Financial Statements Effect—** The fair value of hedging derivatives at June 30, 2019 and June 30, 2018 was a negative $107 million and negative $76.1 million, respectively. The Authority does not currently own investment derivatives.

## 6. LEASE AGREEMENT

The Water Board is a party to a long-term lease (the "Lease") with the City, which transfers the water and sewer related property to the Water Board for the term of the Lease. The Lease term commenced on July 1, 1985, and continues until the later of the fortieth anniversary of the commencement of the Lease or the date on which all bonds, notes or other obligations of the Authority are paid in full or provision for such payment has been made pursuant to the applicable debt instrument. The Lease provides for payments to the City to cover the following:

a. an amount sufficient to pay the cost of administration, maintenance, repair, and operation of the leased property, which includes overhead costs incurred by the City that are attributable to the leased property, net of the amount of any federal, the State, or other operating grants received by the City and

b. an amount sufficient to reimburse the City for capital costs incurred by the City for the construction of capital improvements to the leased property that are not paid or reimbursed from any other source.

In addition to the payments described above, the Water Board pays rent to the City, if requested, each fiscal year in an amount not to exceed the greater of: (a) the principal and interest payable on general obligation bonds issued by the City for water and sewer purposes certified by the City to be paid within such fiscal year or (b) 15% of principal and interest payable on the bonds of the Authority to be paid within such fiscal year.

A summary of operations and maintenance and rental expenses for the years ended June 30 is as follows (in thousands):

| | | 2019 | | 2018 |
|---|---|---|---|---|
| Water supply, treatment, transmission and distribution | $ | 516,977 | $ | 506,831 |
| Sewer collection and treatment systems | | 655,052 | | 589,883 |
| The City agency support cost | | 54,659 | | 54,545 |
| Fringe benefits | | 229,976 | | 225,960 |
| Judgments and claims | | 12,937 | | 12,735 |
| **OPERATION AND MAINTENANCE** | | **1,469,601** | | **1,389,954** |
| Rental payments to the City | | - | | - |
| **TOTAL OPERATIONS AND MAINTENANCE EXPENSES** | **$** | **1,469,601** | **$** | **1,389,954** |

## 7. PAYABLE TO AND RECEIVABLE FROM THE CITY

As of June 30, 2019 and 2018, all utility construction and other projects financed by the Authority debt and recorded by the System, which have not been reimbursed to the City, are recorded as a payable to the City. The Authority had a payable to the City of $695 million and $595 million, respectively, net of the amount of State or federal and other capital grants recognized by the City.

As of June 30, 2019 and 2018, the Water Board had payable to the City of $20.0 million and on June 30, 2018, the Water Board had a receivable due from the City of $20.2 million. The 2019 payable to the City is a result of an under payment of $20.0 million for operations and maintenance expense. The 2018 receivable from the City of $20.2 million is a result of the difference between budget estimates and actual expenses.

## 8. OTHER OPERATING EXPENSES

A summary of other operating expenses for the years ended June 30 is as follows (in thousands):

| | | 2019 | | 2018 |
|---|---|---|---|---|
| Pollution remediation | $ | 4,173 | $ | 15,040 |
| Payments for watershed improvements | | 34,442 | | 34,280 |
| Asset retirement obligation | | (48) | | - |
| Program expense | | 37,484 | | 35,663 |
| **TOTAL OTHER OPERATING EXPENSES** | **$** | **76,051** | **$** | **84,983** |

The City's DEP manages both the System's operations and its capital program, and it also manages other projects with long-term benefits to the System, which do not result in capital assets of the System and that are paid for using the Authority's bond proceeds. Such long-term benefit projects include payment for environmental protection, related improvement in the watershed areas, and pollution remediation projects throughout the System. The System has estimated these amounts based on the current value of outlays expected to be incurred for pollution remediation, which it is currently obligated to perform. Actual future outlays will differ from the estimated amounts if the prices or techniques for remediation measures change or differ from the estimates.

The System offers its residential customers the option to enroll into a protection program on their water and sewer lines against any breakage for a monthly fee. The fee is included in the participating customer utility bill. This protection program is offered by American Water Resources. In fiscal years 2019 and 2018, the System incurred program expenses of $37.5 million and $35.7 million, respectively.

# 9. LONG-TERM LIABILITIES

## DEBT PROGRAM DESCRIPTION

The Authority issues debt to finance the capital needs of the System. The Authority's debt is issued under two bond resolutions – the Water and Sewer System General Revenue Bonds Resolution ("First Resolution") and the Water and Sewer System Second General Resolution ("Second Resolution"). All bonds and notes, issued by the Authority, are special obligations of the Authority payable solely from and secured by a pledge of and lien on the gross revenue of the System, and from money and securities in any of the funds and accounts defined and established by the First Resolution and Second Resolution, subject to the priority of application, other than the arbitrage rebate fund. With respect to all of the Authority's debt, the Water Board has agreed to maintain rates and charges to provide revenues at levels sufficient to pay principal and interest requirements as well as to meet certain debt service coverage and operating cost funding requirements.

The Authority's bond resolutions specify certain events of default, such as failure to pay debt service, failure to comply with the certain provisions of the bond resolutions and certain other governing documents, or seeking relief in bankruptcy that under certain conditions could result in acceleration of debt service payments.

The debt program of the Authority includes commercial paper notes and long-term debt, as well as bond anticipation notes ("BANs"), and interest-subsidized bonds issued to the New York State Environmental Facilities Corporation ("EFC"). While historically, proceeds of commercial paper notes were the main source of funds to reimburse the City for payments made for water and sewer capital projects, in fiscal years 2019 and 2018, the Authority exclusively relied on proceeds from BANs and long-term bond issuances to reimburse the City for the System's capital expenditures. The Authority issues long-term debt to retire commercial paper notes and BANs. The Authority also periodically issues refunding bonds to refinance higher-coupon debt and defeases bonds using current revenues.

The Authority is currently authorized to have outstanding up to $600 million of commercial paper notes. As of June 30, 2019 and 2018, none was outstanding. As of June 30, 2019 and 2018, there was $27.6 million and $216 million of BANs outstanding, respectively. As of June 30, 2019 and 2018, the BANs principal balance of $132 million and $464 million, respectively, was available for future draw down.

As of June 30, 2019, interest rates on the Authority's outstanding First and Second Resolution bonds ranged from a low of 0.90% on a direct borrowing from the EFC, to a high of 6.49% on certain outstanding Build America Bonds ("BABs") prior to interest subsidies from the federal government.

# 9. LONG-TERM LIABILITIES (CONTINUED)

## CHANGES IN LONG-TERM LIABILITIES

In fiscal years 2019 and 2018, the long-term debt was as follows (in thousands):

| BONDS/BANs PAYABLE | BALANCE AT JUNE 30, 2018 | ADDITIONS | DELETIONS | BALANCE AT JUNE 30, 2019 | DUE WITHIN ONE YEAR |
|---|---|---|---|---|---|
| First resolution bonds | $ 1,928,706 | $ – | $ (347,940) | $ 1,580,766 | $ 81,550 |
| Second resolution bonds (non EFC) | 21,917,804 | 1,554,645 | (1,623,000) | 21,849,449 | 91,635 |
| Bonds from direct borrowings (EFC) | 5,953,158 | 804,859 | (669,924) | 6,088,093 | 308,516 |
| Notes from direct borrowings (BANs) | 215,734 | 324,824 | (512,960) | 27,598 | 27,598 |
| Bonds from direct placement (RBC) | – | 500,000 | – | 500,000 | – |
| **TOTAL BEFORE PREMIUM AND DISCOUNTS** | **30,015,402** | **3,184,328** | **(3,153,824)** | **30,045,906** | **509,299** |
| Premium/(discounts) – net | 1,459,530 | 296,799 | (129,986) | 1,626,343 | – |
| **TOTAL DEBT** | **$ 31,474,932** | **$ 3,481,127** | **$ (3,283,810)** | **$ 31,672,249** | **$ 509,299** |

| BONDS/BANs PAYABLE | BALANCE AT JUNE 30, 2017 | ADDITIONS | DELETIONS | BALANCE AT JUNE 30, 2018 | DUE WITHIN ONE YEAR |
|---|---|---|---|---|---|
| First resolution bonds | $ 2,429,956 | $ – | $ (501,250) | $ 1,928,706 | $ 47,940 |
| Second resolution bonds (non EFC) | 21,658,044 | 2,272,410 | (2,012,650) | 21,917,804 | 72,280 |
| Bonds from direct borrowings (EFC) | 5,583,023 | 669,436 | (299,301) | 5,953,158 | 303,659 |
| Notes from direct borrowings (BANs) | 359,375 | 571,767 | (715,408) | 215,734 | 27,598 |
| **TOTAL BEFORE PREMIUM AND DISCOUNTS** | **30,030,398** | **3,513,613** | **(3,528,609)** | **30,015,402** | **451,477** |
| Premium/(discounts) – net | 1,236,352 | 364,063 | (140,885) | 1,459,530 | – |
| **TOTAL DEBT** | **$ 31,266,750** | **$ 3,877,676** | **$ (3,669,494)** | **$ 31,474,932** | **$ $451,477** |

## DEBT PROGRAM ADMINISTRATION

In fiscal year 2019, the Authority issued $985 million of new money bonds to the public or through private placements, and issued an additional $485 million of new money bonds to EFC. The Authority used new money bond proceeds to finance capital improvements to the System, to provide long-term financing of BANs that previously financed capital improvements to the System, and to pay for bond issuance costs.

During fiscal year 2019, as further detailed in the bullets below, the Authority issued $1.4 billion of bonds to refund $1.6 billion of outstanding bonds. These refunding transactions resulted in a cumulative accounting gain of $6.0 million. The Authority reduced its aggregate debt service for principal and interest by $431 million and obtained an economic benefit (present value savings) of $326 million.

## 9. LONG-TERM LIABILITIES (CONTINUED)

- On August 2, 2018, the Authority issued $320 million of fixed rate Second Resolution bonds Fiscal 2019 Series 1 bonds to EFC. The bonds refunded the following fixed rate Second Resolution bonds: $137 million of Fiscal 2008 Series 1 bonds, $157 million of Fiscal 2008 Series 2 bonds, and $71.7 million of Fiscal 2013 Series 1 bonds. The Authority reduced its overall debt service by $44.1 million and obtained an economic benefit of $36.5 million.
- On August 21, 2018, the Authority issued $264 million of tax-exempt fixed rate Second Resolution bonds, Fiscal 2019 Series AA bonds. The bonds refunded $300 million of First Resolution adjustable rate bonds, Fiscal 2008 Series B bonds. The Authority reduced its overall debt service by $107 million and obtained an economic benefit of $101 million.
- On March 20, 2019, the Authority issued $416 million of tax-exempt fixed rate Second Resolution bonds, Fiscal 2019 Series EE bonds. The bonds refunded the following Second Resolution fixed rate bonds: $318 million of Fiscal 2009 Series EE bonds, $63.6 million of Fiscal 2009 Series FF bonds, and $87.2 million of Fiscal 2009 Series GG bonds. The Authority reduced its overall debt service by $151 million and obtained an economic benefit of $98.8 million.
- On April 17, 2019, the Authority issued $390 million of tax-exempt fixed rate Second Resolution bonds, Fiscal 2019 Subseries FF-2 bonds. The bonds refunded the following Second Resolution fixed rate bonds: $41.4 million of Fiscal 2009 Series FF bonds, $300 million of Fiscal 2009 Series GG bonds, and $101 million of Fiscal 2010 Series AA bonds. The Authority reduced its overall debt service by $129 million and obtained an economic benefit of $89.9 million.

In 2019, the Authority drew down $325 million of BANs proceeds.

In fiscal year 2018, the Authority issued $834 million of new money bonds to the public and an additional $669 million of new money bonds to EFC. The Authority used new money bond proceeds to finance capital improvements to the System, to provide long-term financing of BANs that previously financed capital improvements to the System, and to pay for bond issuance costs.

