KPMG

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

Financial Statements and Required Supplementary Information

December 31, 2017 and 2016

(With Independent Auditors' Report Thereon)

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND**

Table of Contents

KPMG LLP
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Independent Auditors' Report

The Retirement Board and Participants
Massachusetts Bay Transportation Authority Retirement Fund:

We have audited the accompanying financial statements of the Massachusetts Bay Transportation Authority Retirement Fund (the Fund), which comprise the statements of fiduciary net position as of December 31, 2017 and 2016 and the related statements of changes in fiduciary net position for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; 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 audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Massachusetts Bay Transportation Authority Retirement Fund as of December 31, 2017 and 2016 and the changes in fiduciary net position for the years then ended in accordance with U.S. generally accepted accounting principles.

Other Matters

Required Supplementary Information

U.S. generally accepted accounting principles require that the Management's Discussion and Analysis and the required supplementary information as listed in the accompanying table of contents (collectively referred to as RSI) 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 RSI 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 audits 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.

KPMG LLP

Boston, Massachusetts
June 14, 2018

This section presents Management's Discussion and Analysis (MD&A) of the Massachusetts Bay Transportation Authority Retirement Fund's (the Fund or MBTARF) financial activity and performance as of and for the years ended December 31, 2017 and 2016. The MD&A is unaudited and is intended to serve as an introduction to the Fund's basic financial statements, as well as to offer readers of the Fund's financial statements a narrative view and analysis of MBTARF's financial activities.

Financial Reporting Structure

The financial statements include the statements of fiduciary net position and changes in fiduciary net position. They present the financial position of the Fund as of December 31, 2017 and 2016 and its financial activities for the years then ended. The notes to the financial statements provide further information that is essential to a full understanding of the financial statements. The notes describe the significant accounting policies of the Fund and provide detailed disclosures on certain account balances. The required supplementary schedules include the schedules of changes in net pension liability and related ratios, investment returns, contributions and related notes as prescribed by the Governmental Accounting Standards Board (GASB).

The Fund's financial statements are prepared on an accrual basis of accounting. This method of accounting requires recognizing and recording financial transactions when they occur and not just in conjunction with the inflows and outflows of cash.

The total assets managed by the Fund are held in the trust for the payment of pension and related benefits to its members. The Fund's Board of Trustees, in its fiduciary capacity, with assistance from its consultants established the Fund's investment policies and oversees their implementation.

Financial Highlights

Year ended December 31, 2017

The net position of the Fund increased $117.6 million, or 7.92%, from $1,485.6 million as of December 31, 2016 to $1,603.2 million as of December 31, 2017.

Net investment income increased $134.9 million, or 155%, from $86.8 million for the year ended December 31, 2016 to $221.7 million for the year ended December 31, 2017. The Fund had a 15.80% rate of return for the year ended December 2017 compared to a 6.88% rate of return for the year ended December 31, 2016. The returns identified in the MD&A are gross of fees with the exception of hedge funds, which are net of fees.

The total contributions received during the year ended December 31, 2017 were $113.2 million compared to total contributions received during the year ended December 31, 2016 of $105.0 million.

Employer contributions during the year ended December 31, 2017 increased $6.2 million or 8.0% to $83.4 million from $77.2 million during the year ended December 31, 2016.

Member contributions were $29.8 million during the year ended December 2017, an increase of $2.0 million or 7.2% over year ended December 31, 2016 member contributions of $27.8 million.

Benefits paid during the year ended December 31, 2017 were $209.0 million an increase of $13.3 million, or 6.8%, over the benefits paid during the year ended December 31, 2016 of $195.7 million. This increase is primarily due to the increased number of retirees and lengthening life span as well as the voluntary separation incentive program offered by the MBTA.

Year ended December 31, 2016

The net position of the Fund decreased $12.2 million, or (0.8%), from $1,497.8 million as of December 31, 2015 to $1,485.6 million as of December 31, 2016.

Net investment income increased $82.1 million, or 1746.8%, from $4.7 million for the year ended December 31, 2015 to $86.8 million for the year ended December 31, 2016. The Fund had a 6.88% rate of return for the year ended December 2016 compared to a 0.90% rate of return for the year ended December 31, 2015. The returns identified in the MD&A are gross of fees with the exception of hedge funds, which are net of fees.

The total contributions received during the year ended December 31, 2016 were $105.0 million compared to total contributions received during the year ended December 31, 2015 of $99.9 million.

Employer contributions during the year ended December 31, 2016 increased $3.8 million or 5.2% to $77.2 million from $73.4 million during the year ended December 31, 2015. This increase is primarily due to the continued execution of the wage agreement that was applied retroactively going back to July 2010.

Member contributions were $27.8 million during the year ended December 2016, an increase of $1.3 million or 4.9% over year ended December 31, 2015 member contributions of $26.5 million. The change in member contributions is also due to the continued implementation of the 2010 wage agreement.

Benefits paid during the year ended December 31, 2016 were $195.7 million an increase of $8.6 million, or 4.6%, over the benefits paid during the year ended December 31, 2015 of $187.1 million. This increase is primarily due to the increased number of retirees and lengthening life span as well as the continued application of the wage agreement for members who retired after July 1, 2010.

Year ended December 31, 2015

The net position of the Fund decreased $90.1 million, or 5.67%, from $1,587.9 million as of December 31, 2014 to $1,497.8 million as of December 31, 2015.

Net investment income decreased $68.8 million, or 93.6%, from $73.5 million for the year ended December 31, 2014 to $4.7 million for the year ended December 31, 2015. The Fund had a 0.90% rate of return for the year ended December 2015 compared to a 5.51% rate of return for the year ended December 31, 2014. The returns identified in the MD&A are gross of fees with the exception of hedge funds, which are net of fees.

The total contributions received during the year ended December 31, 2015 were $99.9 million compared to total contributions received during the year ended December 31, 2014 of $95.9 million.

Employer contributions during the year ended December 31, 2015 increased $2.8 million or 4.0% to $73.4 million from $70.6 million during the year ended December 31, 2014. This increase is primarily due to the continued execution of the new wage agreement that was applied retroactively going back to July 2010.

Member contributions were $26.5 million during the year ended December 2015, an increase of $1.2 million or 4.7% over year ended December 31, 2014 member contributions of $25.3 million. The change in member contributions is also due to the continued implementation of the new wage agreement.

Benefits paid during the year ended December 31, 2015 were $187.1 million an increase of $4.6 million, or 2.5%, over the benefits paid during the year ended December 31, 2014 of $182.5 million. This increase is primarily due to the increased number of retirees and lengthening life span as well as the continued application of the wage agreement for members who retired after July 1, 2010.

Financial Analysis

The following schedules report the condensed comparative fiduciary net position and activities for the Fund as of and for the years ended December 31.

Condensed Comparative Fiduciary Net Position

(Dollar values expressed in millions)

	December 31		
	2017	2016	2015
Cash	$ 4.2	4.1	3.2
Receivables	5.8	6.8	5.1
Investments	1,616.9	1,481.8	1,495.9
Cash collateral on securities lending	38.8	52.5	66.2
Total assets	1,665.7	1,545.2	1,570.4
Cash collateral on securities lending	38.8	52.5	66.2
Accounts payable and accrued expenses	5.2	5.6	5.1
Payable for investments purchased	18.5	1.5	1.3
Total liabilities	62.5	59.6	72.6
Net position – restricted for pension benefits	$ 1,603.2	1,485.6	1,497.8

Total assets at fair value were $1,665.7 million as of December 31, 2017, an increase of $120.5 million, or 7.8%, over the year ended December 31, 2016 and were $1,545.2 million as of December 31, 2016, a decrease of $25.2 million, or 1.60%, over the year ended December 31, 2015. Investments at fair value were $1,616.9 million, an increase of $135.1 million, or 9.1%, over the year ended December 31, 2016, which were valued at $1,481.8 million, a decrease of $14.1 million, or 0.9%, over the year ended December 31, 2015. This investment increase in 2017 is due to continued investor confidence and economic growth. The international markets were strong throughout the year and despite the Federal Reserve increasing the interest rate three times in 2017, fixed income also had a solid year. As of December 31, 2017, cash collateral on securities lending decreased by $13.7 million or 26.1%, over the year ended December 31, 2016. The cash collateral on securities lending decreased by $13.7 million, or 20.7% between December 31, 2015 and December 31, 2016. Receivables decreased by $1.0 million, or 14.7%, over the prior calendar year due to decreased pending investment sales at the end of the calendar year. Between December 31, 2015 and December 31, 2016 receivables increased by $1.7 million, or 33.3%.

