

Manhattan and Bronx Surface Transit Operating Authority Pension Plan

Financial Statements as of and for the
Years Ended December 31, 2018 and 2017,
Supplemental Schedules, and
Independent Auditors' Report

MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY PENSION PLAN

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INDEPENDENT AUDITORS' REPORT

To the Board of Administration of
The Manhattan and Bronx Surface Transit Operating Authority Pension Plan:

Report on the Financial Statements

We have audited the accompanying statements of plan net position of The Manhattan and Bronx Surface Transit Operating Authority Pension Plan (the "Plan") as of December 31, 2018 and 2017, and the related statements of changes in plan net position for the years then ended, and the related notes to the financial statements, which collectively comprise the Plan's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

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

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the Plan's net position as of December 31, 2018 and 2017, and the changes in Plan net position 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 3 through 9 and the Changes in the Employers' Net Pension Liability and Related Ratios-Schedule I on page 53; Employer Contributions and Notes to Schedule-Schedule II on pages 54-56; and the Investment Returns-Schedule III on page 57 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Deloitte & Touche LLP

February 24, 2020

Manhattan and Bronx Surface Transit Operating Authority Pension Plan

Management's Discussion and Analysis As of and For the Years Ended December 31, 2018 and 2017 (Unaudited)

This management's discussion and analysis of The Manhattan and Bronx Surface Transit Operating Authority Pension Plan (the "Plan") financial performance provides an overview of the Plan's financial activities for the years ended December 31, 2018 and 2017. It is meant to assist the reader in understanding the Plan's financial statements by providing an overall review of the financial activities during the two years and the effects of significant changes, as well as a comparison with the prior years' activity and results. This discussion and analysis may contain opinions, assumptions, or conclusions by MTA management that should not be considered a replacement for and is intended to be read in conjunction with the plan's financial statements which begin on page 10.

Overview of Basic Financial Statements

The following discussion and analysis is intended to serve as an introduction to the Plan's financial statements. The basic financial statements are:

- **The Statements of Plan Net Position** — presents the financial position of the Plan at fiscal yearend. It provides information about the nature and amounts of resources with present service capacity that the Plan presently controls (assets), consumption of net assets by the Plan that is applicable to a future reporting period (deferred outflow of resources), present obligations to sacrifice resources that the Plan has little or no discretion to avoid (liabilities), and acquisition of net assets by the Plan that is applicable to a future reporting period (deferred inflow of resources) with the difference between assets/deferred outflow of resources and liabilities/deferred inflow of resources being reported as net position. Investments are shown at fair value. All other assets and liabilities are determined on an accrual basis.
- **The Statements of Changes in Plan Net Position**— presents the results of activities during the year. All changes affecting the assets and liabilities of the Plan are reflected on an accrual basis when the activity occurred regardless of the timing of the related cash flows. In that regard, changes in the fair values of investments are included in the year's activity as net appreciation (depreciation) in fair value of investments.
- **The Notes to Financial Statements**— provides additional information that is essential to a full understanding of the data provided in the financial statements. The notes present information about the Plan's accounting policies, significant account balances and activities, material risks, obligations, contingencies, and subsequent events, if any.
- **Required Supplementary Information**— as required by the Government Accounting Standards Board ("GASB") includes the Schedule of Changes in the Employer's Net Pension Liability and Related Ratios, Schedule of Employer Contributions, and Schedule of Investment returns.

The accompanying financial statements of the Plan are presented in conformity with accounting principles generally accepted in the United States of America as prescribed by the GASB.

Manhattan and Bronx Surface Transit Operating Authority Pension Plan

Management's Discussion and Analysis As of and For the Years Ended December 31, 2018 and 2017 (Unaudited)

CONDENSED FINANCIAL INFORMATION AND ANALYSIS

FINANCIAL ANALYSIS

Plan Net Position As of December 31, 2018, 2017, and 2016 (Dollars in thousands)

	2018	2017	2016	Increase / Decrease			
				2018-2017		2017-2016	
				\$	%	\$	%
Cash and investments	\$ 2,818,963	\$ 2,894,950	\$ 2,526,557	\$ (75,987)	(2.6)%	\$ 368,393	14.6 %
Receivables and other assets	38,807	39,628	39,441	(821)	(2.1)	187	0.5
Total assets	\$ 2,857,770	\$ 2,934,578	\$ 2,565,998	\$ (76,808)	2.6	\$ 368,580	14.4
Payable for investment							
securities purchased	2,148	2,250	2,348	(102)	(4.5)	(98)	(4.2)
Other liabilities	11,220	13,339	7,915	(2,119)	(15.9)	5,424	68.5
Total liabilities	13,368	15,589	10,263	(2,221)	(14.2)	5,326	51.9
Plan net position restricted for pensions	\$ 2,844,402	\$ 2,918,989	\$ 2,555,735	\$ (74,587)	(2.6)%	\$ 363,254	14.2%

December 31, 2018 versus December 31, 2017

Cash and investments at December 31, 2018, were \$2,819.0 million, a decrease of \$76.0 million or 2.6% from 2017. This decrease is a result of weak investment activity in the fourth quarter of 2018 and plan contributions net of benefit payments and expenses during 2018.

Receivables and other assets less plan liabilities at December 31, 2018 decreased by \$3.0 million or 12.6%. The decrease is a result of lower year end accrued expense for 2018 compared with 2017 and continued payments on post retirement death benefits and additional members contribution liabilities for Tiers 3 and 4 – 25 year and age 55 retirement programs.

The plan net position restricted for pensions decreased by \$74.6 million or 2.6% in 2018 as a result of the various changes noted above.

December 31, 2017 versus December 31, 2016

Cash and investments at December 31, 2017, were \$2,895.0 million, an increase of \$368.4 million or 14.6% from 2016. This increase is the result of investment activity and plan contributions net of benefit payments and expenses.

Receivables and other assets less plan liabilities at December 31, 2017 decreased by \$5.1 million or 17.6%. The increase is a result of the revaluation of post retirement death benefits and additional members contribution liabilities for Tiers 3 and 4 – 25 year and age 55 retirement programs.

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Management's Discussion and Analysis As of and For the Years Ended December 31, 2018 and 2017 (Unaudited)

The plan net position restricted for pensions increased by \$363.3 million or 14.2% in 2017 as a result of the changes noted above.

Changes in Plan Net Position For the Years Ended December 31, 2018, 2017 and 2016 (Dollars in thousands)

	2018	2017	2016	Increase / Decrease			
				2018-2017		2017-2016	
				\$	%	\$	%
Additions:							
Net investment (loss)/income	\$ (87,952)	\$ 350,186	\$ 212,260	\$ (438,138)	(125.1)%	\$ 137,926	65.0 %
Transfers and contributions	227,388	222,397	239,169	4,991	2.2	(16,772)	(7.0)
Total net additions	139,436	572,583	451,429	(433,147)	(75.6)	121,154	26.8
Deductions:							
Benefit payments	213,827	209,121	187,823	\$ 4,706	2.3	\$ 21,298	11.3
Administrative expenses	196	208	186	(12)	(5.8)	22	11.8
Total deductions	214,023	209,329	188,009	4,694	2.2	21,320	11.3
Net increase	(74,587)	363,254	263,420	(437,841)	(120.5)	99,834	37.9
Plan net position restricted for pensions:							
Beginning of year	2,918,989	2,555,735	2,292,315	363,254	14.2	263,420	11.5
End of year	\$ 2,844,402	\$ 2,918,989	\$ 2,555,735	\$ (74,587)	(2.6)%	\$ 363,254	14.2 %

December 31, 2018 versus December 31, 2017

Net investment income decreased by \$438.1 million in 2018 due to net investment loss of \$88.0 million in 2018 versus net gains of \$350.2 million in 2017.

Contributions increased by \$5.0 million or 2.2% in 2018 compared to 2017, as a result of the Actuarial Determined Contributions ("ADC") and member contributions from 2017 to 2018.

Benefit payments increased by \$4.7 million or 2.3% over the prior year due to a continuing trend of an increase in the number of retirees and cost-of-living adjustments provided to retirees and beneficiaries.

Administrative expenses decreased by \$0.012 million or 5.8% over 2017. This decrease was due to a decrease in fees for services provided to the Plan.

December 31, 2017 versus December 31, 2016

Net investment income increased by \$137.9 million in 2017 due to net investment gains of \$350.2 million in 2017 versus net gains of \$212.3 million in 2016.

Contributions decreased by \$16.8 million or 7.0% in 2017 compared to 2016, as a result of the Actuarial Determined Contributions ("ADC") and member contributions from 2016 to 2017.

Manhattan and Bronx Surface Transit Operating Authority Pension Plan

Management's Discussion and Analysis As of and For the Years Ended December 31, 2018 and 2017 (Unaudited)

Benefit payments increased by \$21.3 million or 11.3% over the prior year due to a continuing trend of an increase in the number of retirees and cost-of-living adjustments provided to retirees and beneficiaries.

Administrative expenses increased by \$0.022 million or 11.8% over 2016. This increase was due to an increase of fees for services provided to the Plan.

Economic Factors

Market Overview and Outlook – 2018

Risk aversion and volatility marked the end of 2018, with geopolitical developments and concerns about slowing growth both contributing to the sell-off in global equity markets. U.S. stocks led the decline, contributing to the first calendar year with negative returns since 2008. Amid the equity underperformance, credit spreads widened, developed market yields fell, and the U.S. dollar weakened. In addition, the Federal Reserve (“Fed”) hiked interest rates as expected, though trimmed its forecast for hikes in 2019.

Several factors contributed to heightened market volatility throughout 2018—most importantly, investor concerns brought on by rising trade tensions, particularly between the U.S. and China, the apparent shift to a moderately tighter monetary policy by central banks in major developed countries; and the potential for slower growth, especially in China and Europe. Most major indices closed in negative territory at the end fourth quarter. After a difficult start, emerging markets (“EM”) held up better than their developed world counterparts in the fourth quarter, but still trailed for 2018 overall. The U.S. market was among the bottom-performing indices in the last quarter but led most major indices for the year, notwithstanding the S&P 500 Index’s worst performance since the conclusion of the global financial crisis. As a result, global financial markets proved to be a challenging environment during the fourth quarter of 2018.

From a monetary policy perspective, the Fed raised rates 25bps as expected in December and signaled a slower pace of tightening in 2019 as it continued to unwind its extensive balance sheet. Investors divined a more dovish tone from the Fed’s 2019 projections, but markets remained volatile through the end of the year. Globally, most developed-world central banks began moving towards modestly tighter stances, including the European Central Bank (“ECB”), which formally announced the end of its bond-buying program in December, concluding a roughly €2.6 trillion program. Across the channel, the Bank of England raised rates twice since the country’s Brexit referendum in June 2016, but recently indicated it was prepared to pivot as necessary once the formal exit takes place in early 2019. The Bank of Japan has long been in its own monetary policy lane, remaining by far the most accommodative of the major global central banks.

Macro Themes

- Major indices post worst year since 2008 as trade, economic outlook and monetary policy weigh on investors
- Global growth modestly decelerates but remains positive
- Trade uncertainty

After reaching a new high in September, the S&P 500 lost nearly 14% during the fourth quarter to end the year, down more than 4.4%. The Dow Jones Industrial Index was off 11% for the quarter, as was Europe’s Stoxx Limited Index, which ended the quarter 600 points lower. China’s Shanghai Composite

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also lost 12% over the last quarter and nearly 25% for the year. The year's sharp drawdown seemed unlikely at the outset of 2018, given the relatively robust outlook at the time. The silver lining is that share prices now appear cheap from a forward price/earnings perspective compared to long-run averages and the outlook, although more challenging, is still largely positive for 2019.

Global growth slowed, rather than stalled, in the second half of 2018. The U.S. outperformed its peers in end-of-year data with annualized GDP up 3.4% in the third quarter. In contrast, growth in the Eurozone dropped to 0.2% in the third quarter (and 1.7% year-on-year). The German economy contracted due to disruption to the auto industry from tougher emissions rules, while the Italian economy stalled over its now-resolved budget standoff with the European Union. China's growth fell to 6.5% in the third quarter, although the government expects to beat its 6.5% growth target for the full year.

The extent of global growth deceleration is one unknown for markets; how central banks will react is another. The Fed softened its tone on potential hikes in 2019 but nevertheless, it remained too hawkish for some as it stuck to plans to unwind its balance sheet, contributing to year-end market volatility. In December, the ECB ended its bond-buying program but gave no guidance when negative interest rates might end. Loose monetary conditions also remained in force in the UK and Japan as policymakers balanced the competing needs of fragile growth, inflation and the desire to wean economies off support. Despite fears of heavy-handedness, the global approach remained measured.

The greatest concern for markets continues to be the tariff war. The pause in the dispute following the G20 meeting between the U.S. and China provided hope that a more permanent solution could be reached. However, stocks in China, as well as international companies with exposure to China, were affected by weakening sentiment and actual fallout. Apple became the latest U.S. corporation to point the finger at the trade war when it announced that fourth quarter revenues would be lower than expected. Declining consumer confidence in China and cheaper domestic alternatives were significant contributing factors.