During fiscal year 2018, the Authority issued $1.44 billion of bonds to refund $1.6 billion of outstanding bonds. These refundings resulted in an accounting loss of $677 thousand. The Authority reduced its aggregate debt service for principal and interest by $424 million and obtained an economic benefit (present value savings) of $302 million.

During fiscal year 2018, the Authority drew down $572 million of BANs proceeds.

During fiscal year 2019, the Authority legally defeased $94.8 million of Fiscal 2010 Series FF bonds, $70.8 million of Fiscal 2011 Series GG bonds, $2.8 million of Fiscal 2012 Series FF bonds, $303 million of Fiscal 2011 Series EE bonds, $115 million of Fiscal 2012 Series BB bonds and $52.6 million of Fiscal 2012 Series CC bonds using current revenue by depositing $675 million into defeasance escrows. The defeasance transactions resulted in an accounting loss of $26.1 million that is reported in the System's combining statements of revenues, expenses and changes in net position (deficit) and aggregate reduction of debt service of $1.3 billion.

During fiscal year 2018, the Authority legally defeased $250 million of Fiscal 2011 Series GG bonds, $346 million of Fiscal 2012 Series AA bonds and $173 million of Fiscal 2012 Series CC bonds using current revenue by depositing $844 million into a defeasance escrow. This defeasance transaction resulted in an accounting loss of $15.0 million that was reported in the System's combining statements of revenues, expenses and changes in net position (deficit) and aggregate reduction of debt service of $1.7 billion.

# 9. LONG-TERM LIABILITIES (CONTINUED)

The Authority defeased some of its bonds by placing proceeds of refunding bonds or current revenue in irrevocable escrow accounts to provide for all future debt service payments on the defeased bonds. The escrow account assets and the liability for the defeased bonds are not included in the System's combining financial statements. As of June 30, 2019 and 2018, $1.4 billion and $802 million, of the Authority's defeased bonds, respectively, were still outstanding.

## INDEX RATE BONDS

As of June 30, 2019, the Authority had outstanding $500 million of index rate bonds, which were purchased by a bank through direct placement. The index rate bonds pay interest based on a specified index. The terms of the index rate bonds also provide for 9% rate of interest, commencing on an identified step-up date, if such bonds are not converted or refunded prior to such date.

## VARIABLE RATE DEMAND BONDS

As of June 30, 2019, the Authority had $4.6 billion of variable rate demand bonds ("VRDBs") outstanding. VRDBs may be tendered at the option of their holders prior to their maturity. VRDBs are remarketed by remarketing agents on a daily or weekly basis. Interest rates determined by such remarketing agents for such periods represent the lowest rate of interest that would cause the VRDBs to have a market value equal to par. VRDBs interest rates cannot exceed 9%. In fiscal years 2019 and 2018, the VRDBs' interest rates averaged 1.5% and 1.1%, respectively.

The VRDBs are backed by either a Standby Bond Purchase Agreement ("SBPA") or a Letter of Credit ("LOC"), providing for the purchase of the VRDBs by a bank in the event they cannot be remarketed. In such case, the interest rate on the VRDBs would typically increase and would be determined by reference to specified index rates plus a spread (in some cases, with a minimum rate), up to a maximum rate of 25%. No VRDBs were held by such banks during the fiscal years ending June 30, 2019 and 2018. SBPAs and LOCs may be terminated by the respective banks upon the occurrence of specified events of default. None of the SBPAs or LOCs supporting adjustable rate demand bonds provides for acceleration. However, in connection with such LOCs, the Authority has agreed that, following a specified period of time in which the LOC bank holds unremarketed VRDBs, the Authority will exchange such VRDBs for refunding bonds maturing within five years and providing for amortization during such period.

The Authority had the following adjustable rate demand bonds at June 30, 2019:

| SERIES | | OUTSTANDING PRINCIPAL AMOUNT | BANK | EXPIRATION DATE |
|---|---|---|---|---|
| 2011 DD-3A | $ | 50,000,000 | US Bank, N.A. | 10/16/19 |
| 2011 DD-3B | | 50,000,000 | State Street Bank and Trust Company | 10/16/19 |
| 2008 BB-2 | | 101,000,000 | Bank of America, N.A. | 10/22/19 |
| 2008 BB-5 | | 50,000,000 | Bank of America, N.A. | 10/22/19 |
| 2016 AA-1 | | 100,000,000 | Bank of America, N.A. | 10/28/19 |
| 2008 B-3 | | 135,000,000 | Bank of America, N.A. | 03/17/20 |
| 2011 FF-1 | | 100,000,000 | Bank of America, N.A. | 03/17/20 |
| 2003 F-1-B | | 50,000,000 | US Bank, N.A. | 03/27/20 |
| 2000-C | | 107,500,000 | Sumitomo Mitsui Banking Corporation | 06/04/20 |
| 2014 AA-4 | | 100,000,000 | Bank of Montreal | 08/11/20 |
| 2007 CC-2 | | 50,000,000 | Bank of Montreal | 10/05/20 |
| 2017 BB-2 | | 50,000,000 | Bank of Montreal | 10/05/20 |

(Continued)

# 9. LONG-TERM LIABILITIES (CONTINUED)

The Authority had the following adjustable rate demand bonds at June 30, 2019 (continued):

| SERIES | OUTSTANDING PRINCIPAL AMOUNT | BANK | EXPIRATION DATE |
|---|---|---|---|
| 2006 AA-1A | 100,000,000 | State Street Bank and Trust Company | 10/07/20 |
| 2006 AA-1B | 100,000,000 | State Street Bank and Trust Company | 10/07/20 |
| 2008 B-1A | 100,000,000 | Sumitomo Mitsui Banking Corporation | 03/03/21 |
| 2012 B-1 | 100,000,000 | US Bank, N.A. | 03/06/21 |
| 2012 B-2 | 100,000,000 | State Street Bank and Trust Company | 03/06/21 |
| 2012 B-3 | 75,000,000 | State Street Bank and Trust Company | 03/06/21 |
| 2012 B-4 | 50,000,000 | State Street Bank and Trust Company | 03/06/21 |
| 2009 BB-1 | 100,435,000 | Landesbank Hessen-Thuringen Girozentrale | 06/15/21 |
| 2009 BB-2 | 100,435,000 | Landesbank Hessen-Thuringen Girozentrale | 06/15/21 |
| 2011 FF-2 | 100,000,000 | Landesbank Hessen-Thuringen Girozentrale | 06/15/21 |
| 2015 BB-1 | 100,000,000 | Bank of America, N.A. | 07/09/21 |
| 2019 BB | 100,000,000 | Industrial and Commercial Bank of China Limited | 09/10/21 |
| 2008 BB-1 | 100,000,000 | Bank of Tokyo-Mitsubishi UFJ, Ltd. | 09/13/21 |
| 2013 AA-2 | 150,000,000 | Bank of Tokyo-Mitsubishi UFJ, Ltd. | 09/13/21 |
| 2014 AA-1 | 125,000,000 | JPMorgan Chase Bank, N.A. | 09/17/21 |
| 2014 AA-2 | 125,000,000 | JPMorgan Chase Bank, N.A. | 09/17/21 |
| 2013 AA-1 | 50,000,000 | PNC Bank, N.A. | 10/02/21 |
| 2007 CC-1 | 160,500,000 | Sumitomo Mitsui Banking Corporation | 10/05/21 |
| 2017 BB-1A | 100,000,000 | State Street Bank and Trust Company | 10/05/21 |
| 2017 BB-1B | 100,000,000 | State Street Bank and Trust Company | 10/05/21 |
| 2017 BB-3 | 39,500,000 | Sumitomo Mitsui Banking Corporation | 10/05/21 |
| 2003 F-2 | 101,655,000 | Citibank, N.A. | 10/26/21 |
| 2016 AA-2 | 100,000,000 | PNC Bank, N.A. | 10/26/21 |
| 2011 DD-2 | 75,000,000 | JPMorgan Chase Bank, N.A. | 11/12/21 |
| 2001 F-1 | 100,000,000 | Mizuho Bank, Ltd. | 06/10/22 |
| 2015 BB-2 | 100,000,000 | Mizuho Bank, Ltd. | 06/14/22 |
| 2003 F-1-A | 50,000,000 | Barclays Bank PLC | 06/17/22 |
| 2015 BB-4 | 100,000,000 | Barclays Bank PLC | 06/17/22 |
| 2014 AA-5 | 100,435,000 | Mizuho Bank, Ltd. | 08/19/22 |
| 2014 AA-6 | 100,435,000 | Mizuho Bank, Ltd. | 08/19/22 |
| 2012 A-1 | 100,000,000 | Mizuho Bank, Ltd. | 09/27/22 |
| 2012 A-2 | 100,000,000 | Mizuho Bank, Ltd. | 09/27/22 |
| 2010 CC | 200,000,000 | Barclays Bank PLC | 12/13/22 |
| 2001 F-2 | 84,130,000 | JPMorgan Chase Bank, N.A. | 04/11/23 |
| 2015 BB-3 | 100,000,000 | Sumitomo Mitsui Banking Corporation | 07/07/23 |
| 2014 AA-3 | 100,000,000 | TD Bank, N.A. | 09/17/23 |
| 2011 DD-1 | 100,000,000 | TD Bank, N.A. | 11/16/23 |
| | **$ 4,631,025,000** | | |

(Concluded)

# 9. LONG-TERM LIABILITIES (CONTINUED)

Debt service requirements to maturity, including amounts relating to BANs with maturities greater than one year at June 30, 2019 are as follows (in thousands):

| | BONDS | | BONDS AND NOTES FROM DIRECT BORROWINGS AND DIRECT PLACEMENTS | | |
|---|---|---|---|---|---|
| | PRINCIPAL | INTEREST[1] | PRINCIPAL | INTEREST[1] | TOTAL |
| **YEAR ENDING JUNE 30,** | | | | | |
| 2020 | $ 173,185 | $ 1,120,325 | $ 336,114 | $ 275,676 | $ 1,905,300 |
| 2021 | 197,870 | 1,116,250 | 294,809 | 265,962 | 1,874,891 |
| 2022 | 222,390 | 1,107,463 | 301,434 | 255,379 | 1,886,666 |
| 2023 | 229,320 | 1,097,122 | 302,614 | 242,755 | 1,871,811 |
| 2024 | 272,965 | 1,085,403 | 278,765 | 229,656 | 1,866,789 |
| 2025-2029 | 1,931,750 | 5,276,469 | 1,433,542 | 878,255 | 9,520,016 |
| 2030-2034 | 2,638,409 | 4,744,480 | 1,377,950 | 577,795 | 9,338,634 |
| 2035-2039 | 4,247,520 | 3,954,863 | 861,535 | 337,968 | 9,401,886 |
| 2040-2044 | 6,138,032 | 2,697,005 | 694,990 | 175,567 | 9,705,594 |
| 2045-2049 | 6,751,157 | 1,037,304 | 433,938 | 45,512 | 8,267,911 |
| 2050-2054 | 605,589 | 50,457 | 300,000 | 12,750 | 968,796 |
| 2055-2059 | 22,028 | 2,191 | - | - | 24,219 |
| **TOTAL** | **$ 23,430,215** | **$ 23,289,332** | **$ 6,615,691** | **$ 3,297,275** | **$ 56,632,513** |

[1]Includes projected interest expense for variable rate bonds at 4.25% for fiscal year 2020 and thereafter. Variable rate bonds are remarketed daily or weekly, and interest rates are determined by the market on the day of sale.

## ASSET RETIREMENT OBLIGATIONS ("ARO")

Existing laws and regulations require the System to take specific action when retiring chemical and petroleum storage tanks. The System has approximately 462 above and underground tanks with a capacity ranging from 10 to 100,000 gallons. The New York State Department of Conservation Under Title 6 of the New York Codes, Rules and Regulations requires that the System take specific steps to permanently take out the service including the removal, transportation and disposal of liquid, sludge, hazardous waste, piping and the tanks themselves; and to take remedial actions on the area surrounding the tanks. Based on contract estimates and invoice for similar projects, the System's ARO for storage tanks was approximately $15.0 million and $15.2 million as of June 30, 2019 and 2018, respectively, with tanks having a remaining useful life ranging from 0 to 39 years.