Total liabilities as of December 31, 2017 increased by $2.9 million, or 4.9%, over the prior year and decreased by $13.0 million or 17.9% during calendar year 2016. The cash collateral on securities lending decreased by $13.7 million, or 26.1%, in calendar year 2017 and decreased by $13.7 million or 20.7% in calendar year 2016. Payable for investment purchased increased by $17.0 million, or 1,133.3% over the year ended December 31, 2016. Payable for investment purchased increased by $0.2 million or 15.4% during calendar year 2016.

Condensed Comparative Statement of Changes in Fiduciary Net Position

(Dollar values expressed in millions)

		December 31		
		2017	**2016**	**2015**
Additions:				
Employer contributions	$	83.4	77.2	73.4
Member contributions		29.8	27.8	26.5
Income from investments		221.7	86.8	4.7
Total additions		334.9	191.8	104.6
Deductions:				
Retirement benefits		209.0	195.7	187.1
Refunds of contributions		3.8	1.8	1.8
Administrative expense		4.5	6.5	5.8
Total deductions		217.3	204.0	194.7
Total changes in fiduciary net position	$	117.6	(12.2)	(90.1)

Additions to Plan Fiduciary Position

For the calendar year ended December 31, 2017, employer contributions increased by $6.2 million and member contributions increased by $2.0 million. For the calendar year ended December 31, 2016, employer contributions increased by $3.8 million and member contributions increased by $1.3 million. Effective July 1, 2017, the employer's contribution rate changed from 18.0386% to 20.0111% and the member contribution rate changed from 6.4614% to 7.1189%, resulting in a 10.9% and 10.2% increase, respectively. Effective July 1, 2016, the employer's contribution rate changed from 16.0286% to 18.0386% and the member contribution rate changed from 5.7914% to 6.4614%, resulting in a 12.5% and 11.6% increase, respectively.

Contributions are required to provide benefits and meet administrative expenses and are made jointly by the Massachusetts Bay Transportation Authority (the Authority) and members. The member contribution percentage is negotiated periodically as part of the collective bargaining agreement. The Fund's investment portfolio has been a major source of additions to the Fund's net position. There was a net investment gain in 2017 of $221.7 million compared to a $86.8 million net investment gain in 2016 and $4.7 million net investment gain in 2015. This is a result of a change in the fair value of the investment portfolio and continued economic growth.

Deductions from Fiduciary Net Position

Benefits paid increased by $13.3 million and $8.6 million, or 6.8% and 4.6%, over the years ended 2017 and 2016, respectively. These increases are primarily due to the increased number of retirees and lengthening life span as well as the voluntary separation incentive program offered by the MBTA. Administrative expenses decreased from $6.5 million to $4.5 million, a decrease of $2.0 million, or 30.8% over year 2017 and increased $0.7 million or 12.1% over year 2016.

Net Pension Liability (NPL)

The Fund retains an independent actuarial firm, Conduent HR Consulting, LLC, to conduct annual actuarial valuations to monitor net pension liability.

As of December 31, 2017, and 2016, the fiduciary net position as a percentage of the total pension liability was 56.66% and 56.44%, respectively.

Investment Performance 2017

The Fund began the calendar year 2017 with a net position of $1,485.6 million and ended the calendar year with a net position of $1,603.2 million, representing a 7.9% increase. The Fund invests strategically to achieve the actuarial rate of return while controlling risk through diversification of asset class exposure. The primary determinant of long-term investment performance is the strategic asset allocation policy.

Domestic equity (32.9%), international equity (12.8%), fixed income investments (25.0%), and cash equivalents (4.2%) comprise approximately (74.9%) of invested assets as of December 31, 2017. The remaining (25.1%) of assets are invested in real estate (8.4%), and alternative investments (16.7%), which include private equity, absolute return, and diversified beta. These assets are expected to earn enhanced returns and manage risk through further diversification.

Investment performance results are measured by the relationship of the Fund's portfolio returns for equity and fixed income investment against widely accepted market indices. For the calendar year ended December 31, 2017, the MBTA Retirement Fund's total fund return was 15.80% compared to 6.88% for the calendar year ended December 31, 2016. The 2017 increase in return is due to a strong year for the domestic and global markets as well as steady economic growth.

The domestic large cap equity returned 22.04% compared to the S&P 500 Index of 21.83%. The domestic small cap equity returned 17.41% compared to the Russell 2000 Growth Index of 22.17% and the Russell 2000 Value Index of 7.84%. The global equity and emerging markets returned 39.87% compared to MSCI All Country World Index of 23.97%. The international equity returned 30.91% compared to the MSCI EAFE Index of 25.62%. Fixed Income returned 4.51% compared to the BC Aggregate of 3.54%.

The total fund performance of 15.80% for calendar year 2017 outperformed by 3.20% the total fund custom index (a blended composition of major market indices in proportion to the Fund's asset allocation), which returned 12.60%.

Additionally, for the year ended December 31, 2017, the real estate portfolio returned 8.11% compared to the NCREIF Property Index of 6.96%. The hedge fund portfolio returned 6.62% compared to the CSFB/Tremont Hedge Fund Index of 7.12%. The partial year, opportunistic portfolio returned 3.46% compared to Bank of America/Merrill Lynch High Yield Benchmark return of 1.31%. The private equity active portfolio returned 12.66% and the legacy private equity portfolio returned (3.88)% compared to State Street's Customized Benchmark return of 17.59%. State Street Customized Benchmark consists of 36% buyout, 9% venture, 37% debt and 18% fund of funds. Diversified Beta returned 11.67% compared to the 60% MSCI World Eq / 40% Barclays Aggregate Bond return of 14.52%. The 91 Treasury Bill Plus 300 Basis Points returned 3.88% for the year ended December 31, 2017.

Investment Performance 2016

The Fund began the calendar year 2016 with a net position of $1,497.8 million and ended the calendar year with a net position of $1,485.6 million, representing a (0.8%) decrease. The Fund invests strategically to achieve the actuarial rate of return while controlling risk through diversification of asset class exposure. The primary determinant of long-term investment performance is the strategic asset allocation policy.

Domestic equity (33.3%), international equity (12.8%), fixed income investments (24.7%), and cash equivalents (3.5%) comprise approximately (74.3%) of invested assets as of December 31, 2016. The remaining (25.7%) of assets are invested in real estate (8.6%), and alternative investments (17.1%), which include private equity, absolute return, and diversified beta. These assets are expected to earn enhanced returns and manage risk through further diversification.

Investment performance results are measured by the relationship of the Fund's portfolio returns for equity and fixed income investment against widely accepted market indices. For the calendar year ended December 31, 2016, the MBTA Retirement Fund's total fund return was 6.88% compared to 0.90% for the calendar year ended December 31, 2015. The 2016 increase in return is due to the markets closing out the year with strong gains.