The issue of confidence also hindered business. Uncertainty surrounding trade and political issues, such as further concern about a no-deal Brexit in the UK, held back capital investment, as Chief Executive Officers awaited greater clarity, thus creating a silver lining for equity investors. Supercharged earnings growth in 2018 resulted in record share buybacks as announced, and U.S. stock repurchases broke through the \$1 trillion mark in December. Following the market retreat in the fourth quarter, more buybacks can be anticipated in the future. At the very least, the challenges of the fourth quarter present active investors with a more reasonable valuation and a very attractive starting point for 2019.

EM central banks have meanwhile faced their own travails, primarily centered around the security of central bank independence, particularly in Turkey and India. For now, the question in both countries seems to be largely settled in favor of independence—a positive for markets; but as is often the case in EM, that does not preclude the issue resurfacing down the road.

United States

Through mid-2018, U.S. capital markets enjoyed the longest equity bull market in their history. Valuations of stocks reached levels rarely-- and for some valuations measures, never-- seen before. However, in the fourth quarter of 2018, markets in the U.S. weakened tremendously with the S&P 500 ending the year down 13.5% with U.S. equities underperforming in 2018 compared to 2017.

Large Cap stocks were strongly negative, with the S&P 500 and Russell 1000 indices posting returns of

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(-4.4%) and (-4.84%), respectively. Small Cap and Mid Cap indices underperformed large cap. Small Cap, as measured by the Russell 2500 Index, returned (-10.0%). The Russell Mid Cap Index measured by the Russell 2000 Index lagged the Small Cap and posted a return loss of (-11.0%). Of note, growth oriented investments outperformed the value counterpart with the Russell 1000 Growth (-1.5%) outpacing the Russell 1000 Value (-8.3%).

Fixed income markets took the four rate hikes by the Fed in stride in 2018. Treasuries returned (+0.9%) for the year, with the assets strongest quarter coming in the first quarter of 2018. Municipal credit outperformed Treasuries for the year, with (+4.8%), posting positive returns for four straight quarters. Following strong results in 2017, high yield debt underperformed and ended its upward trend in 2018, returning (-2.1%).

International Developed

International equity markets posted very weak results in 2018 and lagged behind U.S. equity markets, returning (-9.4%) as measured by the Morgan Stanley Capital International ("MSCI") All Country World Index. In U.S. dollars, both Europe and Japan equities posted negative performance in 2018 with MSCI Europe returning (-14.9%) and MSCI Japan returning (-12.9%). Weak returns in Europe were driven by the global negative market performance in the last quarter of 2018. The Small Cap portion of international developed markets posted even weaker returns in 2018, (-17.9%).

Fixed income markets in Europe and Japan are largely centered on government bonds, with corporate and asset-backed issuance making up a fraction of the overall markets. Global Treasuries were negative in 2018, following a positive year in 2017.

Emerging Markets

Emerging markets posted very weak returns in 2018 with performance lower than both U.S. and international developed markets across equity and debt. The broad emerging markets index returned (-14.6%) for the year. Brazil was the best performing country, buoyed by President-elect Jair Bolsonaro's pick for chief economic advisor and his pledge to sell state owned companies. Within the EM group, Asia lagged, pulled down by declines in China, Korea and Taiwan. Healthcare and information technology were among the worst performing EM sectors, losing 15.4% and 15.1%, respectively.

The bond markets of emerging markets underperformed in 2018. Both hard currency and local currency bond posted very weak years in performance. Hard currency bonds, which are predominately issued in U.S. dollars, returned (-4.3%) in 2018. Local currency bonds, which are issued in the local currency, returned (-6.2%) for the year.

Commodities

Commodities posted negative results in 2018, with the broad Bloomberg Commodity Index down (-11.2%). Energy was the worst performing sub-sector, as oil prices were dampened by concerns of oversupply based on high inventories and stronger-than-expected production in Iran. Natural gas posted losses of -2.3% in a volatile quarter marked by low inventory levels and fluctuating weather forecasts. Natural gas consumption is projected to decrease slightly in the residential and commercial sectors, as expected milder weather will require less energy for space heating in the winter and air conditioning in the summer, largely based on temperature projections from the National Oceanic and Atmospheric Administration. On the other hand, precious metals strengthened towards the end of 2018, bolstered by the sell-off in equities and expectations for higher real interest rates.

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Management's Discussion and Analysis As of and For the Years Ended December 31, 2018 and 2017 (Unaudited)

Market Outlook

Global economic growth is likely to slow modestly in 2019, but the prevalent view is that investors' worst fears are likely exaggerated, as most of the world's economies will continue to expand rather than contract. Therefore, for the time being there is not – expectation of recession on the horizon.

There are many reasons for investors to be to be optimistic. U.S. corporate profit margins should remain high after the boost from 2018 tax cuts, which should result in earnings growth in the high single-digits or better. Furthermore, a more dovish stance from the Fed could signal a cyclical peak for the U.S. dollar, helping U.S. manufacturing and also providing some welcome relief for embattled EM companies facing higher dollar-denominated borrowing costs.

The Eurozone is expected to increase economic activities in the first half of 2019. Disruption to the German auto industry from new emissions standards, potential for increased fiscal stimulus across major economies in the bloc and the positive developments in Italy signaling a stronger unity in the European Union (“EU”) can be potential catalysts for improving growth. Nevertheless, the intense uncertainty around Brexit will be a drag on the UK in the first quarter of 2019 and may extend its impact across Europe should Britain leave the EU without a deal on March 29th 2019.

An agreement between Organization Petroleum Exporting Countries (“OPEC”) and its oil-producing allies to cut output can lead to greater price stability in 2019. But oil, and the broader commodity sector, remains a leading global growth concern.

Intense uncertainty on global trade remains the big issue gripping investors. The pause in the U.S.-China trade war could pave the way for a more comprehensive agreement. Nonetheless, significant obstacles remain, such as China's real desire to follow through on promises to open up its economy and end forced technology transfers.

Objectively, there can be little doubt there are multiple risks globally in this late-cycle phase. However, the outlook is far from bleak, and there is substantial consensus that 2019 could be a good year for portfolio reallocations, taking advantage of dislocated sectors, oversold opportunities and market outperformance.

Contact Information

This financial report is designed to provide a general overview of the Manhattan and Bronx Surface Transit Operating Authority Pension Plan's finances. Questions concerning any data provided in this report or requests for additional information should be directed to the Comptroller, Metropolitan Transportation Authority, 2 Broadway, 16th Floor, New York, NY 10004.

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MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY PENSION PLAN

STATEMENTS OF PLAN NET POSITION AS OF DECEMBER 31, 2018 AND 2017

(In thousands)

	2018	2017
ASSETS:		
Cash	\$ 5,977	\$ 5,418
Receivables:		
Investment securities sold	672	760
Interest and dividends	1,331	1,263
Employee loans	36,804	37,605
Total receivables	<u>38,807</u>	<u>39,628</u>
Investments at fair market value (Notes 2 and 3):		
Investments measured at readily determinable fair value	433,543	387,520
Investments measured at net asset value	2,379,443	2,502,012
Total investments	<u>2,812,986</u>	<u>2,889,532</u>
Total assets	<u>2,857,770</u>	<u>2,934,578</u>
LIABILITIES:		
Accounts payable	1,380	1,567
Payable for investment securities purchased	2,148	2,250
Accrued benefits payable	937	2,247
Accrued Post Retirement Death Benefits (PRDB) payable	2,921	3,344
Accrued 55/25 Additional Members Contribution (AMC) payable	5,982	6,181
Total liabilities	<u>13,368</u>	<u>15,589</u>
PLAN NET POSITION		
RESTRICTED FOR PENSIONS	<u>\$2,844,402</u>	<u>\$2,918,989</u>

See notes to financial statements.

MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY PENSION PLAN

STATEMENTS OF CHANGES IN PLAN NET POSITION FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017 (In thousands)

	2018	2017
ADDITIONS:		
Contributions (Note 4):		
Employee contributions	\$ 21,955	\$ 19,713
Employer contributions	<u>205,433</u>	<u>202,684</u>
Total contributions	<u>227,388</u>	<u>222,397</u>
Investment income:		
Interest income	7,891	6,092
Dividend income	37,259	24,125
Net (depreciation) / appreciation in fair value of investments	<u>(97,896)</u>	<u>363,877</u>
Total investment (loss) / income	(52,746)	394,094
Less investment expenses	<u>35,206</u>	<u>43,908</u>
Net investment (loss) / income	<u>(87,952)</u>	<u>350,186</u>
Total additions	<u>139,436</u>	<u>572,583</u>
DEDUCTIONS:		
Benefit payments and withdrawals	213,827	209,121
Administrative expenses	<u>196</u>	<u>208</u>
Total deductions	<u>214,023</u>	<u>209,329</u>
NET (DECREASE) / INCREASE IN PLAN NET POSITION	<u>(74,587)</u>	<u>363,254</u>
PLAN NET POSITION RESTRICTED FOR PENSIONS:		
Beginning of year	<u>2,918,989</u>	<u>2,555,735</u>
End of year	<u>\$ 2,844,402</u>	<u>\$ 2,918,989</u>

See notes to financial statements.

MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY PENSION PLAN

NOTES TO FINANCIAL STATEMENTS AS OF AND FOR THE YEARS ENDED DECEMBER 31, 2018 AND 2017

1. PLAN DESCRIPTION

Effective January 1, 1989, the Manhattan and Bronx Surface Transit Operating Authority (MaBSTOA) adopted a defined benefit qualified pension plan known as the MaBSTOA Pension Plan (the “Plan”). Prior to the adoption of the Plan, MaBSTOA pension benefits were funded on a pay-as-you-go basis.

The Plan is a single-employer public employee retirement system. MaBSTOA employees are specifically excluded from participating in the New York City Employees’ Retirement System (NYCERS). Effective January 1, 1999, in order to afford managerial and non-represented MaBSTOA employees the same pension rights as like title employees in the Transit Authority, membership in the MaBSTOA Plan is optional.

The Board of Administration, established in 1963, determines eligibility of employees and beneficiaries for retirement and death benefits. The Board is composed of five members: two representatives from the Transport Workers Union, Local 100 (TWU) and three employer representatives.

Membership of the Plan consisted of the following as of January 1, 2018 and 2017, respectively, the date of the latest actuarial valuation:

	2018	2017
Active and inactive members	8,918	8,739
Retirees and beneficiaries currently receiving benefits	5,661	5,523
Vested formerly active members not yet receiving benefits	<u>1,000</u>	<u>1,006</u>
Total members	<u>15,579</u>	<u>15,268</u>

The Plan provides retirement, death, accident and disability benefits. The benefits provided by the Plan are generally similar to the benefits provided to participants in NYCERS. A participant may receive a vested benefit in accordance with the requirements of his or her Tier.

NYCERS has determined that Tier 4 employees are and have been eligible for a post retirement death benefit retroactive to members who retired no earlier than 1986. In June 2012, the Metropolitan Transportation Authority (“MTA”) Board approved an amendment to the MaBSTOA Plan to provide for incorporation of this benefit. As of December 31, 2012, the Plan had estimated that \$6 million is owed to beneficiaries of retirees who were deceased prior to January 1, 2013. As of December 31, 2018, the Plan has paid \$12.3 million in post-retirement benefits and accrued an additional \$2.9 million based on the updated valuation.

Funding Policy—Contribution requirements of Plan members are established and may be amended only by the MaBSTOA Board in accordance with Article 10.01 of the MaBSTOA Plan. MaBSTOA’s funding policy for periodic employer contributions provides for actuarially determined amounts that are designed to accumulate sufficient assets to pay benefits when due. It is MaBSTOA’s policy to fund to the pension trust, at a minimum, the current year’s normal cost plus amortization of the unfunded actuarial accrued liability.

The MaBSTOA Pension Plan includes the following retirement programs: (i) Tier 1 Age 50 and 20 Year, Age 55 and 1/100; (ii) Tier 2 Age 55 and 25 Year, Tier 2 Age 55 and 1/100; (iii) Tier 3 and Tier 4 Age 62 and 5 Year; (iv) Tier 6 Age 63 and 10 Year; (v.) Tier 4 and Tier 6 25 Year and Age 55; (vi)

Tier 4 25 Year Early Retirement; (vii) Tier 4 Age 57 and 5 Year, and (viii) the Year 2000 amendments, which are all under the same terms and conditions as NYCERS.

The Plan may require mandatory employee contributions, depending on the date of entry into service. Employees entering qualifying service on or before July 26, 1976, are non-contributing (Tiers 1 and 2). Prior to adoption of Tier 6, operating employees entering qualifying service on or after July 27, 1976, are required to contribute 2% of their salary and non-operating employees pay 3% of their salary for a 10-year period plus an additional member contribution of 1.85% of their salary. See Note 4 for 2000 Plan amendments.