DEP has entered into office space lease agreements requiring the removal of affixed furnishings including condensed filing systems, HVAC units, and distributions systems and the restoration of premises to original condition existing prior to installation of fixtures for which the System is responsible for paying. Based on engineer and architectural estimates, the ARO for leases was approximately $2.8 million as of June 30, 2019 and 2018, respectively. The remaining lease terms range from 4 to 5 years.

# 9. LONG-TERM LIABILITIES (CONTINUED)

## COMMITMENTS AND CONTINGENCIES

**Construction—** The System had contractual commitments of approximately $7.0 billion and $6.9 billion at June 30, 2019 and 2018, respectively, for water and sewer projects.

**Risk Financing Activities—** The System is self-insured and carries no commercial or insurance policies other than directors and officer's insurance for the Authority. Any claims made against the System are resolved through the City's legal support, and the amounts of the maximum liability for such judgments are described in the claims and litigation section below. The System is subject to claims for construction delays, property damage, personal injury, and judgments related to delays in construction deadlines under consent agreements.

**Claims and Litigation—** In accordance with the Lease, the Water Board is required to reimburse the City for any judgment or settlement paid by the City arising out of a tort claim to the extent that the City's liability is related to capital improvements and the operation or maintenance of the System. However, in no event shall the payment made to the City, in any fiscal year, exceed an amount equal to 5% of the aggregate revenues shown on the prior year's audited financial statements of the System. In addition, the System is required to reimburse the City, to the extent requested by the City, for the payment of any judgment or settlement arising out of a contract claim with respect to the construction of capital improvements of the System. In addition, the City has agreed, subject to certain conditions, to indemnify the Authority, the Water Board, and their staffs against any and all liability in connection with any act done or omitted in the exercise of their powers, which is taken or omitted in good faith in pursuance of their purposes under the Act. Currently, the City is a defendant in a significant number of lawsuits pertaining to the System. The litigation includes, but is not limited to, actions commenced and claims asserted against the City arising out of alleged torts, alleged breaches of contract, condemnation proceedings, and other alleged violations of law. As of June 30, 2019, the potential future liability attributable to the System for claims outstanding against the City was estimated to be $354 million. This amount is included in the estimated liability for unsettled claims, which is reported in the City's statement of net position (deficit). The potential future liability is the City's best estimate based on available information. The estimate maybe revised as further information is obtained and as pending cases are litigated.

**Arbitrage Rebate—** To maintain the exemption from federal income tax of interest on bonds issued subsequent to January 1, 1986, the System will fund amounts required to be rebated to the Federal Government pursuant to Section 148 of the Internal Revenue Code of 1986, as amended (the "Code"). The Code requires the payment to the United States Treasury of the excess amount earned on all non-purpose obligations over the amount that would have been earned if the gross proceeds of the issue were invested at a rate equal to the yield on the issue, together with any earnings attributable to such excess. Construction funds, debt service funds, or any other funds or accounts funded with proceeds of such bonds, including earnings, or pledged to or expected to be used to pay interest on such bonds are subject to this requirement. Payment is to be made after the end of the fifth bond year and after every fifth bond year thereafter and within 60 days after retirement of the bonds. During fiscal years 2019 and 2018, the System paid $0 million and $11.4 million, respectively, in arbitrage rebates. At June 30, 2019 and 2018, the Authority had a liability of $2.2 million and $1.4 million, respectively. These amounts are included in accrued payable expense in the combining statements of net position (deficit).

# 10. RESTRICTED ASSETS

As of June 30, 2019 and 2018, certain cash, investments, and accrued interest of the System were restricted as follows (in thousands):

| | | 2019 | | 2018 |
|---|---|---|---|---|
| **THE WATER BOARD** | | | | |
| Operation and maintenance reserve fund | $ | 260,102 | $ | 247,304 |
| Local water fund | | 12,264 | | 9,005 |
| **SUBTOTAL – THE WATER BOARD** | | **272,366** | | **256,309** |
| **THE AUTHORITY** | | | | |
| Revenue fund | | 1,061,319 | | 946,965 |
| Debt service reserve fund | | 399,768 | | 389,598 |
| Construction fund | | 54,095 | | 493,652 |
| Escrow accounts | | 365,810 | | 368,363 |
| **SUBTOTAL – THE AUTHORITY** | | **1,880,992** | | **2,198,578** |
| **TOTAL RESTRICTED ASSETS** | **$** | **2,153,358** | **$** | **2,454,887** |

The operation and maintenance reserve fund is established as a depository to hold a reserve as required by the First Resolution. At June 30 of each year, the reserve fund is required to hold one-sixth of the operating expenses as set forth in the following year's annual budget. It is funded through the cash receipts of the Water Board.

The local water fund is established as the account to which all revenues are deposited. Its assets are subject to the payment priority set forth in the Resolutions.

The revenue fund is established as a depository to fund the debt service, the Authority's expenses, debt service reserve, and escrow accounts. It is funded through cash transfers from the Water Board.

The debt service reserve fund is established as a depository to hold the First Resolution bond maximum annual debt service requirement for the next or any future fiscal year. It is funded through revenue bond proceeds and the revenue fund.

The debt service fund is established as a depository to pay all principal and interest payments on the Authority's debt for the current fiscal year. It is funded through the revenue fund. On or prior to June 30, the balances in the debt service fund are transferred to the revenue fund.

The construction fund is established as a depository to pay all capital construction costs incurred by the City and reimbursed by the Authority. It is funded through the proceeds of commercial paper, bond, and note sales.

The escrow account is established as a depository to refund debt in future years. It is funded through bond proceeds or the revenue fund.

# 11. PENSION PLANS

## GENERAL INFORMATION ABOUT THE PENSION PLAN

**Plan Description—**The Authority's eligible employees are provided with pension benefits through the New York City Employee Retirement System Qualified Pension Plan ("NYCERS QPP" or "Pension Plan"). The Pension Plan is a cost-sharing, multiple-employer defined benefit pension plan administered by NYCERS.

The Pension Plan functions in accordance with existing State statutes and the City laws which are the basis by which benefit terms and the Authority's and its members' contribution requirements are established and amended. NYCERS issues a publicly-available financial report that can be obtained at www.nycers.org.

**Benefits Provided—**The Pension Plan provides pension benefits to retired employees generally based on the salary, length of service, member contributions, and membership tier ("Tier"). For certain members, voluntary member contributions also impact pension benefits provided. In addition, the Pension Plan provides automatic cost-of-living-adjustments ("COLA") and other supplemental pension benefits to certain retirees and beneficiaries. Subject to certain conditions, members become fully vested as to benefits upon the completion of five years of service for Tier I to Tier IV and ten years of service for Tier VI. Upon termination of employment before retirement, certain members are entitled to refunds of their own contributions, including accumulated interest, less any outstanding loan balances. In the event of disability during employment, participants may receive retirement allowances based on satisfaction of certain service requirements and other provisions. The Pension Plan also provides death benefits.

The State Constitution provides that pension rights of public employees are contractual and shall not be diminished or impaired. In 1973, 1976, 1983, and 2012, significant amendments made to the State Retirement and Social Security Law ("RSSL") modified certain benefits for employees joining the Pension Plan on or after the effective date of such amendments, creating membership tiers. Currently, there are several Tiers, referred to as Tier I, Tier II, Tier III, Tier IV, and Tier VI. Members are assigned a Tier based on membership date. Chapter 18 of the Laws of 2012 (Chapter 18/12) amended the retirement benefits of public employees who establish membership in the Pension Plan on or after April 1, 2012. Chapter 18/12 is commonly referred to as Tier VI. Tier VI is expected to reduce future employer pension contributions.

Certain members of Tier I and Tier II of the NYCERS QPP have the right to make voluntary excess contributions, which are supplemental voluntary contributions. Members can elect to direct these contributions to an investment program under which such accumulated contributions are credited with interest at rates set by statute ("Statutory Rates"). The Authority does not have any Tier I, Tier II, or Tier III members.

**Contributions and Funding Policy—** Contribution requirements of participating employers and active members are determined in accordance with State statutes and City laws and are generally funded within the appropriate fiscal year. Effective with fiscal year 2006, employer contributions are actuarially determined under the One-Year Lag Methodology ("OYLM"). Under OYLM, the actuarial valuation date is used for calculating the employer contributions for the second following fiscal year. For example, the June 30, 2017 actuarial valuation was used for determining the fiscal year 2019 statutory contributions. Member contributions vary by class.

In general, Tier III and Tier IV members make basic contributions of 3.0% of salary regardless of age at membership. Effective October 1, 2000, in accordance with Chapter 126 of the Laws of 2000, Tier III and Tier IV members are not required to make any contributions after the 10th anniversary of their membership date or completion of ten years of credited service, whichever is earlier. Tier VI members who joined between April 1, 2012 and March 31, 2013 contribute 3% of salary. Beginning April 1, 2013, when Tier VI took effect, joining members contribute between 3.0% and 6.0% of salary, depending on their salary level.

# 11. PENSION PLANS (CONTINUED)

Employer contributions are determined annually to be an amount that, together with member contributions and investment income, provides for the Pension Plan assets to be sufficient to pay benefits when due. The aggregate statutory contribution due to NYCERS QPP from all participating employers for fiscal years 2019 and 2018 was $3.7 billion and $3.4 billion, respectively and the amount of the Authority's contribution to the Pension Plan for such fiscal years 2019 and 2018 was $78 thousand and $111 thousand, respectively.

## INFORMATION ON THE EMPLOYER'S PROPORTIONATE SHARE OF THE COLLECTIVE NET PENSION LIABILITY

The Authority's net pension liabilities reported at June 30, 2019 and 2018 were measured as of those fiscal year-end dates. The total pension liability used to calculate those net pension liabilities were determined by actuarial valuations as of June 30, 2018 and June 30, 2017, respectively, based on the OYLM described above, and rolled forward to the respective fiscal year-end measurement dates.

Information about the Authority net position and additions to and deductions from NYCERS QPP fiduciary net position has been determined on the same basis as that reported by NYCERS QPP. For this purpose, benefits and refunds are recognized when due and payable in accordance with the terms of the respective qualified pension plan, and investments are reported at fair value.

**Actuarial Assumptions—** Measurement of the total net pension liability, on which the net pension liability is based, requires the use of assumptions about numerous future events that affect the benefit payments that will be made to employees in retirement.

The following table provides a brief description of the significant assumptions used in the June 30, 2018 actuarial valuation to determine the fiscal year 2019 Authority's contributions:

### ACTUARIAL ASSUMPTIONS USED FOR DETERMINING FISCAL YEAR 2019 AUTHORITY'S CONTRIBUTIONS

| ITEM | FISCAL YEAR 2019 AUTHORITY'S CONTRIBUTIONS |
|---|---|
| Valuation Date | June 30, 2018 (Lag). |
| Assumed Rate of Return on Investment | 7.0% per annum, net of investment expense. Actual return for variable funds. |
| Post-Retirement Mortality | Tables adopted by the Boards of Trustees during fiscal year 2019. |
| Active Service:<br>Withdrawal, Death, Disability, and Retirement | Tables adopted by the Boards of Trustees during fiscal year 2019. |
| World Trade Center Benefit | Estimates of certain obligations. |
| Salary Increases | Tables adopted by the Boards of Trustees during fiscal year 2019.<br>In general, Merit and Promotion Increases plus assumed General Wage Increase of 3.0% per year. |
| Assumed Cost-of-Living Adjustments | 1.5% per year for Tier I, Tier II, Tier IV and certain Tier III and Tier VI retirees. 2.5% per year for certain Tier III and Tier VI retirees. |
| Liability Loads | Estimates of certain obligations. |

## 11. PENSION PLANS (CONTINUED)

In accordance with the Administrative Code of the City of New York and with appropriate practice, the NYCERS Board of Trustees of the actuarially-funded the Pension Plan is to periodically review and adopt certain actuarial assumptions as proposed by the Chief Actuary of the New York City Retirement Systems (the "Actuary") for use in the determination of Employer Contributions, which are also generally used to determine the total pension liability, as applicable.

