MBTA Retirement Fund

A Pension Trust Fund between the Massachusetts Bay Transportation Authority and its Employees

2024 Annual Comprehensive Financial Report

For the years ended December 31, 2024 & 2023
Boston, Massachusetts

Issued by:
John P. Barry, Interim-Executive Director

MBTA Retirement Fund

A Pension Trust Fund administering benefits earned by employees of the Massachusetts Bay Transportation Authority

ANNUAL COMPREHENSIVE FINANCIAL REPORT

For the Years Ended December 31, 2024 and 2023

Prepared By
The MBTA Retirement Fund Staff

The Massachusetts Bay Transportation Authority Retirement Fund is a private trust created in 1948 by the Metropolitan Transit Authority, the predecessor agency to the Massachusetts Bay Transportation Authority ("MBTA"), and The Boston Carmen's Union, Amalgamated Transit Union Local 589. Our mission then, as now, is to provide retirement benefits to the membership consisting of the transit workers and others employed by the MBTA. To ensure that the pensions earned by active and retired members, and their beneficiaries, remain secure, we are dedicated to managing a strong and diversified investment program.

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INTRODUCTORY SECTION

(Unaudited)

June 20, 2025

To Chairperson Evers, the Trustees of the MBTA Retirement Fund, Participants and Beneficiaries:

On behalf of the Board of Trustees I am pleased to submit the Massachusetts Bay Transportation Authority Retirement Fund's Annual Comprehensive Financial Report (ACFR) for the fiscal year ending December 31, 2024. The goal of the ACFR is to demonstrate that our commitment to accurate and transparent financial reporting is as strong as our commitment to excellence in customer service. The document presented today is the ninth consecutive ACFR produced by the MBTA Retirement Fund.

The ultimate responsibility for the integrity of the data presented within this report and the fair presentation of the financial statements, in all material respects lies with Management. This report is intended to provide complete and reliable information on the Fund's investments, financial statements and performance returns. The calendar year 2024 audit was conducted by KPMG LLP, a firm of licensed certified public accountants.

The MBTA Retirement Fund ACFR includes five major sections:

Introductory Section: This section contains the letter of transmittal, the Certificate of Achievement for Excellence in Financial Reporting, the MBTA Retirement Fund Organizational Chart and list of current and former members of the Fund's Board of Trustees.

Financial Section: This section contains the report of the independent auditors, Management's Discussion and Analysis (MD&A), the financial statements of the MBTA Retirement Fund, the notes to the financial statements and supporting schedules.

Investment Section: This section contains a summary of the Fund's investment results, investment strategy, asset allocation, market summary, investment holdings, investment policy and supporting tables and schedules.

Actuarial Section: This section includes the full valuation report from Gallagher Benefit Services, Inc, formerly known as Buck Global, LLC including assumptions, solvency tests and supporting tables and schedules.

Statistical Section: This section contains information regarding financial ratios of the MBTA Retirement Fund.

The ACFR includes the Management's Discussion and Analysis (MD&A) that follows the Independent Auditor's Report. This analysis is designed to provide an overview of the Fund's financial statements

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and financial results. The Basic Financial Statements immediately follow the MD&A. The Fund's financial statements were prepared in accordance with Generally Accepted Accounting Principles (GAAP), as prescribed by the Governmental Accounting Standards Board (GASB). The Fund's transactions are reported on the accrual basis of accounting. The objective of the internal control framework is to obtain reasonable rather than absolute assurance that the financial statements will be free from material misstatement since the cost of controls should not exceed anticipated benefits to be derived.

Our independent external auditors, KPMG LLP, have conducted an audit of the Basic Financial Statements in accordance with auditing standards generally accepted in the United States, performing tests and procedures as they deem necessary to express opinions on the Basic Financial Statements in their report to the Board. Following the MD&A and BFS, the financial section of the ACFR includes notes disclosures that explain and enhance the basic financial statements as well as a Required Supplementary Information (RSI) section. The ACFR then presents information in the investment section providing the Fund's investment strategy, policy, holdings and results. The statistical section contains information regarding the financial ratios of the MBTA Retirement Fund.