The domestic large cap equity returned 10.39% compared to the S&P 500 Index of 11.96%. The domestic small cap equity returned 18.63% compared to the Russell 2000 Growth Index of 11.32% and the Russell 2000 Value Index of 31.74%. The global equity and emerging markets returned 1.63% compared to MSCI All Country World Index of 7.86%. The international equity returned (0.96)% compared to the MSCI EAFE Index of 1.00%. Fixed Income returned 5.55% compared to the BC Aggregate of 2.65%.

The total fund performance of 6.88% for calendar year 2016 underperformed by 0.54% the total fund custom index (a blended composition of major market indices in proportion to the Fund's asset allocation), which returned 7.42%.

Additionally, for the year ended December 31, 2016, the real estate portfolio returned 9.18% compared to the NCREIF Property Index of 7.97%. The hedge fund portfolio returned (2.21)% compared to the CSFB/Tremont Hedge Fund Index of 1.25%. The private equity active portfolio returned 4.84% and the legacy private equity portfolio returned (4.70)% compared to State Street's Customized Benchmark return of 10.61%. State Street Customized Benchmark consists of 36% buyout, 9% venture, 37% debt and 18% fund of funds. Diversified Beta returned 12.90% compared to the 60% MSCI World Equity / 40% Barclays Aggregate Bond Index of 5.71% and 91 Treasury Bill Plus 300 Basis Points return of 3.34%

Other Information

As part of the Plan of Reorganization of Fletcher International Ltd (Fletcher) approved on March 27, 2014, the Fund agreed with the Bankruptcy Trustee, Richard Davis, to pool claims against Alphonse "Buddy" Fletcher, Fletcher related entities, current and former officers, directors and insiders, and various third party professionals for recovery of the Fund's investment in Fletcher Fixed Income Alpha Fund. A Judgement has been obtained against Buddy Fletcher personally, and collection efforts against him are ongoing. Settlements have also been reached by the Trustee with other Fletcher related defendants. The Fund and the Trustee are also engaged in active litigation in New York against Fletcher's fund administrator. MBTARF, et.al,. v. Citco Fund Services (Cayman Islands), Ltd., et al, Case No. 651446/2015 (New York Supreme Court).

More complete reporting about the Fund's investment in Fletcher is found in prior Fund CAFR's as well as the Trustee's Final Report and Disclosure Statement and Chapter 11 Plan dated November 25, 2013. See In re Fletcher International, Ltd., Case No. 12-12796 (Bankr, S.D.N.Y.). See, e.g., Fund's 2013 CAFR at p. 19.

The Fund is also party to a Pooling and Cooperation Agreement with other investors in Weston Capital Partners Fund II (PII) and investors in Wimbledon Financing Master Fund Ltd (WFF). Both PII and WFF are funds previously managed by Weston Capital Asset Management LLC (Weston). Weston and certain of its principals were the subject of an SEC consensual civil judgement in Florida on June 23, 2014 for an investment unrelated to PII. Civil litigation involving Weston and various related parties is ongoing, and a criminal trial involving a Weston insider recently concluded. USA v. Bergstein, et.al, No. 1:16-cr-746, U.S.D.C, S.D.N.Y.

For historical information on the Fund's investments in PII and White Oak Global Advisors, a PII investment assigned to the Fund, please see the Fund's 2013 CAFR at p. 19 and the Fund's 2015 CAFR at p. 31.

The Fund's investments in Fletcher, Weston (and White Oak) were written down in full in prior fiscal years. The Weston and White Oak funds are in liquidation in the Cayman Islands. The Fund is reporting on the pending litigation and recovery efforts because of activity in those cases this coming fiscal year. Prospects for future recoveries are good but, as with all litigation, uncertain.

Contacting the MBTA Retirement Fund

This financial report is designed to provide a general overview of the Fund's investment results and financial condition of the Fund for the years ended December 31, 2017 and 2016. Please contact the MBTA Retirement Fund Office by emailing invest@mbtarf.com or by phone to 617-316-3800 for additional financial information or questions related to this report.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Statement of Fiduciary Net Position

December 31, 2017 and 2016

		2017	2016
Assets:			
Investments, at fair value:			
Domestic:			
Cash and cash equivalents	$	68,221,441	51,979,952
Fixed income		398,441,314	361,903,673
Common stock and equity funds		531,572,278	493,719,994
Real estate		135,873,109	128,148,179
Alternative investments and hedge funds		269,244,226	252,222,874
		1,403,352,368	1,287,974,672
International:			
Cash and cash equivalents		457,684	121,317
Fixed income		5,721,763	4,720,170
Common stock and equity funds		207,358,130	188,951,235
		213,537,577	193,792,722
Total investments		1,616,889,945	1,481,767,394
Cash and cash equivalents		4,209,095	4,125,256
Contribution receivable from Massachusetts Bay Transportation Authority		2,413,732	2,289,769
Cash collateral on securities lending, invested		38,808,226	52,541,468
Receivable for investments sold and other		3,366,093	4,549,186
Total assets		1,665,687,091	1,545,273,073
Liabilities:			
Cash collateral on securities lending, due to borrowers		38,808,226	52,541,468
Accounts payable and accrued expenses		5,244,890	5,588,301
Payable for investments purchased		18,457,779	1,537,420
Total liabilities		62,510,895	59,667,189
Net position – restricted for pension benefits	$	1,603,176,196	1,485,605,884

See accompanying notes to financial statements.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Statement of Changes in Fiduciary Net Position

December 31, 2017 and 2016

		2017	2016
Additions:			
Contributions by Massachusetts Bay Transportation Authority	$	83,382,882	77,239,279
Contributions by members		29,775,344	27,791,543
Total contributions		113,158,226	105,030,822
Investment income:			
Income from investments		40,650,224	47,108,793
Less investment expenses, other than from securities lending		(6,343,751)	(6,641,836)
Net appreciation in fair value of investments		186,836,935	45,975,643
Net investment gain		221,143,408	86,442,600
Securities lending activity:			
Securities lending income		687,390	930,242
Less borrower rebates and fees		140,180	590,499
Net income from securities lending activities		547,210	339,743
Total net investment income		221,690,618	86,782,343
Total additions		334,848,844	191,813,165
Deductions:			
Retirement benefits		208,999,450	195,707,470
Refunds of members' contributions		3,815,307	1,854,069
Administrative expenses		4,463,775	6,493,777
Total deductions		217,278,532	204,055,316
Net change in net position		117,570,312	(12,242,151)
Net position – restricted for pension benefits:			
Beginning of year		1,485,605,884	1,497,848,035
End of year	$	1,603,176,196	1,485,605,884

See accompanying notes to financial statements.

(1) Description of the Fund

(a) General

The following description of the Massachusetts Bay Transportation Authority Retirement Fund (the Fund), a single employer plan, provides only general information. Employees (members) should refer to the Pension Agreement for a more complete description of the Fund's provisions.

The Fund was established on January 1, 1948, under an agreement and declaration of trust (restated in October 28, 1980) by and among the Massachusetts Bay Transportation Authority (the Authority), Local 589, Amalgamated Transit Union, Boston Carmen's Union, and AFL CIO (collectively, the Union). The Fund was established as a contributory defined benefit retirement plan in accordance with the Pension Agreement, effective July 1, 1970, adopted by the Authority and the Union for the purpose of receiving contributions and providing pension benefits for its members and qualified beneficiaries.

The general administration and responsibility for the operation of the Fund are vested in a seven-member Retirement Board. The Board consists of three members appointed by the Authority (at least one of whom must be a member of the Authority's Board of Directors), two members appointed by the Boston Carmen's Union, Local Union 589 of the Amalgamated Transit Union, AFL-CIO, one member elected by vote conducted by the Authority for a term of three years by members of the Fund who are not members of the Boston Carmen's Union, Local Union 589 of the Amalgamated Transit Union, AFL-CIO, and one member, who has no vote and is known as the honorary member, who is elected, for such period as the Retirement Board may determine, by the other six members of the Retirement Board.