The fiscal year 2019 results reflect changes in the actuarial assumptions and methods since the prior year. The changes are primarily the result of an experience study performed by Bolton, Inc. which compared actual experience of the systems to that expected based on the prior set of actuarial assumptions and methods. These new actuarial assumptions and methods were adopted by each of the NYCRS retirement boards in early calendar year 2019.

The long-term expected rate of return was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of the 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 real rates of return by the target asset allocation percentage and by adding expected inflation.

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

| | TARGET ASSET ALLOCATION | LONG-TERM EXPECTED REAL RATES OF RETURN |
|---|---|---|
| **ASSET CLASS** | | |
| U.S. Public Market Equities | 29.00% | 7.00% |
| International Public Market Equities | 13.00% | 7.10% |
| Emerging Public Market Equities | 7.00% | 9.40% |
| Private Market Equities | 7.00% | 10.50% |
| Fixed Income (Core, TIPS, HY, Opportunistic, Convertibles) | 33.00% | 2.20% |
| Alternatives (Real Assets, Headge Funds) | 11.00% | 5.70% |
| **TOTAL** | **100.00%** | |

**Discount Rate—** The discount rate used to measure the total pension liability of the Pension Plan as of June 30, 2019 and 2018, was 7% per annum. The projection of cash flows used to determine the discount rate assumed that employee contributions will be made at the rates applicable to the current Tier for each member and that employer contributions will be made based on rates determined by the actuary. Based on those assumptions, the Pension Plan fiduciary net position is projected to be available to make all projected future benefit payments of current active and non-active members. Therefore, the long-term expected rate of return on the pension fund investments was applied to all periods of projected benefit payments to determine the total pension liability.

# 11. PENSION PLANS (CONTINUED)

**Sensitivity of the Authority's Proportionate Share of the Net Pension Liability to Changes in the Discount Rate—** The following table presents the Authority's proportionate share of the net pension liability using the discount rate of 7.0%, as well as what the Authority's proportionate share of the net pension liability would be if it were calculated using a discount rate that is one-percentage point lower (6.0%) or one-percentage point higher (8.0%) than the current rate (in thousands):

SENSITIVITY ANALYSIS

**NET PENSION LIABILITY AS OF JUNE 30, 2019**

| | 1% Decrease (6.0%) | Current Discount Rate (7.0%) | 1% Increase (8.0%) |
|---|---|---|---|
| Net Pension Liability | $ 607 | $ 393 | $ 213 |

## PENSION LIABILITIES, PENSION EXPENSE, AND DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES RELATED TO PENSIONS

**Pension Liability—** At June 30, 2019 and 2018, the Authority reported a liability of $393 thousand and $516 thousand, respectively, for its proportionate share of the net pension liability. The Authority's portion of the net pension liability was based on projection of the Authority's long-term share of contributions to the Pension Plan relative to the projected contributions of all participating City governments and their component units, actuarially determined. At June 30, 2019 and 2018, the Authority's proportion was 0.002% and 0.003%, respectively.

**Pension Expense—** For the years ended June 30, 2019 and 2018, the Authority recognized pension expense of ($16) thousand and ($5) thousand, respectively.

**Deferred Outflows and Inflows of Resources—** At June 30, 2019, the Authority reported total deferred outflows of resources and deferred inflows of resources related to pensions from the following sources:

| | DEFERRED OUTFLOWS OF RESOURCES | DEFERRED INFLOWS OF RESOURCES |
|---|---|---|
| Difference between expected and actual experience | $ 32,882 | $ 27,316 |
| Changes of assumptions | 251 | 16,489 |
| Net difference between projected and actual earnings on pension plan investments | - | 24,400 |
| Changes in proportion and difference between the Authority's contributions and proportionate share of contributions | (417,710) | (34,317) |
| The Authority's contributions subsequent to the measurement date | - | - |
| **TOTAL** | **$ (384,577)** | **$ 33,888** |

# 11. PENSION PLANS (CONTINUED)

Amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions at June 30, 2019 will be recognized in pension expense as follows:

| YEAR ENDED JUNE 30, | | AMOUNT |
|---|---|---|
| 2020 | $ | (110,897) |
| 2021 | | (122,188) |
| 2022 | | (92,934) |
| 2023 | | (65,218) |
| 2024 | | (24,790) |
| 2025 | | (2,438) |

# 12. OTHER POST-EMPLOYMENT BENEFITS

**Plan Description—** The Authority's Other Postemployment Benefits Plan ("OPEB Plan") is a single-employer defined benefit plan administered by the New York City Office of Labor Relations. The plan provides certain health and related benefits to eligible retirees and their beneficiaries/dependents of the New York City Municipal Water Finance Authority in accordance with GASB Statement No. 75, ("GASB 75") *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*.

The OPEB Plan consists of three programs: (1) the New York City Health Benefits Program, (2) Welfare Fund Program, and (3) Medicare Part B Program. The Authority's policy is to follow the eligibility criteria applicable to retirees of the City and to provide benefits substantially the same as those provided to the City retirees and eligible beneficiaries/dependents.

There are three classes of employees: active, inactive and retirees.

The following presents a summary of the Authority's census data used in the June 30, 2019 and 2018 OPEB actuarial valuations:

| GROUP | 2019 | 2018 |
|---|---|---|
| Active | 10 | 9 |
| Active off payroll | 2 | 2 |
| Deferreds | 1 | 0 |
| Retired | 5 | 4 |
| **TOTAL** | **18** | **15** |

**Funding Policy—** The Authority is not required to provide funding for the OPEB Plan, other than the pay-as-you-go amount necessary to provide current benefits to retirees and eligible beneficiaries/dependents. For the years ended June 30, 2019 and 2018, the Authority had five and four retirees, respectively, and made contributions of $23.1 thousand and $20.3 thousand, respectively. Members are not required to contribute; although, retirees may elect basic health insurance programs and/or optional coverage that requires contributions. Plan retiree participants who opt for other basic or enhanced coverage must contribute 100% of the incremental costs above the premiums for the benchmark plan. The OPEB Plan also reimburses covered employees for 100% of the Medicare Part B premium rate applicable to a given year, and there is no retiree contribution to the welfare fund (the "Welfare Fund") that covers retirees for various health care benefits not provided through the basic coverage.

## 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

**Annual OPEB Cost and Net OPEB Liability—** The Authority's annual OPEB cost is calculated based on the annual expense ("Expense"), an amount that was actuarially determined in accordance with the parameters of GASB 75. Actuarial valuations involve estimates and assumptions about the probability of events far into the future. The entry age actuarial cost method was used in the actuarial valuation prepared as of June 30, 2018 for the fiscal year ending June 30, 2019, which was the basis for the fiscal year 2019 Expense calculation. Under this method, as used in this OPEB Plan valuation, the actuarial present value ("APV") of benefits ("APVB") of each individual included in actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit age(s). The employer portion of this APVB allocated to the valuation year is the employer normal cost. The portion of this APVB that is not provided for on the valuation date by the APV of future employer normal cost or future member contributions is the total OPEB Plan liability. The excess of the total OPEB Plan liability over the plan fiduciary net position, which represents the assets of the plan, is the net OPEB Plan liability.

All changes in the net OPEB Plan liability as of June 30, 2019 and 2018 are being amortized over the future working lifetime of all plan participants for purposes of calculating the expense except for the amount of change in plan assets, which would be amortized over a 5-year period using level-dollar amortization. This plan however, is not assumed to have any assets.

**Total OPEB Liability—** The Authority's total OPEB Plan liabilities of $1.8 million and $1.5 million, respectively, were measured as of June 30, 2019 and 2018, and were determined by actuarial valuations as of those dates.

The following table shows changes in the Authority's net OPEB Plan liability for fiscal years 2019 and 2018 (in thousands):

| | | 2019 | | 2018 |
|---|---|---|---|---|
| Balance at beginning of the year | $ | 1,457 | $ | 1,412 |
| **CHANGES FOR THE YEAR:** | | | | |
| Service cost | | 111 | | 94 |
| Interest | | 47 | | 43 |
| Difference between expected and actual experience | | 572 | | (106) |
| Changes in assumptions or other inputs | | (336) | | 35 |
| Actual benefit payments | | (23) | | (21) |
| **NET CHANGES** | | **371** | | **45** |
| **NET OPEB PLAN LIABILITY - END OF THE YEAR** | **$** | **1,828** | **$** | **1,457** |

The Authority's annual OPEB Plan expense for fiscal years 2019 and 2018 were as follows (in thousands):

| | | 2019 | | 2018 |
|---|---|---|---|---|
| **COMPONENTS** | | | | |
| Service costs | $ | 111 | $ | 94 |
| Interest on the total OPEB Plan liability | | 47 | | 43 |
| Changes of assumptions | | (60) | | (20) |
| Difference between expected and actual experience | | 44 | | (23) |
| **TOTAL OPEB PLAN EXPENSE** | **$** | **142** | **$** | **94** |

## 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

**Funded Status and Funding Progress—** As of June 30, 2019, the most recent actuarial measurement date, the cost was 0% funded. The total OPEB Plan liability for benefits was $1.8 million, and the plan fiduciary net position was $0, resulting in a net OPEB Plan liability of $1.8 million. The covered payroll (annual payroll of active employees covered by the OPEB Plan) was $.9 million, and the ratio of the net OPEB Plan liability to the covered payroll was 193.9%. The impact on the net OPEB Plan liability of a 1% increase or decrease in the discount rate and trend is included in on page 74 and 75.

**Actuarial Methods Assumptions and Other Inputs—** Actuarial valuations of an ongoing plan involve estimates of the value of reported amounts and assumptions about the probability of occurrence of events far into the future, such as assumptions about future employment, demographic, salary increase, mortality, and the healthcare cost trend. The actuarial assumptions used in the fiscal year 2019 and the fiscal year 2018 OPEB Plan valuations are a combination of those used in the New York City Employee Retirement Systems ("NYCERS") pension actuarial valuations and those specific to the OPEB Plan valuations.

Amounts determined regarding the funded status of the OPEB Plan and the annual Expense of the Authority are subject to continual revision as actual results are compared with past expectations and new estimates are made about the future. Projections of benefits for financial reporting purposes are based on the types of benefits provided at the time of each valuation and the historical pattern of the sharing of benefit costs between the employer and employees to that point. The actuarial methods and assumptions used include techniques that are designed to reduce short-term volatility in total OPEB Plan liability, consistent with the long-term perspective of the calculations.

The actuarial assumptions used in the fiscal year 2019 and fiscal year 2018 OPEB Plan valuations are classified as those used in the New York City Retirement Systems ("NYCRS") valuations and those specific to the OPEB valuations.

The OPEB Plan actuarial valuations incorporate only the use of certain NYCERS demographic and salary increase assumptions. The NYCERS demographic and salary scale assumptions are unchanged from the prior OPEB Plan actuarial valuation. For purposes of determining pension obligations, the demographic and salary scale assumptions requiring NYCERS Board approval (available on the website of the Office of the Actuary at www.nyc.gov/actuary) were adopted by each respective Board of Trustees during fiscal year 2012. Chapter 3 of the Laws of 2013 enacted those actuarial assumptions and methods that require New York State Legislation.

# 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

The OPEB Plan-specific actuarial assumptions used in the fiscal year 2019 OPEB Plan valuation are as follows:

| | |
|---|---|
| Valuation Date | June 30, 2018 |
| Measurement Date | June 30, 2019 |
| Discount Rate | 2.79% per annum for the June 30, 2018 measurement date. 2.98% for the June 30, 2018 valuation date.[1] |
| Actuarial Cost Method | Entry age calculated on an individual basis with the actuarial value of projected benefits allocated on a level basis over earnings from hire through age of exit. |
| Salary Increase | 3.00% per annum which includes an inflation rate of 2.50% and a general wage increase rate of 0.50%. For more information see the Silver Books. |
| Inflation | 2.50% |
| Per-Capita Claims Costs | EBCBS and GHI plans are insured via a Minimum Premium arrangement while the HIP and many of the other HMOs are community rated. Costs reflect age adjusted premiums for all plans. HIP HMO and GHI/EBCBS non-Medicare premiums have been adjusted for Health Savings Agreement changes. |

[1] Rates are based solely on the S&P Municipal Bond 20 Year High Grade Rate Index, since the plan has no assets as per guidance under GASB 75.