Individuals joining the MaBSTOA Pension Plan on or after April 1, 2012 are members of Tier 6. Highlights of Tier 6 include:

- Increases in employee contribution rates. The rate varies depending on salary, ranging from 3% to 6% of gross wages. Contributions are made until retirement or separation from service.
- The retirement age is 63 and includes early retirement penalties, which reduce pension allowances by 6.5 percent for each year of retirement prior to age 63 (excluding Transit Operating Employees).
- Vesting after 10 years of credited service; increased from 5 years of credited service under Tier 3 and Tier 4.
- Changes to the pension multiplier for calculating pension benefits (excluding Transit Operating Employees) for participants who retire with greater than 20 years of credited service is 35% of FAS for the first 20 years of credited service plus 2% times FAS for each year of credited service in excess of 20.
- Adjustments to the Final Average Salary (FAS) calculation changed from an average of the final 3 years to an average of the final 5 years. Pensionable overtime capped at \$15,000 per year plus an inflation factor (\$16,048 for 2017 and \$16,406 for 2018).
- Pension buyback in Tier 6 at a rate of 6% of the wages earned during the period of buyback, plus 5% compounded annually from the date of service until date of payment.

SUMMARY OF PRINCIPAL PLAN PROVISIONS ELIGIBILITY AND BENEFITS

All Tiers

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| 1. Type of Plan | The Plan is a contributory, defined benefit plan. Contributions are not required for Tier 1 and Tier 2 members and vary for other members. Details can be found in the following sections. |
| 2. Effective Date of Plan Qualification | January 1, 1989. |
| 3. Compensation | The wages earned by the employee. Compensation is limited by Section 401(a)(17) of the Code. This limit is \$270,000 for 2017 and \$275,000 for 2018. |
| 4. Credited Service | Credited Service is credited full-time employment from date of hire. |

5. Pensioner Supplementations

(a) 1998 Supplement

Eligibility: Date of retirement is prior to 1993 for all disability pensioners and other pensioners who have attained (or will attain) age 62 or who have attained (or will attain) age 55 and have been retired for at least 10 years.

Benefit: Commencing with the payment for the month of September 1998, the cost-of-living adjustment is applied to the first \$13,500 of the maximum retirement allowance, computed without option modification. If not eligible by September 1998, payment will commence first of the month following eligibility.

(b) 1999 Supplement

Eligibility: Date of retirement is prior to 1994 for all disability pensioners and other pensioners who have attained (or will attain) age 62 or who have attained (or will attain) age 55 and have been retired for at least 10 years.

Benefit: Commencing with the payment for the month of September 1999, the cost-of-living adjustment is applied to the first \$14,000 of the maximum retirement allowance, computed without option modification. If not eligible by September 1999, payment will commence first of the month following eligibility.

(c) 2000 Supplement

Eligibility: Date of retirement is prior to 1997 and one of the following conditions is met:

- (i) All disability pensioners who have been retired for at least 5 years,
- (ii) Other pensioners who have attained (or will attain) age 62 and have been retired for at least 5 years,
- (iii) Other pensioners who have attained (or will attain) age 55 and have been retired for at least 10 years and
- (iv) All recipients of an accidental death benefit who have been in receipt of payments for at least 5 years.

Benefit: Commencing with the payment for the month of September 2000, the cost-of-living adjustment is applied to the first \$18,000 of the maximum retirement allowance, computed without option modification. The cost-of-living adjustment is equal to the change in the CPI-U measured from year of retirement through 1997 multiplied by 50% (greater percentages exist if date of retirement is prior to 1968). If not eligible by September 2000, payment will commence first of the month following eligibility.

Surviving Spouse Eligibility: The surviving spouse of a deceased retired member who chose any joint and survivor option.

Surviving Spouse Benefit: Commencing with the payment for the month of September 2000, the benefit is equal to 50% of the 2000 supplementation which the pensioner would be receiving if living.

(d) Automatic Cost-of-Living Adjustment (COLA)

Eligibility: One of the following conditions is met:

- (i) All disability pensioners who have been retired for at least 5 years,
- (ii) Other pensioners who have attained (or will attain) age 62 and have been retired for at least 5 years,
- (iii) Other pensioners who have attained (or will attain) age 55 and have been retired for at least 10 years and
- (iv) All recipients of an accidental death benefit who have been in receipt of payments for at least 5 years.

Benefit: Commencing with the payment for the month of September 2001 and continuing each September thereafter, the COLA is applied to the first \$18,000 of the maximum retirement allowance, computed without option modification plus any prior COLAs or supplementations. The cost-of-living adjustment is equal to the change in the CPI-U for the year ending March 31 multiplied by 50%. The resulting percentage is then rounded up to the next higher 0.1% and shall not exceed 3.0% nor be less than 1.0%. If not eligible by September 2001 or each September thereafter, payment will commence first of the month following eligibility.

Surviving Spouse Eligibility: The surviving spouse of a deceased retired member who chose any joint and survivor option.

Surviving Spouse Benefit: The benefit is equal to 50% of the automatic COLA benefit which the pensioner would be receiving if living and commence in the month following the death of the deceased member.

6. Normal and Optional Forms of Payment

The basic benefits described in the following sections are payable in the form of a life annuity. Other options are 100% and 50% contingent annuities with and without a popup feature, 5-year and 10-year certain and life annuities, and single life annuities with an insurance feature.

Benefits payable under the optional forms are actuarially adjusted to reflect the anticipated longer payment stream.

7. Maximum Benefit

Maximum benefits payable conforms to those legislated by the Tax Reform Act of 1986. For 2017, the maximum benefit is \$215,000 and for 2018 it is \$220,000.

8. Changes in Plan Provisions Since Prior Valuation

The deadline for filing a Notice of Participation in the World Trade Center Rescue, Recovery or Clean-Up Operations was further extended until September 11, 2022.

Effective December 18, 2017, certain members can use any surplus basic or additional member contributions to offset any deficits in such other contribution account.

I. Tier 1 Employees

1. Eligibility Members hired before July 1, 1973.
2. Pensionable Compensation
 - (a) Compensation Greater of earned or earnable salary during the year prior to retirement.
 - (b) Final Compensation Highest average earnings over five consecutive years.
 - (c) Compensation Limit If hired after June 17, 1971, earnings in a year are limited to 120% of the preceding year.
3. Benefits
 - (a) Service Retirement

Eligibility: Attainment of age 50 and completion of 20 years of credited service.

Benefit:

1.5% for service before March 1, 1962, plus
2.0% for service from March 1, 1962 to June 30, 1970, plus
2.5% for service after June 30, 1970

The accumulated percentage above, up to a maximum of 50%, is multiplied by the member's Compensation. Once the accumulated percentage reaches 50%, the percentage for each further year of service reverts back to 1.5%. The percentage in excess of 50% is multiplied by the Final Compensation.
 - (b) Termination Benefits

Eligibility: Completion of 20 years of credited service.

Benefit: The Service Retirement Benefit with compensation and service calculated as of the date of termination. The benefit is deferred until age 50.
 - (c) Ordinary Death Benefits

Active Members

Eligibility: Completion of 6 months of credited service, but the benefit described below requires completion of 20 years of credited service.

Benefit: A lump sum equal to the present value of the retirement benefit under the Return of Reserve option.

Terminated Vested Members

If a member dies before age 50, a lump sum equal to the present value of the retirement benefit under the Return of Reserve option is payable (Death Gamble).
 - (d) Accidental Death Benefits

Eligibility: Death caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.

Benefit: The benefit equals 50% of Final Compensation.

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| (e) Ordinary Disability Benefits | <p>Eligibility: Completion of 10 years of credited service.</p> <p>Benefit: The benefit equals the greater of the Service Retirement percentages described (a) above or 25% multiplied by Final Compensation. If eligible for a service retirement benefit, the greater of this benefit and the Service Retirement benefit is payable.</p> |
| (f) Accidental Disability Benefits | <p>Eligibility: Disability caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.</p> <p>Benefit: The benefit equals 75% of the Final Compensation reduced by 100% of any worker's compensation payments. If eligible for a service retirement benefit, the greater of this benefit and the Service Retirement benefit is payable.</p> |
| 4. Member Contributions | None |
| 5. Changes in Plan Provisions Since Prior Valuation | None |

II. Tier 2 Employees

1. Eligibility Members hired on or after July 1, 1973, and before July 27, 1976.
2. Final Average Compensation
 - (a) Final 3-Year Average Compensation: Highest average earnings over three consecutive years.
 - (b) Final 5-Year Average Compensation: Highest average earnings over five consecutive years.
 - (c) Compensation Limit: Earnings in a year cannot exceed 120% of the average of the two preceding years.
3. Benefits
 - (a) Service Retirement
Eligibility: Attainment of age 55 and completion of 25 years of credited service.
Benefit: The benefit equals 50% of Final 3-Year Average Compensation for the first 20 years of credited service, plus 1.5% of Final 5-Year Average Compensation per year of credited service in excess of 20 years.
 - (b) Early Retirement
Eligibility: Attainment of age 50 and completion of 20 years of credited service.
Benefit: Determined in the same manner as the Service Retirement benefit but no greater than 2.0% of the Final 3-Year Average Compensation per year of credited service.
 - (c) Termination Benefits
Eligibility: Completion of 20 years of credited service.
Benefit: The benefit equals the Early Retirement benefit, with compensation and service calculated as of the date of termination. The benefit is deferred until age 50. If a member dies before age 50, 50% of the ordinary death benefit (below) is payable.
 - (d) Ordinary Death Benefit
Eligibility: Completion of 90 days of credited service.
Benefit: The benefit equals a lump sum equal to 3 times salary, raised to the next multiple of \$1,000.
 - (e) Accidental Death Benefit
Eligibility: Death caused by on-the-job accident. World Trade Center Presumption benefits may apply if certain criteria are met.
Benefit: The benefit equals 50% of the Final 5-Year Average Compensation.
 - (f) Ordinary Disability Benefits
Eligibility: Completion of 10 years of credited service
Benefit: The benefit equals the greater of the Service Retirement percentage calculated in (a) above and 25% multiplied by Final 5-Year Average Compensation. If eligible for an Early or Service Retirement benefit, the greater of this benefit and the Early or Service Retirement benefit is payable.

(g) Accidental Disability Benefits Eligibility: Disability caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.
Benefit: The benefit equals 75% of the Final 5-Year Average Compensation reduced by any worker's compensation payments. If eligible for an Early or Service Retirement benefit, the greater of this benefit and the Early or Service Retirement benefit is payable.

- 4. Member Contributions None
- 5. Changes in Plan Provisions Since
Prior Valuation None

**III. Tier 3 and Tier 4—Basic Age
62 & 5 Year Retirement Program**

1. Eligibility

Non-operating Members hired prior to June 28, 1995, who have not elected the 55 & 25 Plan. Members hired on or after July 27, 1976, and before September 1, 1983, are in Tier 3. Members hired on or after September 1, 1983, are in Tier 4.
2. Final Average Compensation

Highest average earnings during any three consecutive calendar-years periods, or the final 36 months immediately preceding the member's retirement date. Earnings used in the calculation cannot exceed 110% of the average of the two preceding years.
3. Benefits
 - (a) Service Retirement

Eligibility: Attainment of age 62 and completion of at least 5 years of credited service.

Benefit: If at least 20 years of credited service is completed, the benefit equals 2.0% of Final Average Compensation for first 30 years of credited service plus 1.5% of Final Average Compensation for years of credited service in excess of 30. If completed less than 20 years of credited service, the benefit equals 1-2/3% of Final Average Compensation multiplied by years of credited service.
 - (b) Early Retirement

Eligibility: Attainment of age 55 and completion of at least 5 years of credited service.

Benefit: The benefit equals the Service Retirement benefit reduced by 6% for each of the first two years prior to age 62, and by 3% for years prior to age 60.
 - (c) Termination Benefits
 - (i) Refund of Contributions

Eligibility: Completion of less than 10 years of Credited Service.

Benefit: The benefit equals a refund of the member's contributions accumulated with interest at a rate of 5.0%.
 - (ii) Vested Benefit

Eligibility: Completion of at least 5 years of credited service.

Benefit: The benefit equals the Service Retirement benefit with compensation and service calculated as of the date of termination. The benefit is deferred until age 62. A vested participant with less than 10 years of credited service may elect to receive the benefit in (i) above in lieu of this benefit. If a member with at least 10 years of credited service dies before commencing benefits, 50% of the ordinary death benefit (below) is payable. All accumulated regular contributions with interest are payable.

(d) Ordinary Death Benefits

Eligibility: all members.

Pre-retirement Death Benefit: The benefit equals a lump sum of annual salary times completed years of credited service up to 3 years of service. After age 60, the benefit is reduced 5% per year, to a maximum reduction of 50%. Accumulated regular member contributions with interest. Post-retirement Death Benefit: Upon retirement, the pre-retirement benefit shall be reduced by 50% and reduced an additional 25% after completion of one year of retirement. After completion of two years of retirement, the benefit equals 10% of the pre-retirement benefit in force at age 60.

Spouse Benefit (Tier 3 only)

Eligibility: Vested and spouse is beneficiary.

Benefit: In lieu of the ordinary death benefit above, the spouse may elect 1/3 of the ordinary death benefit plus an annuity of 1.0% of Final Average Compensation per year of credited service, payable for life, or until remarriage. If the surviving spouse is more than 10 years younger, the annuity is actuarially reduced. The total of all payments will at least equal the amount of the full lump sum benefit.