(b) Membership

The Fund covers all employees of the Authority except the MBTA Police, who are covered separately, and certain executives who elect coverage under an alternate plan. At December 31, 2017 and 2016, Fund membership consisted of:

	2017		2016	
Retired members or beneficiaries currently receiving benefits	6,823	(1)	6,684	(2)
Active members	5,386		5,786	
Active members not presently earning service credit	314		233	
Total membership	12,523		12,703	

(1) Year 2017 includes 6,699 retirees and beneficiaries and 124 individuals receiving payments under Qualified Domestic Relation Orders (QDROs)

(2) Year 2016 includes 6,566 retirees and beneficiaries and 118 individuals receiving payments under Qualified Domestic Relation Orders (QDROs)

(c) Funding Policy

Contributions required to provide benefits and meet administrative expenses are made jointly by the Authority and members. The member contribution rate was increased from 6.4614% to 7.1189% effective July 1, 2017 of pretax compensation. The Authority contribution rate was increased from 18.0386% to 20.0111% effective July 1, 2017. As of July 1, 2018, member contribution and Authority contribution rates will be 8.0089% and 22.6811%, respectively. These contribution rates were calculated based on the most recent actuarial valuation of plan benefits and the Memorandum of Understanding with the Authority. The terms of the Fund's obligations are part of the Pension Agreement contained in the annual report of the Fund. Only parties to the Pension Agreement can amend the terms. The contributions by members and the Authority have been developed to provide normal contributions, interest on the unfunded accrued liability, and administrative expenses.

(d) Benefits

The Fund provides for retirement, disability and death benefits in accordance with the Pension Agreement, as amended.

A summary of benefits is as follows:

(i) Normal Retirement Allowance

Condition for Allowance

Any member may retire at age 65. A member may remain in service after the stated retirement date.

Amount of Allowance

The normal retirement allowance equals 2.46% of 3-year average annual compensation multiplied by the years of service, such allowance not to exceed 75% of such average annual compensation.

(ii) Early Normal Retirement Allowance

Condition for Allowance

Any member hired prior December 6, 2012 and has completed at least 23 years of service may retire on an early normal retirement allowance.

Any member hired on or after December 6, 2012, has attained age 55 and completed at least 25 years of service may retire on an early normal retirement allowance.

Amount of Allowance

The early normal retirement allowance is computed in the same manner as a normal retirement allowance on the basis of the compensation and service to the time of retirement.

(iii) *Early Reduced Retirement Allowance*

Condition for Allowance

A member who has attained age 55 and has completed at least 20 years of service may be retired on an early reduced retirement allowance.

Amount of Allowance

The early reduced retirement allowance is an immediate allowance, commencing at the date of retirement, and is computed in the same manner as a normal retirement allowance on the basis of compensation and service to the time of early retirement, but reduced by 1/2 of 1% for each month of retirement prior to normal retirement date.

(iv) *Disability Retirement Allowance*

Condition for Allowance

Any member who has completed 4 years of service in case of disablement due to an occupational accident or sickness, or who has completed 6 years of service in case of disablement due to any other cause, and who has become totally and permanently incapacitated, mentally or physically, for the further performance of duty may be retired.

Amount of Allowance

Upon disability retirement, a member receives an allowance commencing immediately, which is computed as a normal retirement allowance on the basis of the compensation and service to the time of disability retirement and is not less than 15% of the member's 3-year average annual compensation.

(v) *Vested Retirement Allowance*

Condition for Allowance

Any member who has completed 10 years of service and who is not eligible for a retirement allowance is eligible for a vested retirement allowance, in lieu of a refund of his/her contributions with interest, in the event his/her employment terminates for reasons other than voluntary quit or discharge for cause.

Amount of Allowance

The vested retirement allowance is a deferred allowance commencing on the member's normal retirement date and equal to a percentage, not exceeding 100%, of the amount computed as a normal retirement allowance on the basis of the compensation and service to the time of termination; the applicable percentage is 5% multiplied by the number of years of creditable service, not in excess of 20, at the time of termination.

(Continued)

(vi) Survivor Benefit

Condition for Benefit

Upon the death of a member who has completed 10 years of service and who is survived by a spouse and/or dependent children designated to receive the deceased member's contributions with interest, a benefit may be elected by such survivor in lieu of the payment of the contributions with interest.

Amount of Benefit

If the deceased member had completed at least 10 but fewer than 23 years of service, the survivor's benefit, payable for life, is equal to the amount which would have become payable if the member had retired as of the date of his/her death and elected a 50% joint and survivor option in effect as of the date of death with the survivor as the designated person under the option. There is no reduction for early commencement.

If the deceased member had completed at least 23 years of service, the survivor's benefit, payable for life, is equal to the amount which would have become payable if the member had retired as of the date of his/her death and elected a 100% joint and survivor option in effect as of the date of death with the survivor as the designated person under the option. There is no reduction for early commencement.

(vii) Accidental Death Benefit

Condition for Benefit

Upon the death of a member in service whose death results solely from an injury or injuries sustained in the performance of duty, and who is survived by a spouse designated to receive the deceased member's contribution with interest, an allowance shall be payable to said spouse.

Amount of Benefit

The accidental death benefit, payable for life, is equal to the amount which would have become payable to the member if the member had retired as of the date of his/her death on a disability retirement allowance. If there should be insufficient creditable service, the surviving spouse receives the minimum allowance available under the disability retirement provision.

(e) Fund Termination

In the event of termination of the Fund, all of the assets of the Fund shall be used for the benefit of members and retired members or their beneficiaries, and for no other purpose. Each member, and each retired member or their designated beneficiary in receipt of a retirement allowance, shall be entitled to such proportionate part of the assets of the Fund as the reserve, required for their benefits, bears to the total reserves required under the Fund as determined by the Massachusetts Bay Transportation Authority Retirement Board (the Retirement Board) on the basis of actuarial valuation. The Retirement Board may require all such members, and retired members or designated beneficiaries, to withdraw such amounts in cash or in the form of immediate or deferred annuities as it may determine.

(2) Significant Accounting Policies

(a) Basis of Accounting

The financial statements have been prepared on the accrual basis of accounting in conformity with U.S. generally accepted accounting principles (GAAP), as promulgated by the Governmental Accounting Standards Board (GASB).

(b) Use of Estimates

The preparation of financial statements in conformity with GAAP requires the Fund's management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Significant items subject to such estimates and assumptions include, but are not limited to, the assessment of fair values for real estate and alternative investment holdings in the absence of readily available market values, and these estimates may be materially different than values that would have been used had a ready market existed for these investments.

(c) Cash and Cash Equivalents

Cash and cash equivalents generally consist of cash on deposit with banks and financial institutions and highly liquid short-term investments, which have original maturities of three months or less. The Fund maintains its cash deposits with financial institutions, which management considers being of high credit quality and, by policy, limits the allocation of funds to any single major financial institution to minimize the Fund's amount of credit exposure.

(d) Revenue Recognition

Contributions are recognized pursuant to the contractual requirements of the Pension Agreement. Investment income is recognized as it is earned. Net appreciation (depreciation) in the fair value of investments is recorded as an increase (decrease) to investment income based on the valuation of investments as of the date of the financial statements.

(e) Retirement Benefits and Refunds

Retirement benefits and refunds are recognized when they become due and payable.

(f) Investments

Investments are stated at fair value. Securities traded on national security exchanges are valued on the basis of the closing price as of the last business day of the reporting period. Securities traded in the over-the-counter market are normally valued at the mean of the closing bid and asked prices. Securities listed or traded on certain foreign exchanges whose operations are similar to the U.S. over-the-counter market are valued at the price within the limits of the latest available current bid and asked prices deemed best to reflect current value. Gains and losses on sales of investments are determined on the basis of average cost.