Employer premium contribution schedules for the month of July 2018 and January 2019 were reported by the New York City Office of Labor Relations (“OLR”). In most cases, the premium contributions remained the same throughout the year. HIP HMO Medicare rates varied by date and by specific Plan options. These variations are the result of differing Medicare reimbursements. The various monthly rates were blended by proportion of enrollment. For other rates, where the January 2019 premium rate was different than the July 2018 premium rate, the valuation assumed that the January 2019 premium rate was more representative of the long-term cost of the arrangement.

These assumptions are generally unchanged from the previous valuation except as noted below. The NYCERS pension assumptions are provided in the five “Silver Books” available on the Reports page of The Office of the Actuary website (www.nyc.gov/actuary).

The probability of retirement set out in each of the Silver Books is assumed to be 100% at either age 63 or 70, depending upon the program of benefits for the individual employee. For the OPEB Plan valuation, 100% of the individuals remaining in service at these ages are assumed to either retire with a benefit or to terminate employment without a benefit, depending upon whether they have attained the requisite service.

Based on those assumptions, the City’s OPEB Plan’s fiduciary net position was projected to be available to make all projected OPEB Plan payments for current active and inactive employees until 2026. After that time, benefit payments will be funded on a pay-as-you go basis. The discount rate is the single equivalent rate which results in the same present value as discounting future benefit payments made from assets at the long-term expected rate of return and discounting future benefit payments funded on a pay-as-you-go basis at the Municipal Bond 20-year Index Rate.

Results for the OPEB Plans for Component Units are presented using a discount rate of the Municipal Bond 20-year Index Rate, since there is no pre-funding assumed for these plans.

# 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

The initial monthly premium rates used in the valuations are shown in the following table:

| | MONTHLY RATES | |
|---|---|---|
| **PLAN** | **2019** | **2018** |
| **HIP HMO** | | |
| Non-Medicare Single | $ 729.97 | $ 652.44 |
| Non-Medicare Family | 1,783.60 | 1,598.47 |
| Medicare | 170.84 | 164.98 |
| **GHI/EBCBS** | | |
| Non-Medicare Single | 741.40 | 620.08 |
| Non-Medicare Family | 1,947.32 | 1,625.27 |
| Medicare | 191.64 | 172.42 |
| **OTHER HMOs[1]** | | |
| Non-Medicare Single | 1,075.01 | 1,018.56 |
| Non-Medicare Family | 2,409.82 | 2,223.80 |
| Medicare Single | 338.86 | 311.79 |
| Medicare Family | 668.49 | 621.50 |

[1] Other HMO premiums represent the total premium for medical (not prescription drug) coverage, including retiree contributions.

**Welfare Fund—** For the fiscal year 2018 valuation, the Welfare Fund contribution reported for fiscal year 2018, including any reported retroactive amounts, was used as the per capita cost for valuation purposes.

The calculations reflect an additional one-time $100 contribution for fiscal year 2019 in July 2018 and fiscal year 2020 in July 2019.

Reported annual contribution amounts for the last two years are shown in Appendix B, Tables 2a to 2e of the OPEB Plan valuation report dated September 14, 2018.

## 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

Welfare Fund rates are based on actual reported union Welfare Fund code for current retirees.

The weighted average annual contribution rates used for future retirees is shown below.

| | ANNUAL RATE | | | |
|---|---|---|---|---|
| | | **2019** | | **2018** |
| NYCERS | $ | 1,870 | $ | 1,850 |

Contributions are assumed to increase by 3.5% annually starting in fiscal year 2020.

Medicare Part B Premiums are as follows:

| **CALENDAR YEAR** | **MONTHLY PREMIUM** | |
|---|---|---|
| 2013 – 2015 | $ | 104.90 |
| 2016 | | 109.97 |
| 2017 | | 113.63 |
| 2018 | | 125.85 |
| 2019 | | 134.43 |

2019 Medicare Part B premiums are assumed to increase by Medicare Part B trend rates.

Medicare Part B premium reimbursement amounts have been updated to reflect the actual premium rates announced for calendar years through 2019. Due to limited cost-of-living increase in Social Security benefits for calendar years 2017, 2018, and 2019, some Medicare Part B participants will not be charged the Medicare Part B premium originally projected or ultimately announced for those years. Thus, the valuation uses a blended estimate as a better representation of future Part B premium costs.

For the fiscal year 2019 OPEB Plan valuation, the annual premium used was $1,561.68, which is equal to 12 times an average of the calendar year 2018 and 2019 monthly premiums shown.

For calendar year 2019, the monthly premium was determined as follows:

a. 3.5% of the basic $104.90 monthly hold-harmless amount, assuming that there would be no claims made for the slight increase in Part B premiums for continuing retirees, and

b. 96.5% of the announced premiums of $135.50 for calendar year 2019, representing the proportion of the Medicare population that will pay the announced amount.

Overall Medicare Part B Premium amounts are assumed to increase by the following percentages to reflect the income-related increases in Medicare Part B Premiums for high income individuals.

## 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

| FISCAL YEAR | INCOME-RELATED MEDICARE PART B INCREASE |
|---|---|
| 2019 | 5.0% |
| 2020 | 5.2 |
| 2021 | 5.3 |
| 2022 | 5.4 |
| 2023 | 5.5 |
| 2024 | 5.6 |
| 2025 | 5.8 |
| 2026 | 5.9 |
| 2027 and later | 6.0 |

**Medicare Part B Premium Reimbursement Assumption—** 90% of Medicare participants are assumed to claim reimbursement; based on historical data.

**Health Care Cost Trend Rate ("HCCTR")—** Covered medical expenses are assumed to increase by the following percentages. For purposes of measuring entry age calculations, actual historic plan increases are reflected to the extent known, with further historic trend rates based on the trend assumed for fiscal year 2019 valuation.

HCCTR ASSUMPTIONS

| FISCAL YEAR ENDING[1] | PRE-MEDICARE PLANS | MEDICARE PLANS | MEDICARE PART B PREMIUMS | WELFARE FUND CONTRIBUTIONS |
|---|---|---|---|---|
| 2019 | 7.00% | 5.00% | 5.88%[1] | 3.50% |
| 2020 | 7.00 | 5.00 | 5.00 | 3.50 |
| 2021 | 6.75 | 4.90 | 5.00 | 3.50 |
| 2022 | 6.50 | 4.90 | 5.00 | 3.50 |
| 2023 | 6.25 | 4.80 | 5.00 | 3.50 |
| 2024 | 6.00 | 4.80 | 5.00 | 3.50 |
| 2025 | 5.75 | 4.70 | 5.00 | 3.50 |
| 2026 | 5.50 | 4.70 | 5.00 | 3.50 |
| 2027 | 5.25 | 4.60 | 5.00 | 3.50 |
| 2028 | 5.00 | 4.60 | 5.00 | 3.50 |
| 2029 | 4.75 | 4.50 | 5.00 | 3.50 |
| 2030 and later | 4.50 | 4.50 | 5.00 | 3.50 |

[1] Reflects actual calendar year premium for the first 6 months of FY20 (July 2019 to December 2019) and 5.0% trend for remaining 6 months

**Age and Gender-Related Morbidity—** The premiums are age and gender adjusted for GHI/EBCBS, HIP HMO and Other HMOs. The assumed relative costs of coverage are consistent with information presented in the 2013 study *Health Care Costs—From Birth to Death,* sponsored by the Society of Actuaries.

# 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

For non-Medicare costs, a sample of factors used are:

| AGE | MALE | FEMALE | AGE | MALE | FEMALE |
|---|---|---|---|---|---|
| 20 | 0.170 | 0.225 | 45 | 0.355 | 0.495 |
| 25 | 0.146 | 0.301 | 50 | 0.463 | 0.576 |
| 30 | 0.181 | 0.428 | 55 | 0.608 | 0.671 |
| 35 | 0.227 | 0.466 | 60 | 0.783 | 0.783 |
| 40 | 0.286 | 0.467 | 64 | 0.957 | 0.917 |

Children costs assumes a factor of 0.229.

For Medicare costs, relative factors based on the Yamamoto Study for net Medicare costs for 2010 for inpatient, outpatient, and professional costs were blended. Prescription drug costs were not reflected as NYCHBP excludes most drugs from coverage. Professional costs were weighted at 64%, based on the GHI portion of the combined GHI/EBCBS premiums reported historically. Inpatient costs were weighted as twice as prevalent as outpatient costs based on the relative allocation suggested in the Yamamoto Study.

Costs prior to age 65 were approximated using the non-Medicare data, but they assume that individuals under age 65 on Medicare had an additional disability-related morbidity factor.

Medicare costs prior to age 65 assume an additional disability-related morbidity factor. A sample of factors are:

| AGE | MALE | FEMALE | AGE | MALE | FEMALE |
|---|---|---|---|---|---|
| 20 | 0.323 | 0.422 | 65 | 0.919 | 0.867 |
| 25 | 0.278 | 0.565 | 70 | 0.946 | 0.885 |
| 30 | 0.346 | 0.804 | 75 | 1.032 | 0.953 |
| 35 | 0.432 | 0.876 | 80 | 1.122 | 1.029 |
| 40 | 0.545 | 0.878 | 85 | 1.217 | 1.116 |
| 45 | 0.676 | 0.929 | 90 | 1.287 | 1.169 |
| 50 | 0.883 | 1.082 | 95 | 1.304 | 1.113 |
| 55 | 1.159 | 1.260 | 99 and older | 1.281 | 0.978 |
| 60 | 1.493 | 1.470 | | | |

The age adjustment for the non-Medicare GHI/EBCBS premium reflects a 5% reduction in the GHI portion of the monthly premium (with the GHI portion representing $349.58 out of the $741.40 for single coverage and $928.59 out of the $1,947.32 for family coverage for fiscal year 2019 rates) and a 3% reduction in the EBCBS portion of the premium (with the EBCBS portion representing the remainder of the premiums) for the estimated margin that is expected to be returned.

**Mortality Rates—** The fiscal year 2019 pension valuation included changes to mortality. These new assumptions have also been reflected in this valuation.

# 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

**Participation—** Active participation assumptions are based on actual elections for current retirees. Portions of current retirees not eligible for Medicare are assumed to change elections upon attaining age 65 based on the patterns of elections of Medicare-eligible retirees. The participation assumptions have been updated since the prior valuation to reflect recent experience. Detailed assumptions appear in the following table.

PLAN PARTICIPATION ASSUMPTIONS

| BENEFITS | NYCERS |
|---|---|
| **PRE-MEDICARE** | |
| – GHI/EBCBS | 72% |
| – HIP HMO | 20 |
| – Other HMO | 4 |
| – Waiver | 4 |
| **MEDICARE** | |
| – GHI | 72 |
| – HIP HMO | 20 |
| – Other HMO | 4 |
| – Waiver | 4 |
| **POST-MEDICARE MIGRATION** | |
| – Other HMO to GHI | 0 |
| – HIP HMO to GHI | 0 |
| – Pre-Med. Waiver | |
| ** To GHI @ 65 | 0 |
| ** To HIP @ 65 | 0 |

This non-filer group also includes some participants who do not qualify for coverage because they were working less than 20 hours a week at termination.

**Dependent Coverage—** Dependent coverage is assumed to terminate when a retiree dies.

**Dependents—** Dependent assumptions based on distribution of coverage of recent retirees are shown in the following table. Actual spouse data is shown for current retirees. Child dependents of current retirees are assumed to receive coverage until age 26.

Based on experience under the OPEB Plan for NYCERS, male retirees were assumed to be four (4) years older than their wives, and female retirees were assumed to be two (2) years younger than their husbands.

Children are assumed to be covered for eight (8) years after retirement. For employees eligible to retire based only on service, children are assumed to be covered for an additional five (5) years.