(e) Accidental Death Benefits

Eligibility: Death caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.

Benefit: The benefit equals 50% of compensation paid to eligible beneficiary as defined by priority:

(i) Spouse, until remarriage

(ii) Children, to age 25

(iii) Dependent parents

(iv) Any other dependent survivors, to age 21.

Total of all payments will at least equal the amount of the full ordinary death lump sum benefit

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|---|---|
| (f) Ordinary and Accidental Disability Benefits | Eligibility: Completion of 10 years of credited service for ordinary. No minimum years of credited service required for accidental.

Benefit: The benefit equals the greater of 1-2/3% of Final Average Compensation per year of credited service and 1/3 of Final Average Compensation. If eligible for a Service Retirement benefit, the greater of this benefit and the Service Retirement benefit is payable. |
| 4. Member Contributions | Regular contribution rate of 3.0%. Regular contributions cease at the later of October 1, 2000, or the later of 10 years of membership or 10 years of credited service. |
| 5. Changes in Plan Provisions Since Prior Valuation | None |

IV. Tier 3 and Tier 4—25 Year and Age 55 Retirement Programs

1. Eligibility

All operating members hired prior to April 1, 2012 and non-operating members hired prior to July 26, 1994, who elected this program. Members hired on or after July 27, 1976, and before September 1, 1983, are in Tier 3. Members hired on or after September 1, 1983 and before April 1, 2012 are in Tier 4.
2. Final Average Compensation

Highest average earnings during any three consecutive calendar-years periods, or the final 36 months immediately preceding the member's retirement date. Earnings used in the calculation cannot exceed 110% of the average of the two preceding years.
3. Benefits
 - (a) Service Retirement

Eligibility: Attainment of age 55 and completion of at least 25 years of credited service, or attainment of age 62 and completion of at least 5 years of credited service.

Benefit: If completed less than 20 years of credited service, the benefit upon attainment of age 62 equals 1-2/3% of Final Average Compensation multiplied by years of credited service. If completed between 20 and 25 years of service, the benefit upon attainment of age 62 equals 2% of Final Average Compensation multiplied by years of credited service. If at least 25 years of credited service is completed, the benefit equals 2.0% of Final Average Compensation for the first 30 years of credited service plus 1.5% of Final Average Compensation for years of credited service in excess of 30. If age 62 with at least 20 years of credited service is completed, the benefit equals 2.0% of Final Average Compensation for the first 30 years of credited service plus 1.5% of Final Average Compensation for years of credited service in excess of 30. For non-operating employees who have attained age 62, a refund of one-half of the member's additional contributions accumulated at a rate of 5.0% is also payable.
 - (b) Termination Benefits
 - (i) Refund of Contributions

Eligibility: Less than 10 years of credited service.

Benefit: The benefit equals a refund of the basic member's accumulated contributions. All contributions are refunded with interest at a rate of 5.0% also payable.

(ii) Vested Benefit

Eligibility: Completion of at least 5 years of credited service.

Benefit: The benefit equals the Service Retirement benefit with compensation and service calculated as of the date of termination. The benefit is deferred until age 62 if credited service is less than 25 years, else the benefit is deferred until age 55 for operating employees only. For non-operating employees the benefit is payable at age 62 with less than 25 years or if both age and service has not been fulfilled. A vested participant with less than 10 years of credited service may elect to receive the benefit in (i) above in lieu of this benefit. If a member with at least 10 years of credited service dies before commencing benefits, 50% of the salary-related ordinary death benefit (below) plus accumulated regular contributions with interest and one-half of accumulated additional member contributions with interest are payable.

(c) Ordinary Death Benefits

Eligibility: All members.

Pre-retirement Death Benefit: The benefit equals a lump sum of annual salary times the completed years of credited service up to 3 years of service. After age 60, the benefit is reduced 5% per year, to a maximum reduction of 50%. Accumulated regular member contributions with interest and one-half of accumulated additional member contributions with interest are also payable.

Post-retirement Death Benefit: Upon retirement, the pre-retirement benefit shall be reduced by 50% and reduced, an additional 25% after completion of one year of retirement. After completion of two years of retirement, the benefit equals 10% of the pre-retirement benefit in force at age 60.

Spouse Benefit (Tier 3 only)

Eligibility: Vested and spouse is beneficiary.

Benefit: In lieu of the ordinary death benefit above, the spouse may elect 1/3 of the ordinary death benefit plus an annuity of 1.0% of Final Average Compensation per year of credited service, payable for life, or until remarriage. If the surviving spouse is more than 10 years younger, the annuity is actuarially reduced. The total of all payments will at least equal the amount of the full lump sum benefit.

(d) Accidental Death Benefits	<p>Eligibility: Death caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.</p> <p>Benefit: The benefit equals 50% of compensation paid to eligible beneficiary as defined by priority:</p> <ul style="list-style-type: none"> (i) Spouse, until remarriage (ii) Children, to age 25 (iii) Dependent parents (iv) Any other dependent survivors, to age 21. <p>Total of all payments will at least equal the amount of the full ordinary death lump sum benefit.</p>
(e) Ordinary and Accidental Disability Benefits	<p>Eligibility: Completion of 10 years of credited service for ordinary. No minimum years of credited service requirement for accidental.</p> <p>Benefit: The benefit equals the greater of 1-2/3% of Final Average Compensation per year of credited service and 1/3 of Final Average Compensation. If eligible for a Service Retirement benefit, the greater of this benefit and the Service Retirement benefit is payable. For non-operating employees, a refund of one-half of the member's additional contributions accumulated plus interest at a rate of 5.0% is also payable.</p>
4. Member Contributions	<p>Operating Employees: Regular contribution rate of 2.0%. Additional 55/25 contributions were made through 2000. These contributions may be refunded effective November 2007 for TWU Local 100 and April 2008 for TSO Local 106.</p> <p>Non-operating Employees: Regular contribution rate of 3.0%. Regular contributions cease at the later of October 1, 2000 or after the later of 10 years of membership or 10 years of credited service. Additional contribution rates were 4.35%, 2.85% and 1.85%, of which 1.85% ceases after 30 years of credited service.</p>
5. Changes in Plan Provisions Since Prior Valuation	None

**V. Tier 4—Age 57 & 5 Year
Retirement Program**

1. Eligibility
Non-operating members hired on or after June 28, 1995 and prior to April 1, 2012. Members hired on or after September 1, 1983 and before April 1, 2012 are in Tier 4.
2. Final Average Compensation
Highest average earnings during any three consecutive calendar-years periods, or the final 36 months immediately preceding the member's retirement date. Earnings used in the calculation cannot exceed 110% of the average of the two preceding years.
3. Benefits
 - (a) Service Retirement
Eligibility: Attainment of age 57 and completion of at least 5 years of credited service.
Benefit: If less than 20 years of credited service are completed, the benefit equals 1.67% of Final Average Compensation multiplied by years of credited service. If between 20 and 30 years of credited service are completed, the benefit equals 2% of Final Average Compensation multiplied by years credited service. If more than 30 years are completed, 2% of Final Average Compensation multiplied by years of credited service plus 1.5% of Final Average Compensation multiplied by years of credited service in excess of 30. For non-operating employees who have attained age 62, a refund of one-half of the member's additional contributions accumulated plus interest at a rate of 5.0% is also payable.
 - (b) Termination Benefits
 - (i) Refund of Contributions
Eligibility: Completion of less than 10 years of credited service.
Benefit: The benefit equals a refund of the member's basic accumulated contributions and 50% of additional member contributions plus interest at a rate of 5.0%.
 - (ii) Vested Benefit
Eligibility: Completion of at least 5 years of credited service.
Benefit: The benefit equals the Service Retirement benefit with compensation and service calculated as of the date of termination. The benefit is deferred until age 57. A vested participant with less than 10 years of credited service may elect to receive the benefit in (i) above in lieu of this benefit. If a member with at least 10 years of credited service dies before commencing benefits, 50% of the salary-related ordinary death benefit (below) is payable. All accumulated regular contributions with interest and one-half of accumulated additional member contributions with interest are payable.

(c) Ordinary Death Benefits	<p>Eligibility: All members</p> <p>Pre-retirement Death Benefit: The benefit equals a lump sum of annual salary times completed years of credited service up to 3 years of service. After age 60, the benefit is reduced 5% per year, to a maximum reduction of 50%. Accumulated regular member contributions with interest and one-half of accumulated additional member contributions with interest are also payable.</p> <p>Post-retirement Death Benefit: Upon retirement, the pre-retirement benefit shall be reduced by 50% and reduced an additional 25% after completion of one year of retirement. After completion of two years of retirement, the benefit equals 10% of the pre-retirement benefit in force at age 60.</p>
(d) Accidental Death Benefits	<p>Eligibility: Death caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.</p> <p>Benefit: The benefit equals 50% of final 1-year compensation paid to eligible beneficiary as defined by priority:</p> <ul style="list-style-type: none"> (i) Spouse, until remarriage (ii) Children, to age 25 (iii) Dependent parents (iv) Any other dependent survivors, to age 21. <p>Total of all payments will at least equal the amount of the full ordinary death lump sum benefit.</p>
(e) Ordinary and Accidental Disability Benefits	<p>Eligibility: Completion of 10 years of credited service for ordinary. No minimum years of credited service requirement for accidental.</p> <p>Benefit: The benefit equals the greater of 1-2/3% of Final Average Compensation per year of credited service and 1/3 of Final Average Compensation. If eligible for Service Retirement benefit, the greater of this benefit and the Service Retirement benefit is payable. For non-operating employees, a refund of one-half of the member's additional contributions accumulated at a rate of 5.0% is also payable.</p>
4. Member Contributions	<p>Regular contribution rate of 3.0%. Regular contributions cease at the later of October 1, 2000, or after the later of 10 years of membership or 10 years of credited service. Additional contribution rates were 4.35%, 2.85% and 1.85% of which 1.85%, ceases after 30 years of credited service.</p>
5. Changes in Plan Provisions Since Prior Valuation	<p>None</p>

**VI. Tier 6—25 and
Age 55 Retirement Program**

1. Eligibility All operating members hired on or after April 1, 2012.
2. Final Average Highest average pensionable earnings over five consecutive years. Pensionable earnings exclude any overtime earnings, defined as compensation paid at a rate greater than the standard rate, in excess of the overtime cap. The overtime cap is indexed annually and is \$16,048 for 2017. Pensionable earnings also exclude wages in excess of the annual salary paid to the Governor of New York, lump sum payments for sick leave, accumulated vacation and other credits for time not worked, termination pay and any additional compensation paid in anticipation of retirement. Pensionable earnings in a year cannot exceed 110% of the average of the four preceding years.
3. Benefits
 - (a) Service Retirement

Eligibility: Attainment of age 55 and completion of at least 25 years of credited service, or attainment of age 63 and completion of at least 10 years of credited service.

Benefit: If completed at least 25 years of credited service, the benefit equals 2.0% of Final Average Salary for the first 30 years of credited service plus 1.5% of Final Average Salary for years of credited service in excess of 30. If completed less than 20 years of credited service, 1.67% of Final Average Salary multiplied by years of credited service. If completed between 20 to 25 of credited service, 35% of Final Average Salary for first 20 years of credited service, plus 2% of Final Average Salary for years of credited service in excess of 20.
 - (b) Termination Benefits
 - (i) Refund of Contributions

Eligibility: Completion of less than 10 years of credited service.

Benefit: The benefit equals a refund of the member's contributions accumulated plus interest at a rate of 5.0%.
 - (ii) Vested Benefit

Eligibility: Completion of at least 10 years of credited service.

Benefit: The benefit equals the Service Retirement benefit with compensation and service calculated as of the date of termination. The benefit equals the Service Retirement benefit with compensation and service calculated as of the date of termination. The vested benefit is deferred until age 63 if credited service is less than 25 years, else the benefit is deferred until age 55. If a member with at least 10 years of credited service dies before commencing benefits, 50% of the salary-related ordinary death benefit (below) plus accumulated regular contributions with interest are payable.

(c) Ordinary Death Benefits

Eligibility: All members

Pre-retirement Death Benefit: The benefit equals a lump sum of annual salary times completed years of credited service up to 3 years of service. After age 60, the benefit is reduced 5% per year, to a maximum reduction of 50%. Accumulated regular member contributions with interest and one-half of accumulated additional member contributions with interest are also payable.

Post-retirement Death Benefit: Upon retirement, the pre-retirement benefit shall be reduced by 50% and reduced an additional 25% after completion of one year of retirement. After completion of two years of retirement, the benefit equals 10% of the pre-retirement benefit in force at age 60.

(d) Accidental Death Benefits

Eligibility: Death caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.

Benefit: The benefit equals 50% of wages earned during last year of service or annual wage rate if less than one year of service, paid to eligible beneficiary as defined by priority:

(i) Spouse, until remarriage

(ii) Children, to age 25

(iii) Dependent parents

(iv) Any other dependent survivors, to age 21.

Total of all payments will at least equal the amount of the full ordinary death lump sum benefit.