(Continued)

Investments in real estate represent the Fund's percent ownership in private real estate funds and limited partnerships. The Fund's investments are valued based on estimates by the Fund's management as a result of their review of financial information of the underlying real estate investment assets and standards established by the real estate industry, generally using the net asset value of the underlying investment as a practical expedient.

Investments in alternative investments and hedge funds include the Fund's percent ownership in venture capital, leveraged buyouts, private placements, hedge fund-of-funds, and other investments where the structure, risk profile, and return potential differ from traditional equity and fixed income investments. These investments are included in the statement of fiduciary net position at estimated values determined in good faith by the Fund's management, generally using the net asset value of the underlying investment as a practical expedient.

Purchase and sales of investments are selected on a trade-date basis.

(g) Derivatives

A derivative is an investment agreement or security with a value that depends on, or is derived from, the value of an underlying asset, reference rate, or financial index. The Fund has classified its investment in forward exchange contracts as investment derivative instruments. A forward exchange contract is a commitment to purchase or sell a foreign currency at a future date at a negotiated forward rate. The Fund utilizes forward foreign exchange contracts to minimize the effect of fluctuating foreign currencies. Risk associated with such contracts includes movement in the value of a foreign currency relative to the U.S. dollar. Realized gain or loss on forward exchange contracts is the difference between the original contract and the closing value of such contract and is included in the statement of changes in fiduciary net position. At December 31, 2017 and 2016, the Fund held open forward exchange contracts of varying amounts and currencies. Unrealized gains and losses are not significant to the financial statements.

(h) Currency Translation

As a result of having assets and liabilities denominated in foreign currencies, the Fund is exposed to the effect of foreign exchange rate fluctuations. Assets and liabilities denominated in foreign currencies and commitments under forward foreign exchange contracts and currency options are translated into U.S. dollars at the mean of the quoted bid and asked prices of such currencies against the U.S. dollar. Changes in foreign exchanges are reflected directly in income. Purchases and sales of portfolio securities are translated at the rates of exchange prevailing when such securities were acquired or sold. Income and expenses are translated at rates of exchange prevailing when accrued. It is not practical to isolate that portion of the results of operations arising as a result of changes in the foreign exchange rates from the fluctuations arising from changes in the market price of securities during the period. Net realized gains on foreign currency transactions represent net foreign exchange gains from holding foreign currencies, currency gains or losses realized between the trade and settlement dates on security transactions, and the difference between the amounts of dividends, interest, and foreign taxes recorded on the Fund's books and the U.S. dollar equivalent amounts actually received or paid.

(i) Income Taxes

The Fund is considered a qualified governmental plan under Internal Revenue Code Section 414(d) and, is generally exempt from federal and state income tax under the Internal Revenue Code Section 115.

(3) Cash Deposits, Investments, and Securities Lending

The Fund, in accordance with the declaration of trust agreement, is authorized to make deposits into checking and savings accounts and to invest in any form or type of investment, financial instrument, or financial transaction deemed prudent in the informed opinion of the Retirement Board. State Street Bank & Trust Company serves as the master custodian for the Fund's assets.

For the years ended December 31, 2017 and 2016, the Fund's essential risk information about deposits and investments is presented on the following tables.

(a) Custodial Credit Risk

Custodial credit risk is the risk that, in the event of failure of a depository financial institution, the Fund's deposits may not be returned. The Fund maintains its cash and cash equivalent deposits with various financial institutions, which management considers being of high quality. The Fund limits the allocation of its cash and cash equivalent deposits to any single financial institution to minimize the Fund's exposure. The Fund's Board has not adopted a formal custodial credit risk policy.

The Fund's cash and cash equivalent deposits that are not collateralized are subject to the Federal Deposit Insurance Corporation (FDIC) insurance limits. At December 31, 2017 and 2016, $3,801,105 and $3,717,265 of the Fund's cash and cash equivalents deposits were in excess of the FDIC insurance limit.

Investment securities are exposed to custodial credit risk if the securities are uninsured, are not registered in the name of the Fund and are held by either the depository financial institution or the depository financial institution's trust department or agent but not in the Fund's name.

All of the Fund's investments are held by the Fund's custodian in the Fund's name, except for investments in hedge funds, real estate and alternative investments, which by their nature are not required to be categorized.

(b) Investment Policy

The Fund's investment objective is to achieve consistent positive real returns and to maximize long-term total return within prudent levels of risk through a combination of income and capital appreciation. The Fund's goal is to meet or exceed the Fund's actuarial target rate of return in order to maintain and improve upon its funded status.

The Fund is currently invested in stocks (domestic and foreign), fixed income securities (domestic), real estate, private equity, and hedge funds.

The following was the Board's adopted asset allocation policy as of December 31, 2017 and 2016:

Asset class	2017 Target	2016 Target
Domestic equity	25 %	25 %
International large cap equity	9	11
International small cap equity	2	—
Global/emerging markets	7	7
Fixed income	25	25
Real estate	9	9
Private equity	10	10
Hedge funds	4	8
Hedge funds – opportunistic	2	—
Risk parity/diversified beta	5	3
Cash	2	2
Total	100 %	100 %

(c) *Interest Rate Risk*

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. The following is a listing of the Fund's fixed income investments and related maturity schedule (in years) as of December 31, 2017 and 2016.

			2017		
Investment type	**Fair value**	**Less than 1**	**1–5**	**6–10**	**More than 10**
Agency debt	$ 59,569,732	—	58,671,520	221,964	676,248
U.S. Treasury notes and bonds	83,603,827	2,103,896	44,765,056	23,765,997	12,968,878
Domestic corporate	196,309,938	868,908	65,611,951	94,729,681	35,099,398
International corporate	5,721,763	187,192	3,235,415	1,098,313	1,200,843
Asset backed:					
CMOs	11,106,104	—	—	512,264	10,593,840
Mortgage backed	25,191,482	—	—	—	25,191,482
Other	22,660,231	5,979	11,262,868	2,560,184	8,831,200
	$ 404,163,077	3,165,975	183,546,810	122,888,403	94,561,889

			2016		
Investment type	**Fair value**	**Less than 1**	**1–5**	**6–10**	**More than 10**
U.S. agencies	$ 58,697,800	—	56,882,343	1,127,001	688,456
U.S. Treasury notes and bonds	51,315,015	5,091,909	23,841,602	14,124,509	8,256,995
Domestic corporate	196,288,631	563,181	65,773,818	92,249,194	37,702,438
International corporate	4,720,170	1,057,410	2,585,014	899,870	177,876
Asset backed:					
CMOs	14,567,352	—	—	768,983	13,798,369
Mortgage backed	21,989,332	—	—	—	21,989,332
Other	19,045,543	—	7,802,007	1,731,873	9,511,663
	$ 366,623,843	6,712,500	156,884,784	110,901,430	92,125,129

The Fund's guidelines limit its effective exposure to interest rate risk by benchmarking the separately managed fixed income investment accounts to an intermediate duration benchmark with a weighted average duration of four to five years. The Fund further constrains its actively managed fixed income portfolios to maintain a duration that shall not exceed 1.5 times the benchmark duration. The manager of each fixed income portfolio is responsible for determining the maturity and commensurate returns of his/her portfolio. Fixed income managers are also expected to report risk statistics and give a description of portfolio characteristics, including quality, duration, allocation by security type, and yield to maturity.

The collateralized mortgage obligations (CMOs) held by the Fund at December 31, 2017 and 2016 are highly sensitive to changes in interest rates.

(d) Credit Risk

Credit risk exists when there is a possibility the issuer or other counterparty to an investment may be unable to fulfill its obligations.