# 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

DEPENDENT COVERAGE ASSUMPTIONS

| GROUP | NYCERS |
|---|---|
| **MALE** | |
| – Single Coverage | 35 |
| – Spouse | 35 |
| – Child/No Spouse | 5 |
| – Spouse and Child | 25 |
| **TOTAL** | **100%** |
| **FEMALE** | |
| – Single Coverage | 70 |
| – Spouse | 20 |
| – Child/No Spouse | 5 |
| – Spouse and Child | 5 |
| **TOTAL** | **100%** |

**Demographic Assumptions—** The fiscal year 2019 pension valuation included changes to several demographic assumptions including retirement, mortality, disability, withdrawal, and salary scale. These new assumptions have also been reflected in this valuation.

**COBRA Benefits—** Although COBRA beneficiaries pay 102% of "premiums," typical claim costs for COBRA participants run about 50% greater than costs for other participants.

There is no cost to The Authority for COBRA beneficiaries who enroll in community-rated HMOs, including HIP, since these individuals pay their full community rate. However, the City's costs under the experience-rated GHI/EBCBS coverage are affected by the claims for COBRA-covered individuals.

In order to reflect the cost of COBRA coverage, the cost of excess claims for GHI-covered individuals and families is estimated assuming that 15% of employees not eligible for other benefits elect COBRA coverage for 15 months. A lump-sum COBRA cost of $1,100 was assumed for terminations during fiscal year 2019. This lump-sum amount is increased by the Pre-Medicare HCCTR for future years but is not adjusted for age-related morbidity.

**Cadillac Tax—** The OPEB Plan valuation includes an explicit calculation of the high-cost plan excise tax ("Cadillac Tax") that will be imposed beginning in 2022 under HCR.

The tax is 40% of the excess of (a) over (b) where (a) is the cost of medical coverage and (b) is the statutory limits ($10,200 for single coverage and $27,500 for family coverage), adjusted for the following:

- For Pre-Medicare retirees above the age of 55, the limit will be increased by $1,650 for single coverage and $3,450 for family coverage.
- For 2019, the limits are increased by CPI + 1% (e.g. 3.25%). For each year after 2019, the limits are further increased by CPI (e.g. 2.25%). The indexing of limits starts in 2018; the tax is first applied in 2022.

# 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

The impact of the Cadillac Tax for the program benefit is calculated based on the following assumptions about the cost of medical coverage:

- The cost for each benefit option without age adjustment (GHI, HIP, or other HMO, combined with the average cost of Medicare Part B premium reimbursement, if applicable) was separately compared to the applicable limit.
- The additional Cadillac Tax due to the riders or optional benefit arrangements is assumed to be reflected in the contribution required for the rider or optional benefit.
- Pre-Medicare retirees under age 55 are not assumed to have the higher limits that apply to employees engaged in high-risk professions because the majority of employees included in this valuation are not in such professions.

In cases where the Authority provides only a portion of the OPEB Plan benefits, which give rise to the Cadillac Tax, the calculated Cadillac Tax is allocated to the appropriate paying entity in proportion to the OPEB liabilities for relevant OPEB Plan benefits.

**Active/Inactive Liabilities—** 40% of the measured liability of the Active/Inactive population. This is roughly equivalent to assuming that 60% of the Active/Inactive members will terminate membership prior to vesting and not receive OPEB.

## SENSITIVITY OF THE NET OPEB PLAN LIABILITY TO CHANGES IN THE DISCOUNT RATE

**Sensitivity of the Authority's Proportionate Share of the Net OPEB Plan Liability to Changes in the Discount Rate—** The following table presents the Authority's proportionate share of the net OPEB Plan liability using the discount rate of 2.79 percent, as well as what the Authority's proportionate share of the net OPEB Plan liability would be if it were calculated using a discount rate that is one-percentage point lower (1.79 percent) or one-percentage point higher (3.79 percent) than the current rate (in thousands):

SENSITIVITY ANALYSIS

**NET OPEB PLAN LIABILITY AS OF JUNE 30, 2019**

| | | 1% Decrease (1.79%) | | Current Discount Rate (2.79%) | | 1% Increase (3.79%) |
|---|---|---|---|---|---|---|
| Total OPEB Plan Liability | $ | 2,163 | $ | 1,828 | $ | 1,565 |

## SENSITIVITY OF THE NET OPEB PLAN LIABILITY TO CHANGES IN THE HEALTHCARE COST TREND RATE

The following presents the total OPEB Plan liability of the Authority, as well as what the Authority's total OPEB Plan liability would be if it were calculated using healthcare cost trend rates that are 1-percent-point lower or 1-percent-point higher than the current healthcare cost trend rates:

# 12. OTHER POST-EMPLOYMENT BENEFITS (CONTINUED)

SENSITIVITY ANALYSIS

NET OPEB PLAN LIABILITY AS OF JUNE 30, 2019

| | 1% Decrease (6.00% decreasing to 3.50%) | Healthcare Cost Trend Rates (7.00% decreasing to 4.50%) | 1% Increase (8.00% decreasing to 5.50%) |
|---|---|---|---|
| Total OPEB Plan Liability | $ 1,478 | $ 1,828 | $ 2,333 |

## DEFERRED OUTFLOWS OF RESOURCES AND DEFERRED INFLOWS OF RESOURCES RELATED TO THE OPEB PLAN

At June 30, 2019, the Authority reported deferred outflows of resources and deferred inflows of resources related to the OPEB Plan from the following sources:

| | DEFERRED OUTFLOWS OF RESOURCES | DEFERRED INFLOWS OF RESOURCES |
|---|---|---|
| Difference between expected and actual experience | $ 505 | $ 152 |
| Changes of assumptions or other inputs | 27 | 446 |
| **TOTAL** | **$ 532** | **$ 598** |

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

| FISCAL YEAR ENDED JUNE 30, | AMOUNT |
|---|---|
| 2020 | $ (15.7) |
| 2021 | (15.7) |
| 2022 | (15.7) |
| 2023 | (15.7) |
| 2024 | (15.7) |
| 2025 | (15.1) |
| 2026 | 13.0 |
| 2027 | 14.2 |

# 13. POLLUTION REMEDIATION OBLIGATIONS

The System reports pollution remediation obligations ("PROs") as required by the GASB. The System's PROs may arise as a result of: (1) federal, State, and local laws and regulations, (2) violations of pollution-related permits or licenses, (3) a determination by the System that there is an imminent endangerment to public health and safety as a result of an existing pollution condition, (4) the System's being named in a lawsuit to compel remediation or being identified by a regulator as a party responsible or potentially responsible for remediation, and/or (5) the System's voluntarily commencement of remediation. As of June 30, 2019 and 2018, the System reported $33 million and $37.6 million of liabilities for known PROs, respectively.

## 13. POLLUTION REMEDIATION OBLIGATIONS (CONTINUED)

The System has estimated these amounts based on the current value of outlays expected to be incurred for pollution remediation, which it is currently obligated to perform. Actual future outlays will differ from the estimated amounts if the prices or techniques for remediation measures change or differ from estimates, if and when additional information about existing pollution conditions becomes known to the System in the future and/or if applicable laws or regulations change.

Remediation outlays for certain pollution conditions currently known to the System are not included in the reported liabilities because they are not yet reasonably estimable. These include certain locations that the System has been informed have been designated under federal law as Superfund sites to address alleged hazardous substances, pollutants, or contaminants at these sites and for which the System may be named as a potentially responsible party for the remediation because there are the System's facilities operated at these locations.

## 14. SUBSEQUENT EVENTS

- On July 2, 2019, the Authority issued $459.6 million of fixed rate tax-exempt Second Resolution bonds, Fiscal 2020 Series AA. Proceeds of the bonds were used to refund the following amounts of fixed rate Second Resolution bonds: $141.6 million of Fiscal 2009 Series EE, $165 million of Fiscal 2009 Series FF, $108.7 million of Fiscal 2009 Series GG, and $135.7 million of Fiscal 2010 Series BB. The proceeds of Fiscal 2020 Series AA also paid for bond issuance costs.
- On July 9, 2019, the Authority drew down $2.4 million of Fiscal 2012 Series 1 BAN proceeds. The proceeds were used pay for the costs to improvement to the System.
- On July 11, 2019, the Authority drew down $178.5 million of Fiscal 2020 Series 1 BAN proceeds to pay for the costs of improvements to the System.
- On July 17, 2019, pursuant to the terms of Fiscal 2012 Series 1 BAN issued by the Authority to EFC, the total then outstanding BAN principal amount of $30.0 million was forgiven by EFC.
- On July 17, 2019, the Authority issued $450.0 million of fixed rate tax-exempt Second Resolution bonds, Fiscal 2020 Series BB. Proceeds of the bonds were used to pay for the costs of improvements to the System and to pay for bond issuance costs.
- On October 10, 2019, the Authority drew down $149.8 million of Fiscal 2020 Series 1 BAN proceeds. The proceeds were used pay for the costs to improvement to the System.

*****

# REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

### SCHEDULE OF CHANGES FOR TOTAL OPEB PLAN LIABILITY AND RELATED RATIOS AS OF JUNE 30 (IN THOUSANDS):

| | 2019 | 2018 | 2017 | 2016 |
|---|---|---|---|---|
| **TOTAL OPEB PLAN LIABILITY** | | | | |
| Service cost | $ 111 | $ 94 | $ 101 | $ 136 |
| Interest | 47 | 42 | 43 | 43 |
| Changes of benefit terms | – | – | – | – |
| Differences between expected and actual experience | 572 | (106) | (96) | (8) |
| Changes of assumptions | (336) | 35 | (222) | – |
| Benefits payments | (23) | (20) | (15) | (17) |
| **NET CHANGE IN TOTAL OPEB PLAN LIABILITY** | **371** | **45** | **(189)** | **154** |
| Total OPEB Plan liability – beginning | 1,457 | 1,412 | 1,601 | 1,447 |
| **TOTAL OPEB PLAN LIABILITY – ENDING** | **$ 1,828** | **$ 1,457** | **$ 1,412** | **$ 1,601** |
| Covered payroll | $ 942 | $ 859 | $ 1,038 | $ 1,148 |
| Total OPEB Plan Liability as a percentage of covered payroll | 193.9% | 169.6% | 135.9% | 139.5% |

**NOTES TO THE SCHEDULE:**

**Changes of assumption:** Changes of assumption and other inputs reflect the effects of changes in the discount rate each period.

The following are the discount rates used in each period:

| | |
|---|---|
| 2019 | 2.79% |
| 2018 | 2.98% |
| 2017 | 3.13% |
| 2016 | 2.71% |

The Authority funds OPEB benefits on a pay-as-you-go basis and contributions are not actuarially determined. Therefore, the required supplementary information related to actuarially determined contributions for the 10 most current fiscal years is not applicable.

*This data is presented for those years for which information is available.

# REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

### SCHEDULE OF THE AUTHORITY'S PROPORTIONATE SHARE OF THE NET PENSION LIABILITY LAST 10 FISCAL YEARS* (IN THOUSANDS):

| | | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 |
|---|---|---|---|---|---|---|---|---|
| Authority's proportion of the net pension liability | % | 0.002 | 0.003 | 0.004 | 0.005 | 0.005 | 0.005 | 0.005 |
| Authority's proportionate share of the net pension liability | $ | 393 | 516 | 828 | 1,215 | 1,012 | 901 | 1,154 |
| Authority's covered payroll | $ | 942 | 859 | 1,038 | 1,148 | 1,289 | 1,181 | 1,124 |
| Authority's proportionate share of the net pension liability as percentage of its covered employee payroll | % | 41.72 | 60.07 | 79.77 | 105.84 | 78.51 | 76.29 | 102.67 |
| Plan fiduciary net position as a percentage of the total pension liability | % | 78.8 | 78.8 | 74.8 | 69.6 | 73.1 | 75.3 | 67.2 |

*This data is presented for those years for which information is available.