Profile of the MBTA Retirement Fund

The Fund was established on January 1, 1948, under an agreement and declaration of trust (restated on November 17, 2023 and July 19, 2019) by and among the Massachusetts Bay Transportation Authority (the Authority), and Local 589, Amalgamated Transit Union, Boston Carmen's Union, AFL CIO (collectively, the Union). The Fund is a single employer plan. It was established as a contributory defined benefit retirement plan in accordance with the Pension Agreement; effective July 1, 1970, (restated thereafter) adopted by the Authority and the Union for the purpose of receiving contributions and providing pension benefits for its Members and qualified beneficiaries.

The MBTA Retirement Fund Board of Trustees (governing board) seeks to utilize its assets under management to the benefit of the membership by strategically and methodically allocating financial resources to a diverse portfolio of investments while applying the knowledge and experience of a broad range of investment managers. An overview of the Investment Policy Statement is included in the Investment Section, on page 112.

The Board determines investment objectives, strategies, and policies of the Fund. The Executive Director of the Fund is accountable for the Fund's general management and operations. In addition, the Executive Director reports to and advises the six-member Board of Trustees. The staff of the Fund work diligently to uphold the original mission of serving Members and their families.

As of December 31, 2024, the Fund had approximately $1,801.7 million in net position restricted for pension benefits compared to $1,694.4 million for the prior calendar year, representing an increase of $107.3 million in net position. The MBTA Retirement Fund Board utilizes the services of a third-party custodian institution to assist with the settlement and accounting for investment and cash transactions.

As of December 31, 2024, the Fund had 6,565 active members compared to 5,805 as of December

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31, 2023. The MBTA has been actively engaged in increasing the number of MBTA employees and it is matriculating into contributing members of the Fund. There were 6,783 retired members, beneficiaries and disabled members receiving a benefit as of year-end 2024 compared to 6,800 on December 31, 2023.

Interim-Executive Director Discussion
For the year ending December 31, 2024, the total fund returned 8.0% gross of fees, representing the second year in a row of total fund returns out pacing the assumed rate of return of 7.25%. This growth reflects our strategic approach to investing, which focuses on achieving our actuarial rate of return while carefully managing risk through a diversified portfolio.

In 2024, the MBTA contributed to the labor market and economic growth by adding 1,175 new employees to our active membership. We are happy to welcome all new members to the Fund! Due to the new Pension Agreement effective in 2023 the Fund spent much of 2024 implementing the provisions of the document which are described in detail in the organizational section below. I am pleased to report on all of the progress made in 2024. The Fund has developed and begun implementing the MBTA Retirement Fund 2024-2027 Strategic Plan, which was approved by the Board in May 2024. I am excited to discuss in depth the goals of this plan further in this document.

The Board and Investment Consultant are continually monitoring the investment environment and makes prudent decisions on behalf of the Members. Our investment strategy prioritizes long-term growth and stability, with a focus on strategic asset allocation through all market conditions.

Operational Changes
After the Pension Agreement was signed in 2023, the remainder of the year and 2024 was focused on implementing the provisions of the document. The new Pension Agreement made important changes including the creation of a two-tier retirement benefit structure consisting of the Group A Plan and the Group B Plan. The Group A Plan includes employees who became Members of the Fund on or before June 30, 2023, they are automatically in the Group A Plan unless they elected to join the Group B Plan. The election period ended on March 29, 2024. The Group B Plan membership includes any employees who are or became Members of the Fund on or after July 1, 2023. Members of Group A were able to elect to join Group B Plan by providing written notice to the Fund between June 30, 2023, and March 29, 2024, by completing the election form of the Fund's website. A copy of the Pension Agreement is available on the Fund's website.