(e) Ordinary and Accidental Disability Benefits

Eligibility: Completion of 10 years of credited service for ordinary. No minimum years of credited service requirement for accidental.

Benefit: The benefit equals the greater of 1-2/3% of Final Average Salary per year of credited service and 1/3 of Final Average Salary. If eligible for a Service Retirement benefit, the greater of this benefit and the Service Retirement benefit is payable.

4. Member Contributions

Regular contribution rate varies based on gross wages earned during two plan years (January 1 to December 31) prior to applicable plan year based on following table. For first three years, a projection of annual wages will be used. The rate for the plan year ending March 31, 2013 for all Tier 6 employees is 2%.

Annual Wages Earned During Plan Year	Contribution Rate
Up to \$45,000	3.00%
\$45,001-\$55,000	3.50%
\$55,001-\$75,000	4.50%
\$75,001-\$100,000	5.75%
Greater than \$100,000	6.00%

5. Changes in Plan Provisions Since Prior Valuation

None

VII. Tier 6—Age 63 and 10 Year Retirement Program

1. Eligibility

All non-operating members hired on or after April 1, 2012.
2. Final Average Compensation

Highest average pensionable earnings over five consecutive years. Pensionable earnings exclude any overtime earnings, defined as compensation paid at a rate greater than the standard rate, in excess of the overtime cap. The overtime cap is indexed annually and is \$16,048 for 2017. Pensionable earnings also exclude wages in excess of the annual salary paid to the Governor of New York, lump sum payments for sick leave, accumulated vacation and other credits for time not worked, termination pay and any additional compensation paid in anticipation of retirement. Pensionable earnings in a year cannot exceed 110% of the average of the four preceding years.
3. Benefits
 - (a) Service Retirement

Eligibility: Attainment of age 63 and completion of at least 10 years of credited service.

Benefit: If completed less than 20 years of credited service, the benefit equals 1.67%% of Final Average Salary multiplied by years of credited service. If completed at least 20 years of credited service, 35% of Final Average Salary for the first 20 years of credited service, plus 2% of Final Average Salary times each year of credited service in excess of 20.
 - (b) Early Retirement

Eligibility: Attainment of age 55 and completion of at least 10 years of credited service.

Benefit: The benefit equals the Service Retirement benefit reduced by 6.5% for each year prior to age 63.
 - (c) Termination Benefits
 - (i) Refund of Contributions

Eligibility: Completion of less than 10 years of credited service.

Benefit: The benefit equals a refund of the member's contributions accumulated plus interest at a rate of 5.0%.
 - (ii) Vested Benefit

Eligibility: Completion of at least 10 years of credited service.

Benefit: The benefit equals the Service Retirement benefit with compensation and service calculated as of the date of termination. The benefit is deferred until age 63. If a member with at least 10 years of credited service dies before commencing benefits, 50% of the salary-related ordinary death benefit (below) plus accumulated regular contributions with interest are payable.

(d) Ordinary Death Benefits

Eligibility: All members

Pre-retirement Death Benefit: The benefit equals a lump sum of annual salary times the completed years of credited service up to 3 years of service. After age 60, the benefit is reduced 5% per year, to a maximum reduction of 50%. Accumulated regular member contributions with interest and one-half of accumulated additional member contributions with interest are also payable.

Post-retirement Death Benefit: Upon retirement, the pre-retirement benefit shall be reduced by 50% and reduced an additional 25% after completion of one year of retirement. After completion of two years of retirement, the benefit equals 10% of the pre-retirement benefit in force at age 60.

(e) Accidental Death Benefits

Eligibility: Death caused by on-the-job accident. World Trade Center Presumption may apply if certain criteria are met.

Benefit: The benefit equals 50% of wages participant earned during last year of service or annual wage rate if less than one year of service, paid to eligible beneficiary as defined by priority:

(i) Spouse, until remarriage

(ii) Children, to age 25

(iii) Dependent parents

(iv) Any other dependent survivors, to age 21.

Total of all payments will at least equal the amount of the full ordinary death lump sum benefit.

(f) Ordinary and Accidental Disability Benefits

Eligibility: Completion of 10 years of credited service for ordinary. No minimum years of credited service requirement for accidental.

Benefit: The benefit equals the greater of 1-2/3% of Final Average Salary per year of credited service and 1/3 of Final Average Salary. If eligible for Service Retirement benefit, the greater of this benefit and the Service Retirement benefit is payable.

4. Member Contributions

Regular contribution rate varies based on gross wages earned during two plan years (January 1 to December 31) prior to applicable plan year based on following table. For first three years, a projection of annual wages will be used. The rate for the plan year ending March 31, 2013 for all Tier 6 employees is 3%.

Annual Wages Earned During Plan Year	Contribution Rate
Up to \$45,000	3.00%
\$45,001–\$55,000	3.50%
\$55,001–\$75,000	4.50%
\$75,001–\$100,000	5.75%
Greater than \$100,000	6.00%

5. Changes in Plan Provisions Since Prior Valuation None

2. **SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES AND PLAN ASSET MATTERS**

Basis of Accounting—The Plan is accounted for on the accrual basis of accounting under which deductions are recorded when the liability is incurred and additions are recognized in the accounting period in which they are earned. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan. Contributions from members are recorded when the employer makes payroll deductions from plan members. Employer contributions are recognized when due in accordance with the terms of the Plan. Additions to the Plan consist of contributions (member and employer) and net investment income.

The accounting and reporting policies of the Plan conform to accounting principles generally accepted in the United States of America (GAAP).

New Accounting Standards Adopted – The Plan adopted GASB Statement No. 85 *Omnibus 2017*. This Statement addresses a variety of topics including issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pensions and other postemployment benefits (“OPEB”). There was no material impact on the Plan’s financial statements as a result of the implementation of GASB Statement No. 85.

Recent Accounting Pronouncements — Currently being evaluated but have not yet been adopted.

GASB Statement No.	GASB Accounting Standard	MaBSTOA Pension Plan Required Year of Adoption
84	<i>Fiduciary Activities</i>	2019

Methods Used to Value Investments—Investments are stated at fair value or Net Asset Value (“NAV”) which approximates fair value. Fair value is the amount that the Plan can reasonably expect to receive for an investment in a current sale between a willing buyer and a willing seller, that is, other than

a forced or liquidation sale. All investments, with the exception of alternative investments are valued based on closing market prices or broker quotes.

Traded securities are stated at the last reported sales price on a national securities exchange on the last business day of the fiscal year. Securities purchased pursuant to agreements to resell are carried at the contract price, exclusive of interest, at which the securities will be resold. Alternative investments are valued based on the most current net asset values.

Purchases and sales of securities are reflected on the trade date.

Dividend income is recorded on the ex-dividend date. Interest income is recorded as earned on an accrual basis.

Use of Estimates—The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires the Authority to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements and reported amounts of revenues and expenses during the reporting period. Accordingly, actual results could differ from these estimates.

Risks and Uncertainties—The Plan's investments are exposed to various risks, such as interest rate, market, and credit risk. Due to the level of risk associated with certain investment securities and level of uncertainty related to changes in the value of investment securities, it is possible that changes in risks in the near term would materially affect the amounts reported in the Plan's financial statements.

Income Taxes—The Plan is designed to satisfy the applicable requirements for governmental plans under Section 401(a) of the Internal Revenue Code. Accordingly, the Plan is tax-exempt and is not subject to the provisions of ERISA. Therefore, income retained by the Plan is not subject to Federal income tax.

3. CASH AND INVESTMENTS

Investment Committee—The Plan's policy statement is issued for the guidance of fiduciaries, including the members of the Board and investment managers, in the course of investing the assets of the Trust. The investments of the Trust will be made for the exclusive benefit of the Plan participants and their beneficiaries. Policy guidelines may be amended by the Board upon consideration of the advice and recommendations of investment professionals.

In order to have a reasonable probability of achieving the target return at an acceptable risk level, the Board has adopted the asset allocation policy outlined below. The actual asset allocation will be reviewed on, at least, a quarterly basis and will be readjusted when an asset class weighting is outside its target range. The following was the MaBSTOA Pension Plan Board adopted asset allocation policy as at December 31, 2018.

Asset Class	Target Allocation (%)	Target Range (%)	Policy Benchmark
Equities	29.0	24-34	
Domestic Large Cap	10.0	5-15	S&P 500
Domestic Small Cap	5.5	2-10	Russell 2000
International Developed Markets Equities	10.0	5-15	MSCI EAFE
Emerging Markets Equities	3.5	2-6	MSCI Emerging Markets
Fixed Income	15.0	9-21	Manager Specific
Global Asset Allocation*	20.0	15-33	50% World Equity/ 50% Citigroup WGBI unhedged
Opportunistic Investments	6.0	0-15	Manager Specific
Absolute Return	15.0	10-22	Manager Specific
Real Assets	5.0	0-10	Manager Specific
Real Estate	3.0	0-10	Manager Specific
Private Equity	7.0	0-10	Venture Economics
Total	100.0		

* The Global Asset Allocation managers will invest across numerous liquid asset classes including: stocks, bonds, commodities, TIPS and REITs.

Investment Objective — The investment objective of the Plan is to achieve the actuarial return target with an appropriate risk position. **Investment Guidelines** — The Board of Pension Managers executes investment management agreements with professional investment management firms to manage the assets of the Plan. The fund managers must adhere to guidelines that have been established to limit exposure to risk.

The overall capital structure targets and permissible ranges for eligible asset classes of the Trust are detailed within the Investment Policy Statement. Full discretion, within the parameters of the guidelines described herein and in any individual investment policy associated with that allocation, is granted to the investment managers regarding the asset allocation, the selection of securities, and the timing of transactions. It is anticipated that the majority of investment managers will be funded through commingled funds, however, in some cases (likely equity and fixed income mandates) separate account vehicles may be utilized. For separate accounts, individual manager guidelines and/or exemptions are specified in each approved investment management agreement (IMA). Should there be conflicts, the individual manager guidelines set forth in the IMA supersede the general guidelines in the Investment Policy Statement. For commingled funds, investment guidelines and/or exemptions are specified in such vehicle's offering documents. Should there be conflicts, the individual vehicle's investment guidelines supersede the general guidelines in the Investment Policy Statement.

Individual investment manager benchmarks and performance requirements are specified within the Investment Policy Statement. Performance of the Trust will be evaluated on a regular basis. Evaluation will include the degree to which performance results meet the goals and objectives as herewith set forth. Toward that end, the following standards will be used in evaluating investment performance:

1. The compliance of each investment manager with the guidelines as expressed herein, and
2. The extent to which the total rate of return performance of the Trust achieves or exceeds the targeted goals.

Fixed Income Investment Managers

- Domestic fixed income investments are permitted, subject to the guidelines reflected in Investment Policy Statement. Yankee bonds, which are dollar denominated foreign securities, may be held by each domestic manager in proportions which each manager shall deem appropriate.
- International fixed income securities are permitted, subject to the guidelines reflected in Investment Policy Statement. Generally defined, the Citigroup World Government Bond Index represents the opportunity set for international developed markets. The J.P. Morgan Emerging Markets Bond Index-Global represents the opportunity set for international emerging markets denominated in USD. The J.P. Morgan GBI-EM Global Diversified Index represents the opportunity set for international emerging markets denominated in local currency. These index references are guidelines and do not prohibit investment in securities outside those indexes.
- Investment managers are responsible for making an independent analysis of the credit worthiness of securities and their suitability as investments regardless of the classifications provided by rating agencies.
- The average duration (interest rate sensitivity) of an actively managed fixed income portfolio shall range within two years of the benchmark's duration.
- For domestic fixed income portfolios, individual manager account for the securities of an individual issuer, excepting the U.S. government and U.S. government agencies, shall not constitute more than 5% at market at any time.
- For international bond portfolios, individual manager account for the securities of any non-governmental issuer shall not constitute more than 5% at market at any time.

Equity Investment Managers

- Domestic equity investments are permitted, subject to the guidelines. American Depository Receipts (ADRs), which are dollar denominated foreign securities traded on the domestic U.S. stock exchanges (e.g., Reuters, Nestle, Sony) may be held by each domestic stock manager in proportions which each manager shall deem appropriate.
- International equities are permitted, subject to the guidelines. Generally defined, the Morgan Stanley EAFE (Europe, Australasia and the Far East) Index represents the opportunity set for international developed markets. The Morgan Stanley Emerging Markets Free Index represents the opportunity set for international emerging markets. These index references are guidelines and do not prohibit investment in securities outside those indexes.
- The equity specialists may vary equity commitment from 90% to 100% of assets under management.
- Individual manager account may hold no more than 8% at market or 1.5x the manager's benchmark weight (whichever is greater) of any single company's stock.

Overlay Manager(s)

- For a variety of reasons, the investment program may carry large amounts of cash throughout the year. In order to achieve the actuarial assumed returns on the total investment program, the Board may retain a futures overlay manager. The overlay manager shall use exchange traded futures contracts to expose the cash to the long-term target asset allocation.