The Fund's Board does not have a formal investment policy governing credit risk; each fixed income securities investment manager is given a specific set of guidelines to invest within based on the mandate for which it was hired. The Fund expects all investment managers to perform their fiduciary duties as prudent people would and conform to all state and federal statutes governing the investment of the funds. Managers are to adhere to the philosophy and style that was articulated to the Retirement Board at the time of hire. The fixed income investment managers have full discretion to invest in fixed income securities in order to exceed their strategy specific benchmarks.

The Fund's fixed income investments as of December 31, 2017 and 2016 were rated by Standard and Poor's and/or an equivalent national rating organization, and the ratings are presented below using the Standard & Poor's rating scale:

					2017				
Investment type	**Fair value**	**AAA**	**AA**	**A**	**BBB**	**BB**	**B**	**CCC**	**Not rated**
Agency debt	$ 59,569,732	—	1,962,785	784,969	56,433,547	—	388,431	—	—
Domestic corporate	196,309,938	1,351,151	2,457,525	62,713,953	53,981,700	18,162,005	40,504,302	490,702	16,648,600
International	5,721,763	—	—	1,252,561	140,673	1,011,816	162,322	—	3,154,391
Asset backed:									
CMOs	11,106,104	2,115,608	—	158,549	137,056	—	—	—	8,694,891
Mortgage backed	25,191,482	—	—	—	—	—	—	—	25,191,482
Other	22,660,231	8,778,089	60,827	3,473,034	2,879,407	—	—	—	7,468,874
Total credit securities risk	320,559,250	12,244,848	4,481,137	68,383,066	113,572,384	19,173,821	41,055,055	490,702	61,158,238
U.S. government fixed income securities*	83,603,827								
Total fixed income securities	$ 404,163,077								

Investment type	Fair value	AAA	AA	A	2016 BBB	BB	B	CCC	Not rated
Agency debt	$ 58,697,801	—	2,174,927	1,917,252	54,198,969	—	406,653	—	—
Domestic corporate	196,288,631	—	1,381,445	66,385,908	52,552,153	9,879,528	47,538,616	—	18,550,981
International	4,720,170	982,740	—	1,426,190	535,558	—	193,192	—	1,582,490
Asset backed:									
CMOs	14,567,350	5,846,549	—	1,587,211	162,030	—	—	—	6,971,560
Mortgage backed	21,989,332	—	—	—	—	—	—	—	21,989,332
Other	19,045,544	5,218,413	42,908	2,295,983	2,077,487	—	13,126	219,893	9,177,734
Total credit securities credit	315,308,828	12,047,702	3,599,280	73,612,544	109,526,197	9,879,528	48,151,587	219,893	58,272,097
U.S. government fixed income securities*	51,315,015								
Total fixed income securities	$ 366,623,843								

* Obligations of the U.S. government or obligations explicitly guaranteed by the U.S. government are not considered to have credit risk.

(e) Concentration Risk

Concentration of credit risk is the risk of loss that may be attributed to the magnitude of a government's investment in a single issuer. The Fund places a 5% limit on the individual exposure to any single issuer at the time of purchase. The Fund has no investments, at fair value, that exceed 5% of the Fund's total investments as of December 31, 2017 and 2016. The Fund does have investments in individual commingled funds and trusts that represent more than 5% of the Fund's assets, but in each case, these investments are in institutional commingled funds that are invested in diversified portfolios.

(f) Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. The Fund's exposure to foreign currency risk is attributable to its investments in separately managed and commingled international equity mutual funds and trusts that are invested in diversified portfolios of international stocks that are denominated in foreign currencies. The Fund's combined policy target allocation to all non-U.S. securities is currently 18.0% of the Fund's total assets. Currency hedging is permitted for defensive purposes. Currency hedging shall be effected through the use of forward currency contracts, which are described more fully in note 2.

Risk of loss arises from changes in currency exchange rates. The Fund's exposure to foreign currency risk as of December 31, 2017 and 2016 are presented on the following tables:

Currency		2017 Short-term	Fixed income	Equity	Total
Argentine peso	$	33,279	844,974	—	878,253
Australian dollar		14,668	—	2,307,705	2,322,373
Brazilian real		—	187,192	—	187,192
Canadian dollar		156,502	—	3,114,432	3,270,934
Colombian peso		—	949,730	—	949,730
Danish krone		—	—	3,082,253	3,082,253
Euro currency		105,448	—	41,723,120	41,828,568
Hong Kong dollar		13,700	—	5,745,782	5,759,482
Japanese yen		45,847	—	28,837,313	28,883,160
Malaysian ringgit		—	888,871	—	888,871
Mexican peso		—	1,839,181	—	1,839,181
New Israeli sheqel		2,681	—	377,853	380,534
New Zealand dollar		6,936	—	208,443	215,379
Norwegian krone		4,337	—	673,989	678,326
Pound sterling		59,431	—	15,604,094	15,663,525
Singapore dollar		5,217	—	2,173,887	2,179,104
South African rand		—	1,011,815	4,543,724	5,555,539
Swedish krona		8,954	—	2,273,702	2,282,656
Swiss franc		684	—	4,658,481	4,659,165
Thailand baht		—	—	6,527,496	6,527,496
International equity pooled funds (various currencies)		—	—	85,505,856	85,505,856
Total securities subject to foreign currency risk		457,684	5,721,763	207,358,130	213,537,577
United States dollars (securities held by international investment managers)		—	—	20,955,537	20,955,537
Total international investment securities	$	457,684	5,721,763	228,313,667	234,493,114

Currency		2016			
		Short-term	Fixed income	Equity	Total
Argentine peso	$	—	193,192	—	193,192
Australian dollar		—	316,947	570,811	887,758
Brazilian real		—	183,542	—	183,542
Canadian dollar		51,988	—	1,457,584	1,509,572
Colombian peso		—	775,532	—	775,532
Danish krone		—	—	1,978,987	1,978,987
Euro currency		2,550	—	37,658,553	37,661,103
Hong Kong dollar		—	—	3,305,102	3,305,102
Hungarian forint		—	—	—	—
Indian rupee		—	982,740	—	982,740
Indonesian rupiah		—	—	439,408	439,408
Japanese yen		—	—	30,239,692	30,239,692
Mexican peso		—	2,268,216	—	2,268,216
New Israeli sheqel		—	—	588,947	588,947
New Zealand dollar		—	—	607,909	607,909
Pound sterling		2	—	17,616,494	17,616,496
Singapore dollar		(8)	—	2,375,594	2,375,586
South African rand		—	—	3,092,935	3,092,935
South Korean won		18,264	—	1,018,818	1,037,082
Swedish krona		—	—	533,901	533,901
Swiss franc		48,521	—	8,167,398	8,215,919
Thailand baht		—	—	5,500,658	5,500,658
International equity pooled funds (various currencies)		—	—	73,798,445	73,798,445
Total securities subject to foreign currency risk		121,317	4,720,169	188,951,236	193,792,722
United States dollars (securities held by international investment managers)		—	—	19,590,078	19,590,078
Total international investment securities	$	121,317	4,720,169	208,541,314	213,382,800

(g) Securities Lending Transactions

The Fund participates in the State Street Bank and Trust Company securities lending program by lending securities to borrowers (subject to borrower limits and program guidelines) and earning additional income, which is included in net investment income in the statement of changes in fiduciary net position. The lending program loans domestic and international equities, REIT and fixed income securities for collateral with a concurrent agreement to return the collateral for the same securities in the future.