### SCHEDULE OF THE AUTHORITY'S PENSION CONTRIBUTIONS LAST 10 FISCAL YEARS (IN THOUSANDS):

| | | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Actuarially determined contribution | $ | 78 | 111 | 136 | 170 | 161 | 141 | 136 | 157 | 113 | 121 |
| Contribution in relation to the actuarially determined contribution | $ | (78) | (111) | (136) | (170) | (161) | (141) | (136) | (157) | (113) | (121) |
| **CONTRIBUTION DEFICIENCY (EXCESS)** | **$** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** | **-** |
| Authority's covered payroll[1] | $ | 942 | 859 | 1,038 | 1,148 | 1,289 | 1,181 | 1,124 | 919 | 1,026 | 676 |
| Contribution as a percentage of covered payroll | % | 8.28 | 12.92 | 13.10 | 14.81 | 12.49 | 11.94 | 12.10 | 17.08 | 11.01 | 17.90 |

[1]Covered payroll data from the actuarial valuation date with one-year lag.

# STATISTICAL

# CONTENTS

This part of the New York City Water and Sewer System's Comprehensive Annual Financial Report presents detailed information to provide context to the information in the combining financial statements, note disclosures and required supplementary information.

# SCHEDULES OF FINANCIAL TRENDS INFORMATION

## NET POSITION (DEFICIT) BY CATEGORY - TEN YEAR TREND

| | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Restated | Restated | | | Restated | Restated | | |
| Net investment in capital assets | $437,786 | $116,124 | $(204,403) | $(430,201) | $(598,349) | $(771,165) | $(945,890) | $(840,201) | $(215,322) | $920,728 |
| **RESTRICTED FOR:** | | | | | | | | | | |
| Debt service | 1,624,802 | 1,501,529 | 1,781,994 | 1,457,332 | 1,224,925 | 1,145,505 | 918,229 | 687,656 | 573,461 | 239,192 |
| Operations and maitenance | 260,102 | 247,304 | 237,746 | 250,447 | 226,383 | 221,440 | 212,233 | 212,885 | 199,636 | 191,772 |
| Unrestricted (deficit) | (983,233) | (781,214) | (760,384) | (543,830) | (723,166) | (754,581) | (668,471) | (869,372) | (910,633) | (1,632,209) |
| Total net position (Deficit) | $1,339,457 | $1,083,743 | $1,054,953 | $733,748 | $129,793 | $(158,801) | $(483,899) | $(809,032) | $(352,858) | $(280,517) |

# SCHEDULES OF FINANCIAL TRENDS INFORMATION (CONTINUED)

## CHANGES IN NET POSITION (DEFICIT) – TEN YEAR TREND

| | 2019 | 2018 | 2017 | 2016 | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Restated | Restated | | | Restated | Restated | | |
| OPERATING REVENUES | | | | | | | | | | |
| Water supply and distribution | $1,416,713 | $1,346,045 | $1,407,328 | $1,431,148 | $1,382,189 | $1,351,550 | $1,278,646 | $1,238,352 | $1,158,977 | $1,005,045 |
| Sewer collection and treatment | 2,252,574 | 2,140,214 | 2,237,652 | 2,275,524 | 2,197,679 | 2,148,964 | 2,033,047 | 1,857,527 | 1,797,777 | 1,562,777 |
| Bad debt expense | 852 | (18,259) | (2,620) | (4,467) | (23,301) | (26,979) | (16,983) | (28,541) | (76,799) | (14,032) |
| Other operating revenues | 149,660 | 187,308 | 186,355 | 185,793 | 211,267 | 266,996 | 172,283 | 140,595 | 111,552 | 190,251 |
| **TOTAL OPERATING REVENUES** | **3,819,799** | **3,655,308** | **3,828,715** | **3,887,998** | **3,767,834** | **3,740,531** | **3,466,993** | **3,207,933** | **2,991,507** | **2,744,041** |
| OPERATING EXPENSES | | | | | | | | | | |
| Operation and maintenance | 1,545,652 | 1,474,937 | 1,441,562 | 1,313,840 | 1,517,132 | 1,518,424 | 1,375,740 | 1,446,852 | 1,397,867 | 1,829,835 |
| Administration and general | 52,504 | 55,493 | 50,749 | 61,335 | 55,865 | 68,936 | 56,738 | 47,402 | 40,424 | 40,257 |
| Depreciation and amortization | 908,355 | 1,042,968 | 930,482 | 918,950 | 1,023,906 | 740,879 | 677,560 | 692,296 | 628,339 | 574,483 |
| **TOTAL OPERATING EXPENSES** | **2,506,511** | **2,573,398** | **2,422,793** | **2,294,125** | **2,596,903** | **2,328,239** | **2,110,038** | **2,186,550** | **2,066,630** | **2,444,575** |
| **OPERATING INCOME** | **1,313,288** | **1,081,910** | **1,405,922** | **1,593,873** | **1,170,931** | **1,412,292** | **1,356,955** | **1,021,383** | **924,877** | **299,466** |
| NONOPERATING REVENUES (EXPENSES) | | | | | | | | | | |
| Interest expense | (1,224,907) | (1,205,793) | (1,171,594) | (1,195,773) | (1,264,538) | (1,263,305) | (1,225,771) | (1,246,863) | (1,178,226) | (1,019,633) |
| Loss on retirement/ impairment of fixed assets | (2,423) | (48,609) | (44,452) | (4,488) | (2,334) | (18,815) | (20,976) | (1,646) | (3,426) | (23,254) |
| Subsidy income | 176,346 | 175,620 | 166,715 | 164,502 | 163,655 | 174,606 | 174,862 | 196,241 | 180,986 | 128,110 |
| Capital distribution | (110,750) | (22,789) | (45,789) | (11,082) | (25,337) | (39,627) | (25,429) | (42,005) | (53,591) | (32,580) |
| Investment income | 91,712 | 28,809 | 4,178 | 53,322 | 22,426 | 50,148 | 58,793 | 48,936 | 38,313 | 65,760 |
| **NET INCOME (LOSS) BEFORE CAPITAL CONTRIBUTIONS** | **243,266** | **9,148** | **314,980** | **600,354** | **64,803** | **315,299** | **318,434** | **(23,954)** | **(91,067)** | **(582,131)** |
| Capital contributions | 12,448 | 19,642 | 6,225 | 4,060 | 223,791 | 9,799 | 7,699 | 26,903 | 18,696 | 30,424 |
| **CHANGE IN NET POSITION (DEFICIT)** | **255,714** | **28,790** | **321,205** | **604,414** | **288,594** | **325,098** | **326,133** | **2,949** | **(72,371)** | **(551,707)** |
| Net position (deficit) – beginning of year | 1,083,743 | 1,054,953 | 733,748 | 129,793 | (158,801) | (483,899) | (809,032) | (352,888) | (280,517) | 260,251 |
| Restatement of beginning net position (deficit) | – | – | – | (459) | – | – | (1,000) | (459,093) | – | 10,939 |
| **NET POSITION (DEFICIT) – END OF YEAR** | **$1,339,457** | **$1,083,743** | **$1,054,953** | **$733,748** | **$129,793** | **$(158,801)** | **$(483,899)** | **$(809,032)** | **$(352,888)** | **$(280,517)** |

# REVENUE CAPACITY INFORMATION

## WATER AND SEWER RATE INCREASE – TEN YEAR TREND

| EFFECTIVE DATE | INCREASE IN FLAT-RATE WATER/ METERED WATER | METERED WATER RATE (PER CCF) [1] | SEWER RATE |
|---|---|---|---|
| July 1, 2010 | Increased 12.9% | 2.95 | 159% of water charge |
| July 1, 2011 | Increased 7.5% | 3.17 | 159% of water charge |
| July 1, 2012 | Increased 7.0% | 3.39 | 159% of water charge |
| July 1, 2013 | Increased 5.6% | 3.58 | 159% of water charge |
| July 1, 2014 | Increased 3.4% | 3.70 | 159% of water charge |
| July 1, 2015 | Increased 3.0% | 3.81 | 159% of water charge |
| July 1, 2016 | No rate increase | 3.81 | 159% of water charge |
| July 1, 2017 | No rate increase | 3.81 | 159% of water charge |
| July 1, 2018 | Increased 2.36% | 3.90 | 159% of water charge |
| July 1, 2019 | Increased 2.31% | 3.99 | 159% of water charge |

[1] Ccf equals 100 cubic feet or approximately 748 gallons

## AVERAGE DAILY WATER CONSUMPTION – TEN YEAR TREND

| FISCAL YEAR | TOTAL (MGD) [1] | UPSTATE COUNTIES (MGD) [1] | CITY (MGD) [1] | PER CAPITA (GALS/DAY) [2] |
|---|---|---|---|---|
| 2010 | 1,127 | 112 | 1,016 | 126 |
| 2011 | 1,152 | 117 | 1,035 | 127 |
| 2012 | 1,117 | 109 | 1,009 | 123 |
| 2013 | 1,123 | 110 | 1,013 | 124 |
| 2014 | 1,116 | 111 | 1,005 | 123 |
| 2015 | 1,115 | 112 | 1,003 | 123 |
| 2016 | 1,109 | 112 | 997 | 122 |
| 2017 | 1,112 | 113 | 999 | 122 |
| 2018 | 1,114 | 110 | 1,004 | 123 |
| 2019 | 1,090 | 100 | 991 | 120 |

[1] MGD = millions of gallons used per day

[2] Population source: U.S. Department of Commerce, Bureau of the Census.

# SCHEDULES OF DEBT CAPACITY INFORMATION

## REVENUE BOND COVERAGE – LAST TEN FISCAL YEARS

Years Ended June 30, 2010 - 2019 (in thousands):

| | | DEBT SERVICE REQUIREMENTS [1] | | | | |
|---|---|---|---|---|---|---|
| YEAR | CASH RECEIPTS $ | PRINCIPAL $ | INTEREST $ | TOTAL $ | FIRST RESOLUTION DEBT SERVICE COVERAGE | SECOND RESOLUTION DEBT SERVICE COVERAGE [2] |
| 2010 | 2,622,290 | 249,093 | 592,194 | 841,287 | 5.24 | 3.09 |
| 2011 | 3,039,374 | 345,591 | 778,235 | 1,123,826 | 5.77 | 2.67 |
| 2012 | 3,270,827 | 378,042 | 700,658 | 1,078,700 | 7.41 | 2.98 |
| 2013 | 3,512,710 | 343,287 | 617,189 | 960,476 | 10.32 | 3.61 |
| 2014 | 3,728,823 | 359,259 | 415,611 | 774,870 | 12.62 | 4.76 |
| 2015 | 3,911,463 | 291,955 | 163,574 | 455,529 | 19.72 | 8.49 |
| 2016 | 3,960,660 | 398,877 | 125,945 | 524,822 | 32.81 | 7.46 |
| 2017 | 3,981,404 | 365,383 | 131,018 | 496,401 | 36.97 | 7.92 |
| 2018 | 3,722,423 | 359,501 | – | 359,501 | 62.81 | 10.21 |
| 2019 | 3,959,550 | 424,794 | 230,497 | 655,291 | 51.41 | 5.97 |

[1] Debt service requirements include First Resolution debt service and Second Resolution debt service, net of subsidy from the NYS Environmental Facilities Corporation and surplus revenues carried forward from the prior fiscal year.

[2] Revenue for coverage purposes for Second Resolution is net of Authority expenses.

## RATIO OF DEBT OUTSTANDING – TEN YEAR TREND

Years Ended June 30, 2010 - 2019 (in thousands):

| YEAR | TOTAL DEBT OUTSTANDING $ | DEBT PER CAPITA |
|---|---|---|
| 2010 | 23,728,997 | 2.87 |
| 2011 | 26,275,774 | 3.18 |
| 2012 | 27,992,861 | 3.35 |
| 2013 | 28,864,590 | 3.44 |
| 2014 | 30,144,755 | 3.57 |
| 2015 | 29,941,881 | 3.54 |
| 2016 | 30,629,355 | 3.61 |
| 2017 | 31,266,750 | 3.71 |
| 2018 | 31,474,932 | 3.75 |
| 2019 | 31,672,249 | N/A |

N/A = data not available

# SCHEDULES OF DEBT CAPACITY INFORMATION (CONTINUED)

## AVERAGE NUMBER OF CUSTOMERS BILLED BY THE SYSTEM

Years Ended June 30, 2010 - 2019

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| Residential | 759,850 | 760,760 | 761,700 | 761,400 | 762,300 | 758,300 | 758,500 | 759,200 | 759,550 | 759,850 |
| Commercial & Industrial | 75,150 | 75,240 | 74,300 | 74,100 | 74,000 | 76,300 | 75,800 | 75,500 | 75,700 | 75,150 |
| **TOTAL ACCOUNTS** | **835,000** | **836,000** | **836,000** | **835,500** | **836,300** | **834,600** | **834,300** | **834,700** | **835,250** | **835,000** |
| Metered accounts | 780,000 | 787,100 | 789,000 | 792,000 | 792,000 | 793,000 | 797,500 | 799,500 | 801,600 | 802,000 |
| Percent metered | 93% | 94% | 94% | 95% | 95% | 95% | 96% | 96% | 96% | 96% |

Sources: (1) Historical NYCMWFA official statements and (2) DEP Bureau of Customer Service.