- In addition, the overlay manager may be utilized for the following:
 - a) Expose un-invested assets of domestic and international equity investment managers to their respective equity benchmarks through the use of futures contracts,
 - b) Assist the Board in rebalancing, transitions, and/or gaining exposure to approved asset classes,
 - c) Provide the market (or “beta”) exposures in a portable alpha program.
 - d) The overlay manager shall ensure that all futures positions are fully collateralized and the manager is prohibited from leveraging any portion of the portfolio.

Alternative Investments Managers

Alternative investments are broadly categorized into the following categories:

- Opportunistic
- Real assets
- Real estate
- Absolute return
- Private equity

Common features of alternative investments are limited liquidity, the use of derivatives, leverage and shorting, lower regulatory oversight, limited transparency, and high fees. Compensating for these risks, these investments offer the potential of diversification and/or higher rates of return over time.

Derivatives Policy

Where appropriate, investment managers may use derivative securities for the following reasons:

- Hedging. To the extent that the portfolio is exposed to clearly defined risks and there are derivative contracts that can be used to reduce those risks, the investment managers are permitted to use such derivatives for hedging purposes, including cross-hedging of currency exposures.
- Creation of Market Exposures. Investment managers are permitted to use derivatives to replicate the risk/return profile of an asset or asset class provided that the guidelines for the investment manager allow for such exposures to be created with the underlying assets themselves.
- Management of Country and Asset Allocation Exposure. Investment managers charged with tactically changing the exposure of their portfolio to different countries and/or asset classes are permitted to use derivative contracts for these purposes.
- Additional uses of derivatives shall be approved by the Board or set forth in the individual investment guidelines or the offering documents prior to implementation and shall be restricted to those specific investment managers.

Ineligible Investments (Separately Managed Accounts)

Unless specifically approved by the Board or set forth in the individual investment guidelines, certain securities, strategies and investments are ineligible for inclusion within separately managed accounts. Among these are:

- Privately-placed or other non-marketable debt, except securities issued under Rule 144a,
- Lettered, legend or other so-called restricted stock,
- Commodities
- Short sales, and,
- Direct investments in private placements, real estate, oil and gas and venture capital, or funds comprised thereof.

Exceptions:

The Board of Managers, in recognition of the benefits of commingled funds as investment vehicles (i.e., the ability to diversify more extensively than in a small, direct investment account and the lower costs which can be associated with these funds) may, from time to time, allow investment in such funds. The Board recognizes that it cannot give specific policy directives to a fund; therefore, the Board, with assistance of the investment advisor, will assess and monitor the investments of any funds used by the Plan to ascertain whether they are appropriate.

Investment Valuation and Income Recognition — Investments are presented at fair value based on information provided by JP Morgan Chase (the “trustee”), New England Pension Consultant (“NEPC”), and the investment managers. The fair value of investments is based on published market prices and quotations from major investment brokers at current exchange rates, as available, or net asset value, which is determined to be a practical expedient for measuring fair value. Many factors are considered in arriving at that value. All investments are registered, with securities held by the Plan’s trustee, in the name of the Plan. Gains and losses on investments that were sold during the year are included in the statement of plan net position.

Risks and Uncertainties — The Plan’s investments are exposed to various risks, such as interest rate, market, and credit risk. Due to the level of risk associated with certain investment securities and level of uncertainty related to changes in the value of investment securities, it is possible that changes in risks in the near term would materially affect the amounts reported in the Plan’s financial statements.

The financial markets, both domestically and internationally, have demonstrated significant volatility on a daily basis, which affects the valuation of investments. The Plan utilizes asset allocation strategies that are intended to optimize investment returns over time in accordance with investment objectives and with acceptable levels of risk.

Investments measured at readily determined fair value (FV)
(In thousands)

	Quoted Price in Active Markets for Identical Assets		Significant Other Observable Inputs	Significant Unobservable Inputs
	December 31, 2018	Level 1	Level 2	Level 3
Equity Securities:				
Separate account large-cap equity funds	\$ 85,650	\$ 85,650	\$ -	\$ -
Separate account small-cap equity funds	136,628	136,628	-	-
Separate account real estate investment trust funds	24,296	24,296	-	-
Total equity investments	246,574	246,574	-	-
Debt Securities				
Separate account debt funds	186,969	-	186,969	-
Total debt investments	186,969	-	186,969	-
Total investments at readily determined FV	\$ 433,543	\$ 246,574	\$ 186,969	\$ -

Investments measured at the net asset value (NAV)
(In thousands)

	December 31, 2018	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Equity Securities:				
Commingled large cap equity funds	\$ 174,270	\$ -	Daily	None
Commingled international equity funds	326,065	-	Daily	None
Commingled emerging market equity funds	81,142	-	Daily, monthly	None
Total equity investments measured at the NAV	581,477	-		
Debt Securities				
Commingled debt funds	161,192	-	Daily, monthly, quarterly	None
Mutual fund	43,662	-	Daily	None
Total debt investments measured at the NAV	204,854	-		
Absolute return:				
Directional	89,472	-	Monthly	3-60 days
Direct lending	134,954	38,079	Bi-annually	60 plus days
Distressed securities	43,766	-	Not eligible	N/A
Credit long	32,728	-	Quarterly	3-30 days
Credit long/short	59,953	-	Quarterly	3-60 days
Equity long/short	38,792	-	Quarterly	3-60 days
Event driven	53,418	2,093	Quarterly, Bi-annually	60-120 days
Global macro	96,755	-	Monthly	3-30 days
Global tactical asset allocation	162,712	-	Daily, monthly	3-30 days
Multistrategy	75,956	-	Quarterly	3-60 days
Risk parity	232,379	-	Monthly	3-30 days
Structured credit	5,277	-	Not eligible	N/A
Total absolute return measured at the NAV	1,026,162	40,172		
Private equity - private equity partnerships	222,078	154,653	Not eligible	N/A
Real assets				
Commingled commodities fund	51,738	-	Not eligible	N/A
Commingled real estate funds	102,439	-	Not eligible	N/A
Energy	67,528	45,077	Not eligible	N/A
Infrastructure	19,466	5,123	Not eligible	N/A
Total real assets measured at the NAV	241,171	50,200		
Short term investments measured at the NAV	103,701	-		
Total investments measured at the NAV	2,379,443	\$ 245,025		
Total investments at fair value	\$ 2,812,986			

Investments measured at readily determined fair value (FV)
(In thousands)

	Quoted Price in			
	December 31, 2017	Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2	Significant Unobservable Inputs Level 3
Equity Securities:				
Separate account large-cap equity funds	\$ 85,488	\$ 85,488	\$ -	\$ -
Separate account small-cap equity funds	146,050	146,050	-	-
Separate account real estate investment trust funds	25,437	25,437	-	-
Total equity investments	256,975	256,975	-	-
Debt Securities				
Separate account debt funds	130,545	-	130,545	-
Total debt investments	130,545	-	130,545	-
Total investments at readily determined FV	\$ 387,520	\$ 256,975	\$ 130,545	\$ -

Investments measured at the net asset value (NAV)
(In thousands)

	December 31, 2017	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Equity Securities:				
Commingled large cap equity funds	\$ 184,948	\$ -	Daily	None
Commingled international equity funds	380,935	-	Daily	None
Commingled emerging market equity funds	100,360	-	Daily, monthly	None
Total equity investments measured at the NAV	666,243	-		
Debt Securities				
Commingled debt funds	226,761	-	Daily, monthly, quarterly	None
Mutual fund	38,074	-	Daily	None
Total debt investments measured at the NAV	264,835	-		
Absolute return:				
Directional	91,662	-	Monthly	3-60 days
Direct lending	121,893	9,047	Bi-annually	60 plus days
Distressed securities	30,446	-	Not eligible	N/A
Credit long	41,165	-	Quarterly	3-30 days
Credit long/short	55,742	-	Quarterly	3-60 days
Equity long/short	41,257	-	Quarterly	3-60 days
Event driven	56,885	2,093	Quarterly, Bi-annually	60-120 days
Global macro	87,963	-	Monthly	3-30 days
Global tactical asset allocation	194,495	-	Daily, monthly	3-30 days
Multistrategy	83,030	-	Quarterly	3-60 days
Risk parity	258,962	-	Monthly	3-30 days
Structured credit	11,652	-	Not eligible	N/A
Total absolute return measured at the NAV	1,075,152	11,140		
Private equity - private equity partnerships	212,724	148,579	Not eligible	N/A
Real assets				
Commingled commodities fund	55,646	-	Not eligible	N/A
Commingled real estate funds	107,002	-	Not eligible	N/A
Energy	45,027	14,157	Not eligible	N/A
Infrastructure	16,831	5,526	Not eligible	N/A
Total real assets measured at the NAV	224,506	19,683		
Short term investments measured at the NAV	58,552	-		
Total investments measured at the NAV	2,502,012	\$ 179,402		
Total investments at fair value	\$ 2,889,532			

Concentration of Credit Risk – Individual investments held by the Plan that represents 5.0% or more of the Plan’s net assets available for benefits at December 31, 2018 and 2017 are as follows:

(In thousands)	<u>2018</u>	<u>2017</u>
Investments at fair value as determined by quoted market prices:		
Sanderson International Equity Fund	\$ -	\$ 156,606
Robert W. Baird and Company	158,405	-

Credit Risk — At December 31, 2018 and 2017, the following credit quality rating has been assigned by a nationally recognized rating organization:

(In thousands)	2018	Percentage of	2017	Percentage of
Quality Rating	Fair Value	Fixed Income	Fair Value	Fixed Income
		Portfolio		Portfolio
AAA	\$ 90,620	9.02 %	\$ 112,325	21.16 %
AA	142,058	14.14	(3,161)	(0.60)
A	56,656	5.64	45,135	8.50
BBB	67,683	6.73	69,916	13.17
BB	83,413	8.30	62,391	11.75
B	58,869	5.86	41,445	7.81
CCC	12,902	1.28	4,493	0.85
CC	113	0.01	823	0.16
C	993	0.10	-	-
D	4,544	0.45	10	-
Not Rated	<u>253,222</u>	<u>25.20</u>	<u>78,990</u>	<u>14.88</u>
Credit risk debt securities	771,073	76.73	412,367	77.68
U.S. Government bonds	<u>233,849</u>	<u>23.27</u>	<u>118,466</u>	<u>22.32</u>
Total fixed income securities	1,004,922	<u>100.00 %</u>	530,833	<u>100.00 %</u>
Other securities not rated — equity, international funds and foreign corporate bonds	<u>1,808,064</u>		<u>2,358,699</u>	
Total investments	<u>\$ 2,812,986</u>		<u>\$ 2,889,532</u>	

Interest Rate Risk Exceptions — Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Duration is a measure of sensitivity to interest rate risk. The greater the duration of a bond or portfolio of bonds, the greater its price volatility will be in response to a change in interest rate risk and vice versa. Modified duration is an indicator of bond price's sensitivity to a parallel 100 basis point change in interest rates.

(In thousands) Investment Fund	2018		2017	
	Fair Value	Duration	Fair Value	Duration
Chase	\$ 186,969	12.81	\$ 130,545	11.81
Wellington Blended Emerging Market Debt Fund	42,167	5.44	49,815	5.70
Allianz Structured Alpha Fund	89,472	0.13	91,662	0.13
GAM Unconstrained Bond Fund	20,702	0.10	102,061	(0.17)
Bridgewater All Weather Fund	66,694	8.30	61,675	7.70
Wellington Opportunistic Fund	39,390	1.52	25,845	1.70
Bridgewater Pure Alpha Fund	164,759	(0.90)	(144,266)	(7.90)
Northern Trust William Capital	10,272	-	10,103	-
Park Square Capital Credit Opportunities Fund II	25,529	-	26,688	-
Park Square Capital Credit Opportunities Fund III	10,009	-	-	-
Crescent Capital High Income Fund	37,893	2.56	22,661	2.43
EIG Energy Fund XV	2,761	-	3,319	-
EIG Energy Fund XVI	3,863	-	4,554	-
Fir Tree Value Realization Fund	-	-	3	-
Libremax Partners Fund	59,954	2.63	14,382	2.50
Gramercy Distressed Opportunistic Fund	16,017	0.26	1,769	(0.05)
Makuria Credit Fund	12,182	5.38	22,226	5.50
Orchard Landmark Fund	70,511	1.44	-	-
PIMCO Distressed Credit Opportunities Fund	32,728	2.18	-	-
Wellington Global Managed Fund	55,285	6.20	79,238	10.60
State Street Real Asset Fund	12,947	5.84	13,851	5.84
State Street Long US Treasury Index Fund	19,682	17.38	-	-
Riverstone Credit Partners Fund	12,144	4.00	-	-
Riverstone Credit Partners Syndication Fund	1,202	4.00	-	-
Canyon Value Fund	11,790	3.26	14,702	2.50
Total fixed income securities	1,004,922		530,833	
Portfolio modified duration		4.43		8.76
Investments with no duration reported	\$ 1,808,064		\$ 2,358,699	
Total investments	\$ 2,812,986		\$ 2,889,532	

Foreign Currency Risk — Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. Some of the Plan's investment managers will have foreign currency exposure through holdings of foreign securities, currency derivatives or private investments whose revenue will be non-USD based. The Plan also holds investments in American Depository Receipts ("ADRs") which are not included in the below schedule since they are denominated in U.S. dollars and accounted for at fair market value.