The Fund did not incur any losses on loaned securities during the year ended December 31, 2017 and 2016. The securities are monitored and valued on a daily basis by the custodian to ensure that the loans are properly collateralized. The collateral value is required to be at least 102% of the fair value of loaned domestic investments and a collateral value of at least 105% of the fair value on loaned international investments. Collateral can consist of both cash and securities. Should the collateral percentage levels fall below the stated figures, the borrowers are required to provide additional collateral to proper levels. The indemnification that State Street Bank provides the Fund in regard to loan risk is that should a borrower default on returning a security from loan, the collateral held is used to buy the security to be returned to the Fund. Any shortfall of proceeds to purchase the securities is taken on by State Street Bank.

Loaned securities are included in the statement of fiduciary net position since the Fund maintains ownership. For loans collateralized by cash, the value of the collateral is recorded as a liability offsetting the cash collateral recorded as an asset. The cash collateral as of December 31, 2017 and 2016 was $38,808,226 and $52,541,468, respectively. For loans having collateral other than cash, the related collateral securities are not recorded as assets in the statement of fiduciary net position, and a corresponding liability is not recorded, since the Fund cannot pledge or sell the collateral securities, except in the event of a borrower’s default.

At December 31, 2017 and 2016, the fair value of loaned securities outstanding, included in investments, was approximately $37,806,521 and $51,224,711, respectively.

(h) Commitments

At December 31, 2017 and 2016, the Fund had contractual commitments to provide approximately $81.4 million and $61.4 million, respectively, of additional funding for alternative investments and real estate.

(i) Money Rate of Return

The Annual money-weighted rate of return on the Fund’s investments calculated as the internal rate of return on the pension fund net of investment expenses for the years ended December 31, 2017 and 2016 is 17.79% and 5.88%, respectively. A money weighted return expresses investment performance net of pension plan investment expense, adjusted for the changing amounts actually invested.

(4) Fair Value Measurements

The Fund measures and records its investments using fair value measurement guidelines established by generally accepted accounting principles. The fair value gives the highest priority to unadjusted quoted prices in active markets for identical assets and liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). These levels of fair value hierarchy are described below:

- Level 1 – Unadjusted quoted prices for identical assets or liabilities in active markets
- Level 2 – Observable inputs other than quoted prices in active markets for identical assets and liabilities. Level 2 inputs include the following:
  - Quoted prices for similar assets and liabilities in active markets
  - Quoted prices for identical or similar assets or liabilities in markets that are not active
  - Inputs other than quoted prices that are observable for the asset or liability, such as:
    1. Interest rates and yield curves observable at commonly quoted intervals
    2. Implied volatilities
    3. Credit spreads
- Level 3 – Unobservable inputs for the asset or liability (i.e., supported by little or no market activity). Level 3 inputs include management's assumptions.

The following tables' sets forth by fair value hierarchy level, the Fund's assets carried at fair value at December 31, 2017 and 2016. Certain reclassifications have been made to the 2016 schedule in order to conform to the current year presentation.

	Total at December 31, 2017	Fair value measurements using: Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Cash equivalents:				
Active cash	$ 1,387,325	1,387,325	—	—
Swap Bank of America COC	130,000	130,000	—	—
International cash and equivalents	457,684	457,684	—	—
Stif-type instrument	66,704,116	—	66,704,116	—
Total cash equivalents	68,679,125	1,975,009	66,704,116	—
U.S. equities:				
Common stock	268,930,172	249,957,594	18,972,578	—
Depository receipts	24,960,624	24,960,624	—	—
Mutual funds	233,460,403	233,460,403	—	—
Preferred stock	1,171,546	1,171,546	—	—
Real estate investment trust	3,049,533	3,049,533	—	—
Total U.S. equities	531,572,278	512,599,700	18,972,578	—
International equities	207,358,130	207,358,130	—	—
Fixed income:				
Agency debt	59,569,732	—	59,569,732	—
U.S. Treasury notes and bonds	83,603,827	—	83,603,827	—
Domestic corporate	196,309,938	—	183,527,288	12,782,650
Asset backed:				
CMO	11,106,104	—	11,106,104	—
Mortgage-backed	25,191,482	—	25,191,482	—
Other asset backed	22,660,231	—	22,660,231	—
Total U.S. fixed income	398,441,314	—	385,658,664	12,782,650
International fixed income	5,721,763	—	5,721,763	—
Total investments by fair value level	1,211,772,610	721,932,839	477,057,121	12,782,650
Total investments measured at net asset value (NAV):				
Hedge fund of funds	131,780,294			
Private equity funds	137,463,932			
Private real estate funds	135,873,109			
Total investments measured at NAV	405,117,335			
Total investments	$ 1,616,889,945			

	Total at December 31, 2016	Fair value measurements using: Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)
Cash equivalents:				
Active cash	$ 2,006,156	2,006,156	—	—
Government issues	2,954,772	2,954,772	—	—
International cash and equivalents	121,317	121,317	—	—
Stif-type instrument	47,019,024	—	47,019,024	—
Total cash equivalents	52,101,269	5,082,245	47,019,024	—
U.S. equities:				
Common stock	429,517,683	418,096,664	11,421,019	—
Depository receipts	22,262,879	22,262,879	—	—
Mutual funds	29,767,778	340,487	29,427,291	—
Preferred stock	2,079,384	2,079,384	—	—
Real estate investment trust	10,092,270	10,092,270	—	—
Total U.S. equities	493,719,994	452,871,684	40,848,310	—
International equities	188,951,235	115,152,790	73,798,445	—
Fixed income:				
Agency debt	58,697,801	—	58,697,801	—
U.S. Treasury notes and bonds	51,315,015	—	51,315,015	—
Domestic corporate	196,288,630	—	179,985,865	16,302,765
Asset backed:				
CMO	14,567,352	—	14,567,352	—
Mortgage-backed	21,989,332	—	21,989,332	—
Other asset backed	19,045,543	—	19,045,543	—
Total U.S. fixed income	361,903,673	—	345,600,908	16,302,765
International fixed income	4,720,170	—	4,720,170	—
Total investments by fair value level	1,101,396,341	573,106,719	511,986,857	16,302,765
Total investments measured at net asset value (NAV):				
Hedge fund of funds	112,818,545			
Private equity funds	139,404,329			
Private real estate funds	128,148,179			
Total investments measured at NAV	380,371,053			
Total investments	$ 1,481,767,394			

(5) Related-Party Transactions

The Fund invests certain cash in a money market fund, the State Street Bank and Trust Company Short Term Investment Fund, which is sponsored by the Fund's custodial bank. The total value of the funds held at December 31, 2017 and 2016 was $66,704,116 and $47,019,024, respectively.

The Fund invests in the AFL-CIO Housing Investment Trust and the AFL-CIO Building Investment Trust, two for-profit investment programs of the AFL-CIO. The total value of AFL-CIO Housing Investment Trust at December 31, 2017 and 2016 was $51,831,541 and $49,286,560, respectively. The total value of AFL-CIO Building Investment Trust at December 31, 2017 and 2016 was $15,208,535 and $14,553,935, respectively.

(6) Net Pension Liability

The components of the net pension liabilities of the MBTA Retirement Fund as of December 31, 2017 and 2016 are shown as follows (amounts in thousands):

		2017	2016
Total pension liability	$	2,829,386	2,632,255
Plan fiduciary net position		(1,603,176)	(1,485,606)
Fund's net pension liability	$	1,226,210	1,146,649
Plan fiduciary net position as a percentage of total pension liability		56.66 %	56.44 %

Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of December 31, 2017 and 2016, using the following actuarial assumptions:

- Projected salary increases of 4% per year including inflation
- Investment rate of return compounded annually in 2017 and 2016 of 7.5% and 8.0% per annum, respectively
- Inflation rate of 3%

For the actuarial valuations as of December 31, 2017 and 2016, the RP-2000 Blue Collar Mortality Tables with generational projection using Scale BB are used for all active participants. 97.2% of the RP-2000 Blue-Collar Tables for Healthy Males projected by Scale BB generationally are used for all retirees and deferred vested participants. 116.5% of the RP-2000 Blue-Collar Tables for Healthy Females projected by Scale BB generationally are used for all beneficiary participants. The RP-2000 Tables for Disabled Lives projected by Scale BB generationally are used for the period after disability retirement. Among pre-retirement deaths, 7.50% are assumed for accidental death benefits.