## TEN LARGEST CUSTOMERS (IN THOUSANDS):

| NAME | FISCAL 2019 BILLED |
|---|---|
| New York City Housing Authority | $ 190,967 |
| The City of New York | 115,699 |
| Consolidated Edison, Inc | 19,824 |
| Riverbay Corporation (Co-op City) | 19,782 |
| Port Authority of New York and New Jersey | 14,730 |
| New York City Health and Hospital Corporation | 13,135 |
| New York Presbyterian Hospital | 9,625 |
| Columbia University | 9,558 |
| New York City Transit- Subway | 6,803 |
| BPP Street Owner, LLC | 5,816 |

# DEMOGRAPHIC AND ECONOMIC INFORMATION

## POPULATION – TEN YEAR TREND

| YEAR | UNITED STATES | PERCENTAGE CHANGE FROM PRIOR PERIOD | CITY OF NEW YORK | PERCENTAGE CHANGE FROM PRIOR PERIOD |
|---|---|---|---|---|
| 2009 | 306,771,529 | 0.88 | 8,131,574 | 0.79 |
| 2010 | 309,326,085 | 0.83 | 8,190,355 | 0.72 |
| 2011 | 311,580,009 | 0.73 | 8,272,963 | 1.01 |
| 2012 | 313,874,218 | 0.74 | 8,348,032 | 0.91 |
| 2013 | 316,057,727 | 0.70 | 8,398,739 | 0.61 |
| 2014 | 318,386,421 | 0.74 | 8,437,387 | 0.46 |
| 2015 | 320,742,673 | 0.74 | 8,468,181 | 0.36 |
| 2016 | 323,071,342 | 0.73 | 8,475,976 | 0.09 |
| 2017 | 325,147,121 | 0.64 | 8,438,271 | –0.44 |
| 2018 | 327,167,434 | 0.62 | 8,398,748 | –0.47 |

Source: U.S. Department of Commerce, Bureau of Economic Analysis. US Census Bureau

## POPULATION – TEN YEAR TREND

| | PERSONAL INCOME | | | PER CAPITA | | |
|---|---|---|---|---|---|---|
| YEAR | UNITED STATES ($ BILLIONS) | CITY OF NEW YORK ($ BILLIONS) | NEW YORK CITY AS A PERCENTAGE OF THE UNITED STATES | UNITED STATES ($) | CITY OF NEW YORK ($) | NEW YORK CITY AS A PERCENTAGE OF THE UNITED STATES |
| 2009 | 12,051 | 406.04 | 3.37 | 39,284 | 49,934 | 127.11 |
| 2010 | 12,542 | 426.08 | 3.40 | 40,546 | 52,023 | 128.30 |
| 2011 | 13,315 | 457.21 | 3.43 | 42,735 | 55,266 | 129.32 |
| 2012 | 13,998 | 479.43 | 3.42 | 44,599 | 57,430 | 128.77 |
| 2013 | 14,176 | 492.44 | 3.47 | 44,851 | 58,633 | 130.73 |
| 2014 | 14,983 | 518.20 | 3.46 | 47,058 | 61,417 | 130.51 |
| 2015 | 15,709 | 541.65 | 3.45 | 48,978 | 63,963 | 130.60 |
| 2016 | 16,112 | 567.59 | 3.52 | 49,870 | 66,964 | 134.28 |
| 2017 | 16,870 | 616.94 | 3.66 | 51,885 | 73,113 | 140.91 |
| 2018 | 17,813 | 644.66 | 3.62 | 54,446 | 76,757 | 140.98 |

Source: U.S. Department of Commerce, Bureau of Economic Analysis. Amounts as of November 15, 2019

# DEMOGRAPHIC AND ECONOMIC INFORMATION (CONTINUED)

## UNEMPLOYMENT RATE – TEN YEAR TREND

| YEAR | CITY OF NEW YORK | CHANGE FROM PRIOR PERIOD |
|---|---|---|
| 2009 | 9.32 | 3.70 |
| 2010 | 9.54 | 0.22 |
| 2011 | 9.08 | –0.46 |
| 2012 | 9.33 | 0.25 |
| 2013 | 8.82 | –0.51 |
| 2014 | 7.26 | –1.57 |
| 2015 | 5.71 | –1.55 |
| 2016 | 5.19 | –0.52 |
| 2017 | 4.62 | –0.58 |
| 2018 | 4.12 | –0.50 |

Source: NY State, Department of Labor.

## EMPLOYMENT DISTRIBUTION – TEN YEAR TREND

Average annual employment (in thousands):

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| GOODS PRODUCING SECTORS | | | | | | | | | | |
| Construction | 120.8 | 112.5 | 112.4 | 116.2 | 122.3 | 129.3 | 139.4 | 147.2 | 152.5 | 157.8 |
| Manufacturing | 81.6 | 76.3 | 75.7 | 76.4 | 76.4 | 76.6 | 77.9 | 76.2 | 73.2 | 70.6 |
| SERVICE PRODUCING SECTORS | | | | | | | | | | |
| Trade Transportation and Utilities | 551.9 | 559.0 | 574.9 | 589.7 | 603.9 | 619.2 | 628.6 | 628.3 | 631.5 | 631.2 |
| Information | 165.9 | 166.6 | 171.5 | 176.5 | 180.2 | 186.3 | 190.4 | 194.2 | 200.5 | 204.4 |
| Financial Activities | 432.9 | 427.3 | 438.1 | 437.8 | 436.4 | 448.0 | 457.9 | 464.6 | 467.5 | 474.7 |
| Professional and Business Services | 569.1 | 575.3 | 597.4 | 619.2 | 643.0 | 669.1 | 700.0 | 722.7 | 742.8 | 762.1 |
| Education and Health Services | 752.6 | 771.6 | 789.2 | 805.6 | 831.1 | 866.4 | 896.9 | 928.7 | 961.9 | 1,006.2 |
| Leisure and Hospitality | 309.5 | 323.1 | 343.2 | 366.7 | 386.6 | 409.7 | 429.1 | 441.6 | 458.4 | 463.0 |
| Other Services | 160.3 | 160.6 | 165.2 | 170.4 | 174.9 | 180.2 | 185.7 | 190.1 | 191.6 | 193.1 |
| **TOTAL PRIVATE** | **2,942.2** | **3,172.4** | **3,267.5** | **3,358.5** | **3,454.5** | **3,584.6** | **3,705.9** | **3,793.5** | **3,880.0** | **3,963.0** |
| Government | 568.3 | 579.0 | 573.3 | 570.6 | 570.6 | 573.3 | 579.5 | 583.7 | 584.7 | 588.3 |
| **TOTAL** | **3,730.9** | **3,751.4** | **3,840.8** | **3,929.0** | **4,025.0** | **4,157.9** | **4,285.4** | **4,377.2** | **4,464.7** | **4,551.3** |

Source: NY State, Department of Labor. Data are presented using the North American Industry Classification System ("NAICS").

# OPERATING INFORMATION

## WATER POLLUTION CONTROL PLANTS DAILY FLOW

| | | 12 MONTH AVG. (MGD) [1] | |
|---|---|---|---|
| **PLANT** | **DESIGN FLOW (MGD)[1]** | **JULY 17 – JULY 18** | **JULY 18 – JULY 19** |
| Wards Island | 275 | 201 | 206 |
| North River | 170 | 109 | 114 |
| Hunts Point | 200 | 138 | 139 |
| 26th Ward | 85 | 47 | 51 |
| Coney Island | 110 | 93 | 102 |
| Owls Head | 120 | 93 | 95 |
| Newtown Creek | 310 | 211 | 215 |
| Red Hook | 60 | 30 | 30 |
| Jamaica | 100 | 78 | 85 |
| Tallmans Island | 80 | 58 | 65 |
| Bowery Bay | 150 | 102 | 108 |
| Rockaway | 45 | 18 | 20 |
| Oakwood Beach | 40 | 30 | 34 |
| Port Richmond | 60 | 26 | 31 |
| **TOTAL** | **1,805** | **1,234** | **1,295** |

[1] mgd=millions of gallons of water

# OPERATING INFORMATION (CONTINUED)

## WATER SYSTEM TUNNELS AND AQUEDUCTS LENGTH DIAMETER TRANSMISSION IN SERVICE

| | CONNECTIONS | LENGTH (MILES) | DIAMETER (FEET)[1] | IN SERVICE DATE |
|---|---|---|---|---|
| **TUNNELS UPSTATE** | | | | |
| Shandanken | | 18.1 | 11.5 x 10.25[1] | 1924 |
| West Delaware | | 44.0 | 11.33 | 1964 |
| East Delaware | | 25.0 | 11.33 | 1955 |
| Neversink | | 6.0 | 10 | 1954 |
| **AQUEDUCTS** | | | | |
| New Croton | New Croton to Gatehouse 1 | 24.0 | 3.5 x 13.6[1] | 1893 |
| | Gatehouse 1 to Shaft 33, including Branch Aqueduct | 8.3 | 12.25-10.5[2] | 1893 |
| | Croton Water Treatment Plant (CWTP) Raw Water | 0.2 | 12 | 2015 |
| | CWTP Low-Level Service Treated Water | 0.8 | 9 | 2015 |
| | CWTP High-Level Service Treated Water | 0.7 | 9 | 2015 |
| Catskill | Ashokan to Kensico | 75.0 | 17 x 17.5[1] | 1915 |
| | Kensico to Hillview | 17.0 | 17 x 18[1] | 1915 |
| Delaware | Rondout to West Branch | 44.2 | 13.5 | 1944 |
| | West Branch to Kensico | 27.2 | 15 | 1943 |
| | Kensico to Hillview | 13.6 | 19.5 | 1942 |
| **TUNNELS DOWNSTATE** | | | | |
| Tunnel 1 | Hillview to Shaft 24 | 18.3 | 15-11[2] | 1917 |
| Tunnel 2 | Hillview to Shaft 17A | 19.3 | 17-15[2] | 1936 |
| Tunnel 3, Stage 1 | Hillview to Shaft 15B | 12.0 | 24-20[2] | 1998 |
| Tunnel 3, Stage 2 | Shaft 13B to Manhattan Distribution | 8.5 | 10 | 2013 |
| Richmond Tunnel | Tunnel 2 to Staten Island Uptake Shaft | 5.0 | 10 | 1970 |
| Staten Island Siphon | Richmond Tunnel and Brooklyn Trunk Water Mains | 2.0 | 6 | 2016 |

[1] Tunnels are not round

[2] Variable diameter tunnels

## NUMBER OF EMPLOYEES – DEPARTMENT OF ENVIRONMENTAL PROTECTION – TEN YEAR TREND

| YEAR | NUMBER OF EMPLOYEES | PERCENTAGE CHANGE FROM PRIOR PERIOD |
|---|---|---|
| 2010 | 5,749 | -0.62% |
| 2011 | 5,653 | -1.67% |
| 2012 | 5,564 | -1.57% |
| 2013 | 5,567 | 0.05% |
| 2014 | 5,547 | -0.36% |
| 2015 | 5,558 | 0.20% |
| 2016 | 5,720 | 2.91% |
| 2017 | 5,748 | 0.49% |
| 2018 | 5,849 | 1.76% |
| 2019 | 5,923 | 1.27% |

NEW YORK CITY
WATER AND SEWER SYSTEM

255 Greenwich Street, 6th Floor, New York, NY 10007