The benefits department is continuously working to enhance the Members' experience and provide easier access to retirement information. Under the updated Pension Agreement, we have proactively adjusted processes. Now members can utilize a new fillable online form on our website to request retirement appointments. All other essential retirement forms are also conveniently available online. Our goal is to significantly reduce the time the Member spends on paperwork during their in-person retirement appointment.

The updated Pension Agreement also required some technological updates. PTG Pension Pro was enhanced to incorporate necessary changes for the Group B Plan. In addition, we are thrilled to

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announce the launch of a completely redesigned website, www.mbtarf.com, expertly executed by Boston Web Design. Our goal was to create a modern, user-friendly platform that ensures services and content are delivered efficiently and are easily understandable to our entire membership. The redesigned website is now readily available to the public, offering improved navigation, a fresh look, and enhanced accessibility. We invite you to explore the new site and discover its improved features!

A key provision of the new Pension Agreement mandated the transfer of 50% of the market value of all Fund assets as of April 30, 2023, to the PRIT Fund. The Pension Trust Agreement was subsequently amended to formally acknowledge and incorporate this directive. Crucially, on July 19, 2024, the MBTARF and PRIM (Pension Reserves Investment Management Board) entered into a revised Letter Agreement. This agreement explicitly confirms that PRIM operates in a fiduciary capacity when managing the Retirement Fund's investments, reinforcing the highest standard of care in safeguarding the Fund's assets.

We are delighted to announce that as of April 1, 2025, the PRIT Fund is investing the required amount of Fund assets concurrent with the Pension Agreement. The staff undertook this complex task and accomplished this mandate with three years to spare before the March 31, 2028, deadline, demonstrating our team's exceptional efficiency and diligence.

As always, the Fund stands ready to answer questions. We continue to offer walk-in capabilities for select services and appointments for services that take longer than 15 minutes. The latest operational amendments are posted on the Fund's website and are continuously updated as needed.

Objectives and Goals

The Fund has a formidable history of planning for the future. Ten years ago, in 2014, the MBTA Retirement Fund embarked on its first Strategic Plan covering the five-year period from 2015 – 2019. We are proud to say that the initial plan, with its well-articulated mission and clear goals, led to improved customer service, superior financial reporting, professional development of staff, the adoption of a more sophisticated technological infrastructure, and enhanced ethics training and accountability. In 2020, the Retirement Fund developed its Project 2020 Strategic Plan covering the period from 2020-2023 – concluding in 2023 with the 75th Anniversary of the creation of the Fund. Goals established pursuant to that Strategic Plan were ambitious and substantially achieved even while the Fund operated seamlessly through the challenges of the pandemic and implemented significant changes to the Pension Agreement during its anniversary year. At the conclusion of the 2020 – 2023 Strategic Plan, the Retirement Fund commissioned an independent assessment of its efforts to implement its various planning Goals and Objectives. This assessment led to the recommended actions for the Retirement Fund's 2024-2027 Strategic Plan.

The current strategic plan outlines the following four goals:

Goal A: Continue to improve and enhance processes, technology, and capabilities to ensure excellence in delivery of services to members, retired members, and their beneficiaries.

Goal B: Cultivate a sophisticated, professional and intelligent organization that is dedicated to achieving the organization's goals.

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Goal C: Enhance financial technology capabilities to support a secure and high performing environment.

Goal D: Maintain and preserve the long-term sustainability of the pension fund.

Within Goal A, the Fund specifically intends to continue to engage the membership through communication and education. The Fund will develop and implement processes and procedures to administer benefits effectively under the new Group B plan. All while continuing to achieve excellence in the delivery of services to the membership. Under Goal B, the Fund will continue to develop and retain a highly competent, professional staff. In order to maintain a dynamic organization focused on continuous improvement, the organizational structure and succession plan will be reviewed and updated as needed. Our culture of best practices will continue to be developed and honed through information sharing and review.