The Plan's foreign currency exposures as of December 31, 2018 and 2017 are as follows (amounts in U.S. dollars, in thousands):

Foreign Currency Holdings in US \$ (In thousands)	December 31, 2018	December 31, 2017
Argentina Peso	\$ 12,417	\$ 3,148
Dollar (Australian)	18,820	25,072
Bahraini Dinar	325	358
Bangladesh (Taka)	312	352
Bermudian Dollar	2,084	607
Botswana Pula	138	132
Brazil Cruzeiro Real	22,971	12,168
Bulgarian Lev	12	14
Dollar (Canadian)	25,792	14,493
Dollar (Caymanian)	591	-
Chilean Peso	6,308	4,148
China (Yuan Renminbi)	12,140	13,680
Colombian Peso	3,436	3,176
Croatia Kuna	408	436
Czech Koruna	416	(1,159)
Dominican Peso	6	-
Krone (Danish)	5,039	1,836
Egyptian Pound	809	2,191
Euro	81,204	68,054
Georgian Lari	607	1,359
Ghanaian Cedi	130	209
Dollar (Hong Kong)	6,266	13,310
Hungary (Forint)	2,731	551
Icelandic Krona	2,118	3,186
Indian Rupee	16,044	20,102
Indonesia Rupiah	5,103	12,038
Israeli (Shekel)	1,083	1,014
Yen (Japan)	6,297	7,031
Jordanian Dinar	310	380
Kazakhstani Tenge	342	514
Kenyan Shilling	325	348
Kuwait Dinar	657	714
Lebanese Pound	41	99
Laos Kip	332	-
Malaysian (Ringgit)	2,973	6,467
Mauritius (Rupee)	719	732
Mexican New Peso	(1,694)	3,886
Morocco Dirham	301	357
Dollar (New Zealand)	519	5,306
Nigerian Naira	327	351
Krone (Norwegian)	787	5,835
Omanian Rial	270	359
Pakistani Rupee	709	1,522
Panamanian Balboa	129	135
Peru Sol	1,365	1,936
Philippines Peso	2,399	1,859
Polish (New Zloty)	(2,316)	1,233
Pound (Sterling)	36,157	79,022
Qatar Riyal	802	952
Romanian Leu	1,201	554
Russian Federation Rouble	(3,505)	4,296
Saudi Riyal	665	357
Singapore Dollar	(7,183)	4,255
South Africa Rand	8,888	5,871
South Korean Won	13,882	24,351
Sri Lankan Rupee	273	349
Krona (Swedish)	6,157	19,137
Swiss Franc	14,221	10,474
Thai (Bhat)	3,738	4,507
Dollar (Taiwan, New)	7,055	18,458
Tunisian Dinar	122	145
Turkish Lira	(2,259)	3,149
Ukrainian Hryvnia	40	-
UAE Dirham	986	1,656
Uruguayan Pesos	11	338
Vietnamese Dong	600	571
Other	- 43 -	(17,199)
Total	\$ 334,605	\$ 400,782

4. CONTRIBUTIONS

The financial objective of the Plan is to fund, on an actuarial basis, the retirement and death benefits for eligible MaBSTOA employees and beneficiaries. MaBSTOA contributions to the fund are made annually. Contributions to MaBSTOA require the approval of the MaBSTOA Board.

Employer contributions amounted to \$205.4 million and \$202.7 million for the years ended December 31, 2018 and 2017, respectively. Employee contributions amounted to \$22.0 million and \$19.7 million for the years ended December 31, 2018 and 2017, respectively. Contributions made by employees are accounted for in separate accounts maintained for each employee. Annually, these accounts are credited with interest at 5%. Effective April 1, 1990, MaBSTOA began to deduct employee contributions as pretax contributions under Section 414(h) of the Internal Revenue Code.

Pursuant to Section 7.03 of the MaBSTOA Plan, active plan members are permitted to borrow up to 75% of their contributions with interest. Their total contributions and interest remain intact and interest continues to accrue on the full balance. The participant's accumulated contribution account is used as collateral against the loan. The Plan granted \$15.7 million and \$18.2 million in loans to members during 2018 and 2017, respectively. Loan repayments by members amounted to \$14.1 million and \$14.9 million in 2018 and 2017, respectively.

Upon termination of employment before retirement, certain participants are entitled to refunds of their own contributions including accumulated interest less any loans outstanding.

5. NET PENSION LIABILITY

The components of the net pension liability of the Plan at December 31, 2018 and 2017 were as follows (in thousands):

	December 31, 2018	December 31, 2017
Total pension liability	\$ 3,811,124	\$ 3,676,476
Fiduciary net position	<u>2,844,402</u>	<u>2,918,989</u>
Net pension liability	<u>\$ 966,722</u>	<u>\$ 757,487</u>
Fiduciary net position as a percentage of the total pension liability	74.63 %	79.40 %

Actuarial Methods and Assumptions—The total pension liability as of December 31, 2018 was determined by an actuarial valuation date of January 1, 2018, that was updated to roll forward the total pension liability to the respective year-end. Actuarial valuations are performed annually as of January 1.

Additional information of the latest actuarial valuation follows:

Valuation date	January 1, 2018	January 1, 2017
Actuarial cost method	Frozen initial liability (FIL) ⁽¹⁾	Frozen initial liability (FIL) ⁽¹⁾
Amortization method	For FIL bases, period specified in current valuation report. Future gains/ losses are amortized through the calculation of the normal cost in accordance with FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population	For FIL bases, period specified in current valuation report. Future gains/ losses are amortized through the calculation of the normal cost in accordance with FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population
Actuarial asset valuation method	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets
Mortality	Based on experience of all MTA members reflecting mortality improvement on a generational basis using Scale AA	Based on experience of all MTA members reflecting mortality improvement on a generational basis using Scale AA
Actuarial Assumptions:		
Investment rate of return	7.00%, net of investment related expenses	7.00%, net of investment related expenses
Projected salary increases	Reflecting general wage, merit and promotion increases of 3.5% to 4.0% per year for operating and nonoperating employees, respectively. Larger increases are assumed in the first 5 years of a member's career.	Reflecting general wage, merit and promotion increases of 3.5% to 4.0% per year for operating and nonoperating employees, respectively. Larger increases are assumed in the first 5 years of a member's career.
Overtime	Except for managerial employees, 8.5% of base salary for operating employees and 2.0% of base salary for nonoperating employees, with different assumptions used in the year before retirement	Except for managerial employees, 8.5% of base salary for operating employees and 2.0% of base salary for nonoperating employees, with different assumptions used in the year before retirement
Cost-of-living adjustments	55% of inflation assumption or 1.375% per annum, if applicable	55% of inflation assumption or 1.375% per annum, if applicable
Inflation	2.50% per annum	2.50% per annum

⁽¹⁾ Under this actuarial method, the initial liability has been established by the Entry Age Actuarial Cost Method for determining changes in the Unfunded Actuarial Accrued Liability (UAAL) due to plan provision and assumption changes.

Until the inception of the Tier 6 provisions in 2012, amendments enacted by State legislation in 2000 reflected the most significant changes to the plan and are summarized as follows:

For operating employees (Chapter 10 of the Laws of 2000):

- All operating employees are automatically included in the 2000 55/25 plan.
- Elimination of the 2.3% additional employees' contributions applicable to members of the 55/25 plan.
- Reduction in the Tier 3 and 4 employee contribution rate from 3.0% to 2.0%.

For managerial and non-operating employees (Chapter 126 of the Laws of 2000):

- Vesting under the Age 57 plan required only five years of service versus ten.
- As of October 1, 2000, regular Tier 3 and 4 employee contributions ceased after the completion of ten years of service.

For retired members (Chapter 125 of the Laws of 2000):

- Automatic cost-of-living adjustments (COLAs). The COLAs apply to retired members as follows:

Retirees at Least age	Retired or Receiving Benefits for at Least
62	5 years
55	10
Disabled retirees	5
Accidental death beneficiaries	5

- Initial COLA payable September 30, 2000, based on the first \$18,000 of the maximum retirement allowance.
- Thereafter, annual COLAs of 50% of the increase in the consumer price index (CPI), but not less than 1% or more than 3%, of the first \$18,000 of maximum retirement allowance will be payable.

The benefit enhancements, as well as the automatic COLA for retirees, were reflected in the actuarial valuation beginning with the January 1, 2000, valuation.

The Plan adopted several amendments during 2002 as a result of state legislation. Amendments included changes to the definition of active service for Tier 1 and Tier 2 members, extension of the phase-in period from five years to ten years for funding liabilities created by Chapter 125 of the Laws of 2000 and increased accidental disability benefits for Tier 3 and Tier 4 members.

The Plan also adopted the legislative provisions of Chapter 379 of 2007, which allow current and former members of the Transport Workers Union, Local 100 and Transit Supervisors Organization, Local 106, with an accumulated balance of additional member contributions (AMC) made in accordance with the MaBSTOA 55/25 Plan enacted in 1994, to apply for a refund of such contributions. The MaBSTOA Board additionally adopted legislative provisions of Chapter 428 of 2016, which provided eligible members a refund of the employee Additional Member Contributions made in the Tier 4 Age 57 and 5 Year Program and the Tier 4 Age 25 and Year 55 Early Retirement Program. AMC refunds amounted to approximately \$773 thousand and \$603 thousand as of December 31, 2018 and 2017, respectively.

At December 31, 2018 and 2017, assets were available to fund 74.6% and 79.4%, respectively, of the unfunded actuarial accrued liability (UAAL) when measured using the Entry Age Normal Cost Method per GASB 67 and the market value of assets.

Calculation on Money-Weighted Rate of Return

The money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of pension plan investments by the proportion of time they are available to earn a return during that period. External cash flows are determined on a monthly basis and are assumed to occur at the middle of each month. External cash inflows are netted with external cash outflows, resulting in a net external cash flow in each month.

Schedule of Calculations of Money-Weighted Rate of Return

(In thousands)				
	Net External Cash Flows	Periods Invested	Period Weight	Net External Cash Flows With Interest
Beginning Value - January 1, 2018	\$2,918,989	12.00	1.00	\$2,831,240
Monthly net external cash flows:				
January	1,114	11.50	0.96	1,082
February	1,114	10.50	0.88	1,084
March	1,114	9.50	0.79	1,087
April	1,114	8.50	0.71	1,090
May	1,114	7.50	0.63	1,092
June	1,114	6.50	0.54	1,095
July	1,114	5.50	0.46	1,098
August	1,114	4.50	0.38	1,101
September	1,114	3.50	0.29	1,104
October	1,114	2.50	0.21	1,107
November	1,114	1.50	0.13	1,110
December	1,114	0.50	0.04	1,112
Ending Value - December 31, 2018				\$2,844,402
Money-Weighted Rate of Return	-3.01%			

Schedule of Calculations of Money-Weighted Rate of Return

(In thousands)				
	Net External Cash Flows	Periods Invested	Period Weight	Net External Cash Flows With Interest
Beginning Value - January 1, 2017	\$2,555,735	12.00	1.00	\$2,905,018
Monthly net external cash flows:				
January	2,671	11.50	0.96	3,020
February	809	10.50	0.88	906
March	809	9.50	0.79	896
April	809	8.50	0.71	886
May	809	7.50	0.63	877
June	809	6.50	0.54	867
July	809	5.50	0.46	859
August	809	4.50	0.38	850
September	809	3.50	0.29	840
October	809	2.50	0.21	832
November	809	1.50	0.13	823
December	2,303	0.50	0.04	2,315
Ending Value - December 31, 2017				\$2,918,989
Money-Weighted Rate of Return	13.67%			

Expected Rate of Return on Investments—The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target allocation and best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of the December 31, 2018 and 2017 actuarial valuations are summarized in the following table:

SCHEDULE OF LONG TERM EXPECTED RATE OF RETURN FOR 2018

Asset Class	Index	Target Allocation	Long-Term Expected Real Rate of Return
US Core Fixed Income	Barclays Aggregate	9.00%	2.03%
US Long Bonds	Barclays Long Term Government/Credit	1.00%	2.44%
US Bank/Leveraged Loans	Credit Suisse Leveraged Loan	7.00%	3.08%
US Inflation-Indexed Bonds	Barclays US TIPS	2.00%	1.16%
US High Yield Bonds	BAML High Yield	4.00%	3.93%
Emerging Market Bonds	JPM EMBI Plus	2.00%	3.76%
US Large Caps	S&P 500	12.00%	4.71%
US Small Caps	Russell 2000	6.00%	5.93%
Foreign Developed Equity	MSCI EAFE NR	12.00%	6.15%
Emerging Market Equity	MSCI EM NR	5.00%	8.22%
Global REITS	FTSE EPRA/NAREIT Developed	1.00%	5.80%
Private Real Estate Property	NCREIF Property	4.00%	3.69%
Private Equity	Cambridge Private Equity	9.00%	9.50%
Commodities	Commodity	1.00%	2.85%
Hedge Funds - MultiStrategy	HFRI: Fund Wtd Composite	16.00%	3.28%
Hedge Funds - Event Driven	HFRI Event Driven	6.00%	3.38%
Hedge Funds - Equity Hedge	HFRI Equity Driven	3.00%	3.85%
Total		100.00 %	
Assumed Inflation - Mean			2.50%
Assumed Inflation - Standard Deviation			1.65%
Portfolio Nominal Mean Return			7.19%
Portfolio Standard Deviation			10.87%
Long-Term Expected Rate of Return selected by MTA			7.00%