(Continued)

The actuarial assumptions used in the December 31, 2017 valuation were based on the results of an actuarial experience study for the period from January 1, 2010, through December 31, 2014. Actuarial valuations attempt to estimate costs associated with the pension fund based on a number of demographic, economic and retirement experience assumptions. Experience studies are required by statute to be conducted every five years to review experience in comparison to these assumptions and to provide recommended changes to assumptions.

The Long-term expected rate of return on Fund 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 Fund investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of long-term arithmetic rates of return for each major asset class included in the Fund's target asset allocation as of December 31, 2017, are summarized in the following table:

	Target asset allocation		Long-term expected real rate of return	
Asset class	**2017**	**2016**	**2017**	**2016**
Equity	43 %	43 %	8.56 %	8.95 %
Fixed income	25	25	1.79	6.20
Alternatives	30	30	7.96	8.70
Cash	2	2	0.94	0.94

Nominal long-term expected rates of return for these asset classes are equal to the sum of the above expected long-term real rates and the expected long-term inflation rate of 3.07%

(a) Discount Rate

The discount rate used to measure the total pension liability at December 31, 2017 and 2016, was 7.50% and 8.00%, respectively. The projections of cash flows used to determine the discount rate assumed that contributions will continue to be made in accordance with the current funding policy. Based on those assumptions, the Fund's fiduciary net position was projected to be available to make all projected future benefit payments to current Fund members. The expected rate of return on assets assumption changed from 8.00% to 7.50%. This resulted in a decrease in discount rate used to measure the pension liabilities and a consequent increase of $128.7 million in the total pension liability as of December 31, 2017. The assumed discount rate has been determined in accordance with the method prescribed by GASB 67 and is based on an expected long-term rate of return on Fund assets of 7.50%. We believe these assumptions are reasonable for the purposes of the measurements required by GASB 67.

(Continued)

(b) Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the net pension liability as of December 31, 2017 and 2016, calculated using the discount rate of 7.50% and 8.00%, respectively, as well as what the net pension liability would be if it were calculated using a discount rate that is one percentage point lower (6.50%, 7.00%) or one percentage point higher (8.50%, 9.00%) than the current rate (amounts in thousands):

		2017		
		1% Decrease (6.50%)	**Current discount rate (7.50%)**	**1% Increase (8.50%)**
Net pension liability	$	1,517,983	1,226,210	978,782

		2016		
		1% Decrease (7.00%)	**Current discount rate (8.00%)**	**1% Increase (9.00%)**
Net pension liability	$	1,412,017	1,146,649	920,903

REQUIRED SUPPLEMENTARY INFORMATION

(Unaudited)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Required Supplementary Information

Schedule of Changes in Net Pension Liability and Related Ratios

(Unaudited)

		2017	2016	2015	2014
Total pension liability:					
Service cost	$	31,850,127	31,896,560	37,305,333	34,500,540
Interest		204,779,603	195,768,057	191,392,028	184,667,178
Differences between expected and actual experience		44,627,096	90,067,566	31,325,149	48,560,391
Changes of assumptions		128,688,470	—	(6,762,751)	—
Benefit payments		(212,814,757)	(197,561,539)	(188,906,232)	(184,130,187)
Net change in total pension liability		197,130,539	120,170,644	64,353,527	83,597,922
Total pension liability – beginning of year		2,632,255,238	2,512,084,594	2,447,731,057	2,364,133,135
Total pension liability – ending (a)		2,829,385,777	2,632,255,238	2,512,084,584	2,447,731,057
Change in fiduciary net position:					
Contributions – employer		83,382,882	77,239,279	73,373,672	70,603,285
Contributions – employee		29,775,344	27,791,543	26,510,946	25,318,224
Net investment income		221,690,618	86,782,343	4,711,246	73,543,477
Benefit payments		(212,814,757)	(197,561,539)	(188,906,232)	(184,130,187)
Administrative expenses		(4,463,775)	(6,493,777)	(5,808,086)	(4,052,664)
Net change in fiduciary net position		117,570,312	(12,242,151)	(90,118,454)	(18,717,865)
Fund fiduciary net position – beginning of year		1,485,605,884	1,497,848,035	1,587,966,489	1,606,684,354
Fund fiduciary net position – end of year (b)		1,603,176,196	1,485,605,884	1,497,848,035	1,587,966,489
Fund's net pension liability – ending (a)-(b)	$	1,226,209,581	1,146,649,354	1,014,236,549	859,764,568
Fund fiduciary net position as a percentage of the total pension liability		56.66 %	56.44 %	59.63 %	64.88 %
Covered payroll	$	428,830,122	446,740,427	443,237,899	417,957,007
Net pension liability as a percentage of covered – employee payroll		285.94 %	256.67 %	228.82 %	205.71 %

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

See accompanying independent auditors' report.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Required Supplementary Information

Schedule of Investment Returns

(Unaudited)

	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expense	17.79 %	5.88 %	0.65 %	4.80 %

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

See accompanying independent auditors' report.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Required Supplementary Information

Schedule of Contributions

(Unaudited)

Year	Actuarially determined contribution	Actual contribution in relation to actuarially determined contribution	Percentage of actuarially required contributions	Covered-payroll	Contribution as a percentage of covered-payroll
2017	$ 83,383,000	83,382,882	100.00 %	$ 428,830,000	19.44 %
2016	77,239,000	77,239,279	100.00	446,740,000	17.29
2015	73,359,000	73,373,372	100.02	443,238,000	16.55
2014	77,594,000	70,603,285	90.99	417,957,000	16.89
2013	67,602,000	58,039,160	85.85	379,071,000	15.31
2012	66,035,000	54,968,325	83.24	370,873,000	14.82
2011	60,691,000	52,278,311	86.14	366,535,000	14.26
2010	60,252,000	49,006,722	81.34	356,608,000	13.74
2009	49,340,000	38,566,024	78.16	350,619,000	11.00
2008	39,761,000	35,420,770	89.08	377,795,000	9.38

See accompanying independent auditors' report.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Notes to Required Supplementary Information

Schedule of Contributions

(Unaudited)

Actuarial Assumption and Methods

Actuarially determined contributions are calculated as of the December 31 preceding by six months of the start of the fiscal year in which contributions are made. For example, the contribution calculated in the December 31, 2016 actuarial valuation was to be made during the period from July 1, 2017 through June 30, 2018.

Methods and assumptions used to determine the contributions for calendar 2018 and 2017 (based on 2015 and 2016 actuarial valuations).

- Actuarial cost method – Entry Age Normal
- Amortization method – Level Percentage of Pay
- Remaining amortization period – 23 years (2016 valuation), 24 years (2015 valuation)
- Asset Valuation method – Five year phase-in smoothing method
- Investment rate of return – 7.5% net of pension plan investment expense.
- Retirement Age – Probabilities of retirement are based on table that reflects both age and service
- Mortality – For all active and retired participants, the RP-2000 Blue Collar Mortality Tables with generational projection using Scale BB are used for all active participants. 97.2% of the RP-2000 Blue-Collar Tables for Healthy Males projected by Scale BB generationally are used for all retirees and deferred vested participants. 116.5% of the RP-2000 Blue-Collar Tables for Healthy Females projected by Scale BB generationally are used for all beneficiary participants. The RP-2000 Tables for Disabled Lives projected by Scale BB generationally are used for the period after disability retirement. Among pre-retirement deaths, 7.50% are assumed for accidental death benefits.