Goal C will focus on maintaining a comprehensive cybersecurity governance, risk and compliance program designed to ensure the security of information technology and confidential information. In addition, utilizing technology as a strategic means of improving operational efficiency and as a convenient delivery of services to the membership will be evaluated including the feasibility of artificial intelligence. Our final Goal D is focused on implementing processes, procedures, and strategies to deliver risk-adjusted investment returns that meet or exceed the expected rate of return while meeting the Pension Reserves Investment Trust (PRIT) investment mandate of the new Pension Agreement. As discussed earlier in this document, a key provision of the Pension Agreement mandated the transfer of 50% of the market value of all Fund assets as of April 30, 2023, to the PRIT Fund. Following the fulfillment of the mandate on April 1, 2025, the board and staff will continue to monitor the current PRIM investments and future opportunities per the Investment Policy Statement.

We look forward to sharing our updated goals to continue to provide responsible and efficient stewardship to deliver promised retirement benefits, while promoting retirement security for members and retirees.

Investment Policy Overview

The Fund's portfolio is broadly diversified, holding investments ranging from publicly traded stocks and bonds to privately held partnerships. The scale and scope of these investments makes oversight of these assets highly complex and requires an investment policy. The Retirement Board of the Fund adopts an Investment Policy Statement (IPS) which establishes investment objectives and policy, obtains expert advice and assistance, and oversees the employment of qualified and competent investment staff. In addition, the IPS is designed to obtain optimal risk-adjusted returns and ensure that investments are made for the exclusive benefits of the Members of the Fund. The Board also monitors the actions of staff, consultants, and advisors to ensure compliance with its policies. In 2024, the Fund convened its Investment Compliance Working Group for their annual review of the IPS, Investment Selection Process, Investment Management Compliance Policies and Financial Reporting. The ICWG did not recommend any formal changes to these policies in 2024. However, edits were made in early 2025 to reflect the PRIM Investment mandate in the new Pension Agreement. The Investment Policy Statement in effect as of year-end December 31, 2024, has been in effect since July

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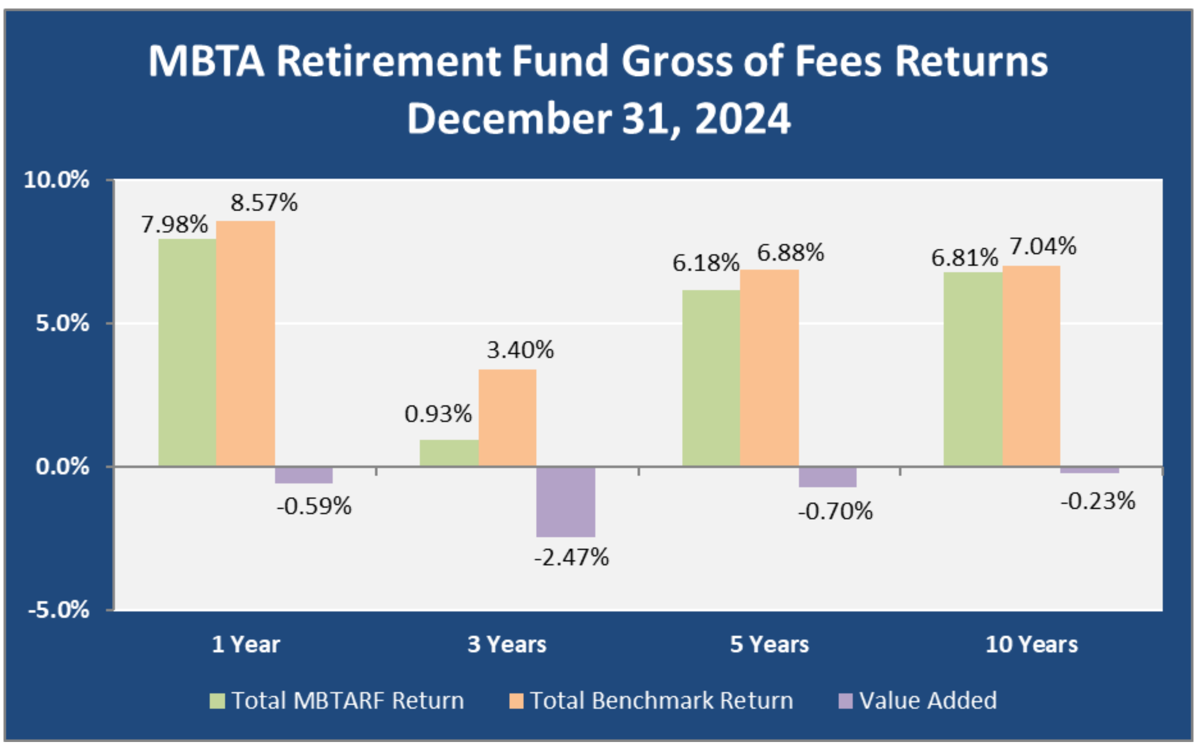
2020. The Board's primary goal is to maintain a financially sound pension fund to provide financial security for its Members.