* Based on March 2014 Investment Policy

SCHEDULE OF LONG TERM EXPECTED RATE OF RETURN FOR 2017

Asset Class	Index	Target Allocation	Long-Term Expected Real Rate of Return
U.S. Core Fixed Income	Barclays Aggregate	10.00 %	1.96 %
U.S. High Yield Bonds	BAML High Yield	8.00 %	4.62 %
Global Bonds	Citi WGBI	10.00 %	0.34 %
Emerging Market Bonds	JPM EMBI Plus	3.00 %	3.30 %
U.S. Large Cap	S&P 500	10.00 %	4.31 %
U.S. Small Cap	Russell 2000	5.50 %	5.57 %
Global Equities	MSCI ACWI NR	10.00 %	4.99 %
Foreign Developed Equities	MSCI EAFE NR	10.00 %	5.57 %
Emerging Market Equities	MSCI EM NR	3.50 %	7.91 %
GLOBAL REITs	FTSE EPRA/NAREIT Developed	5.00 %	5.62 %
Private Real Estate Property	NCREIF Property	3.00 %	3.64 %
Private Equity	Cambridge Private Equity	7.00 %	8.99 %
Hedge Funds - MultiStrategy	HFRI Fund Wtd Composite	15.00 %	3.35 %
Total		100.00 %	
Assumed Inflation—Mean			2.50 %
Assumed Inflation—Standard Deviation			1.85 %
Portfolio Arithmetic Mean Return			6.80 %
Portfolio Standard Deviation			11.54 %
Long-Term Expected Rate of Return selected by MTA			7.00 %

* Based on March 2014 Investment Policy

Discount Rate—The discount rate used to measure the total liability as of December 31, 2018 and 2018 was 7.0%. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that the Plans' contributions will be made in accordance with the statutory contributions determined by the Actuary. Based on those assumptions, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current and inactive plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate—The following presents the net pension liability of the Plan, calculated using the discount rate of 7.00 percent; as well as what the Plan’s net pension would be if it were calculated using a discount rate that is 1-percentage point lower (6.00 percent) or 1-percentage point higher (8.00 percent) than the current rate for years 2018 and 2017 respectively:

2018 (in thousands)	1% Decrease 6.00%	Current Discount Rate 7.00%	1% Increase 8.00%
Net pension liability	<u>\$ 1,388,193</u>	<u>\$ 966,722</u>	<u>\$ 607,684</u>
2017 (in thousands)	1% Decrease 6.00%	Current Discount Rate 7.00%	1% Increase 8.00%
Net pension liability	<u>\$ 1,166,477</u>	<u>\$ 757,487</u>	<u>\$ 409,121</u>

6. CUSTODIAL AND OTHER PROFESSIONAL SERVICES

JP Morgan Chase Bank is custodian and trustee of plan assets with the exception of Mellon asset management investments in which Mellon Bank N.A. is the custodian. JP Morgan Chase also provides cash receipt and cash disbursement services to the Plan. NEPC reviews the Plan’s portfolio, the investment policies as adopted by the Investment Committee and the performance of the Investment Managers. NEPC also provides audit services for the Plan’s equity portfolios. Actuarial services were provided to the Plan by Milliman Inc.

7. SUBSEQUENT EVENTS

The Plan redeemed its entire investment in the GAM Unconstrained Bond Fund, amid allegations of misconduct by a portfolio manager. The Plan suffered no loss on its investment.

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**REQUIRED SUPPLEMENTARY INFORMATION
(UNAUDITED)**

**MANHATTAN AND BRONX SURFACE TRANSIT
OPERATING AUTHORITY PENSION PLAN**

**REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)
SCHEDULE OF CHANGES IN THE EMPLOYERS' NET PENSION LIABILITY AND RELATED RATIOS
(in millions)**

	2018	2017	2016	2015	2014
Total pension liability:					
Service cost	\$ 87	\$ 85	\$ 82	\$ 77	\$ 72
Interest	256	246	237	232	224
Changes of benefit terms	-	6	-	-	-
Differences between expected and actual experience	6	12	14	(69)	(2)
Benefit payments and withdrawals	<u>(214)</u>	<u>(209)</u>	<u>(188)</u>	<u>(180)</u>	<u>(175)</u>
Net change in total pension liability	135	140	145	60	119
Total pension liability—beginning	<u>3,676</u>	<u>3,536</u>	<u>3,391</u>	<u>3,331</u>	<u>3,212</u>
Total pension liability—ending (a)	<u>3,811</u>	<u>3,676</u>	<u>3,536</u>	<u>3,391</u>	<u>3,331</u>
Plan fiduciary net position:					
Employer contributions	205	203	221	215	226
Employee contributions	22	20	18	16	15
Net investment income	(88)	350	212	(24)	105
Benefit payments and withdrawals	<u>(214)</u>	<u>(209)</u>	<u>(188)</u>	<u>(180)</u>	<u>(175)</u>
Net change in plan fiduciary net position	(75)	364	263	27	171
Plan fiduciary net position—beginning	<u>2,919</u>	<u>2,555</u>	<u>2,292</u>	<u>2,265</u>	<u>2,094</u>
Plan fiduciary net position—ending (b)	<u>2,844</u>	<u>2,919</u>	<u>2,555</u>	<u>2,292</u>	<u>2,265</u>
Employer's net pension liability—ending (a)-(b)	<u>\$ 967</u>	<u>\$ 757</u>	<u>\$ 981</u>	<u>\$ 1,099</u>	<u>\$ 1,066</u>
Plan fiduciary net position as a percentage of the total pension liability	<u>74.63 %</u>	<u>79.40 %</u>	<u>72.26 %</u>	<u>67.58 %</u>	<u>68.00 %</u>
Covered payroll	<u>767</u>	<u>748</u>	<u>713</u>	<u>686</u>	<u>672</u>
Employer's net pension liability as a percentage of covered payroll	<u>126.11 %</u>	<u>101.32 %</u>	<u>137.54 %</u>	<u>160.30 %</u>	<u>158.74 %</u>

Note: Information for periods prior to 2014 was not readily available.

**MANHATTAN AND BRONX SURFACE TRANSIT
OPERATING AUTHORITY PENSION PLAN**

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)

SCHEDULE OF EMPLOYER CONTRIBUTIONS

(in thousands)

Fiscal Year Ending December 31,	Actuarially Determined Contribution	Actual Employer Contribution	Contribution Deficiency/ (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2018	\$ 202,509	\$ 205,433	\$ (2,924)	\$ 766,562	26.80 %
2017	202,897	202,684	213	747,651	27.11
2016	220,486	220,697	(211)	713,280	30.94
2015	214,881	214,881	-	685,998	31.32
2014	226,374	226,374	-	671,633	33.70
2013	234,474	234,474	-	582,081	40.28
2012	228,918	228,918	-	575,989	39.74
2011	186,454	186,454	-	579,696	32.16
2010	200,633	200,633	-	591,073	33.94
2009	204,274	204,274	-	569,383	35.88

(continued)

**MANHATTAN AND BRONX SURFACE TRANSIT
OPERATING AUTHORITY PENSION PLAN**

SCHEDULE II

**REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

Note to Schedule II:

The more significant actuarial assumptions and methods used in the calculation of employer contributions to the Plan are as follows:

Valuation Dates	January 1, 2018	January 1, 2017	January 1, 2016	January 1, 2015
Actuarial cost method	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)
Amortization method	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population
Actuarial asset valuation method	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets
Interest rate	Net rate of 7.0% for 2018, per annum, net of investment expenses	Net rate of 7.0% for 2017, per annum, net of investment expenses	Net rate of 7.0% for 2016, per annum, net of investment expenses	Net rate of 7.0% for 2015, per annum, net of investment expenses
Inflation	2.5% per annum	2.5% per annum	2.5% per annum	2.5% per annum
Deaths after retirement	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience
Separations other than for normal retirement	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience
Rates of normal retirement	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan. All members are assumed to retire by age 80	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan. All members are assumed to retire by age 80	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan. All members are assumed to retire by age 80	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan. All members are assumed to retire by age 80
Salary increases	Reflecting general, merit and promotion increases of 3.5% to 4.0% per year for operating and non-operating employees, respectively. Larger increases are assured in the first 5 years of a member's career.	Reflecting general, merit and promotion increases of 3.5% to 4.0% per year for operating and non-operating employees, respectively. Larger increases are assured in the first 5 years of a member's career.	In general, merit and promotion increases plus assumed general wage increases of 3.5% to 15.0% for operating employees and 4.0% to 7.0% for nonoperating employees per year, depending on years of service	In general, merit and promotion increases plus assumed general wage increases of 3.5% to 15.0% for operating employees and 4.0% to 7.0% for nonoperating employees per year, depending on years of service
Overtime	Except for managerial employees, 8.5% of base salary for operating employees and 2.0% of base salary for nonoperating employees, with different assumptions used in the year before retirement. For Tier 6 members, all overtime was assumed to be less than overtime cap	Except for managerial employees, 8.5% of base salary for operating employees and 2.0% of base salary for nonoperating employees, with different assumptions used in the year before retirement. For Tier 6 members, all overtime was assumed to be less than overtime cap	Except for managerial employees, 8.5% of base salary for operating employees and 2.0% of base salary for nonoperating employees, with different assumptions used in the year before retirement. For Tier 6 members, all overtime was assumed to be less than overtime cap	Except for managerial employees, 8.5% of base salary for operating employees and 2.0% of base salary for nonoperating employees, with different assumptions used in the year before retirement. For Tier 6 members, all overtime was assumed to be less than overtime cap
Cost-of-living adjustments	55% of inflation assumption or 1.375% per annum if applicable (2)	55% of inflation assumption or 1.375% per annum if applicable (2)	55% of inflation assumption or 1.375% per annum if applicable (2)	55% of inflation assumption or 1.375% per annum if applicable (2)
Provision for expenses	An average of the prior two years' administrative charges added to the normal cost	An average of the prior two years' administrative charges added to the normal cost	An average of the prior two years' administrative charges added to the normal cost	An average of the prior two years' administrative charges added to the normal cost

(1) Under this actuarial method, the initial liability has been established by the Entry Age Actuarial Cost Method for determining changes in the Unfunded Actuarial Accrued Liability (UAAL) due to plan provision and assumption changes.

(2) Assumes a long-term consumer price inflation assumption of 2.5% per annum, compounded annually.

(Continued)

**MANHATTAN AND BRONX SURFACE TRANSIT
OPERATING AUTHORITY PENSION PLAN**

SCHEDULE II

**REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)
SCHEDULE OF EMPLOYER CONTRIBUTIONS**

Note to Schedule II:

The more significant actuarial assumptions and methods used in the calculation of employer contributions to the Plan are as follows:

Valuation Dates	January 1, 2014
Actuarial cost method	Frozen initial liability (FIL) (1)
Amortization method	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population
Actuarial asset valuation method	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets
Interest rate	Net rate of 7.0% for 2014, per annum, net of investment expenses
Inflation	2.5% per annum
Deaths after retirement	Tables based on recent experience
Separations other than for normal retirement	Tables based on recent experience
Rates of normal retirement	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan. All members are assumed to retire by age 80
Salary increases	In general, merit and promotion increases plus assumed general wage increases of 3.5% to 15.0% for operating employees and 4.0% to 7.0% for nonoperating employees per year, depending on years of service
Overtime	Except for managerial employees, 8.5% of base salary for operating employees and 2.0% of base salary for nonoperating employees, with different assumptions used in the year before retirement. For Tier 6 members, all overtime was assumed to be less than overtime cap
Cost-of-living adjustments	55% of inflation assumption or 1.375% per annum if applicable (2)
Provision for expenses	An average of the prior two years' administrative charges added to the normal cost

(1) Under this actuarial method, the initial liability has been established by the Entry Age Actuarial Cost Method for determining changes in the Unfunded Actuarial Accrued Liability (UAAL) due to plan provision and assumption changes.

(2) Assumes a long-term consumer price inflation assumption of 2.5% per annum, compounded annually.

(concluded)

**MANHATTAN AND BRONX SURFACE TRANSIT
OPERATING AUTHORITY PENSION PLAN**

**REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)
SCHEDULE OF INVESTMENT RETURNS**

The money-weighted rate of return considers the changing amounts actually invested during a period and weights the amount of pension plan investments by the proportion of time they are available to earn a return during that period. The following table displays the annual money-weighted rate of return calculated net of investment expense for the Plan for:

Fiscal Year Ended December 31	Annual Money-Weighted Rate of Return
2018	(3.01)%
2017	13.67
2016	9.16
2015	(1.05)
2014	4.95

Note: Information for periods prior to 2014 was not readily available.