MBTA Retirement Fund Performance

The year ended December 31, 2024, brought continued positive performance for the Fund. Regardless of market conditions or political climate, the Board and management are always focused on long-term performance. As of December 31, 2024, the total Fund return gross of fees was 7.98% and the annualized three, five and ten-year returns were 0.93%, 6.18% and 6.81%, respectively. For more detailed information regarding the Fund's investment policies, guidelines and results please see the Investment Section of this report, starting on page 71.

Year Ended December 31, 2024:

- The Fund's total gross return is 7.98% compared to the total policy benchmark 8.57%.
- The Fund's inception to date gross return is 8.95%.
- The return equates to an investment gain of $127.7 million.
- Net total outflows to pay benefits for the calendar year were approximately $238.0 million.
- The 1- year and since inception gross returns outperformed the actuarial rate of return of 7.25%.



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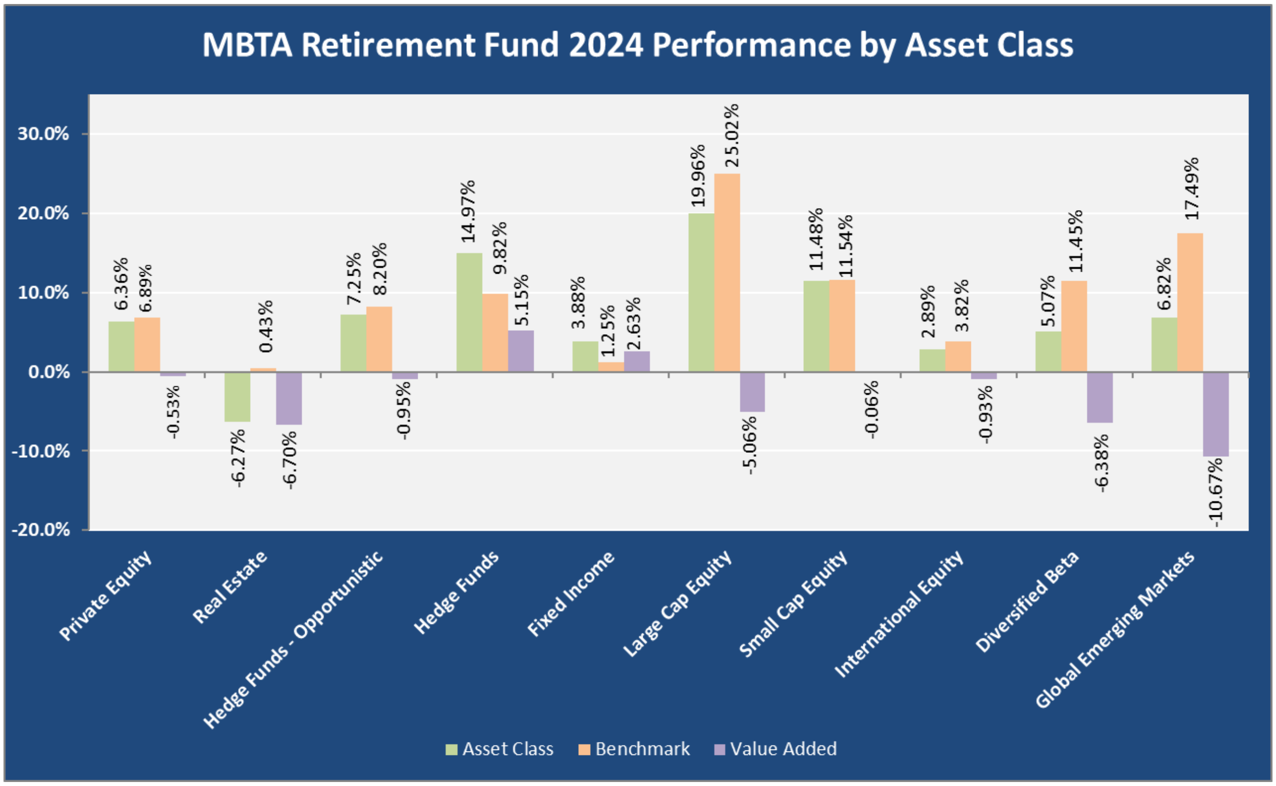
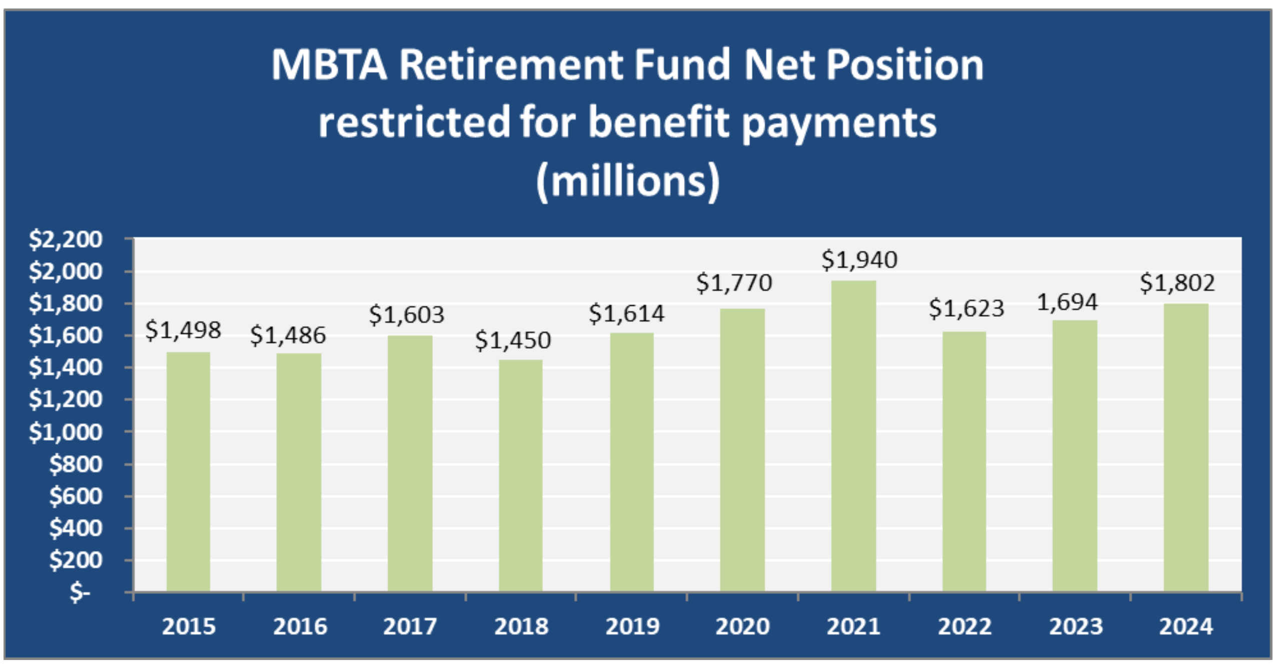

MBTA Retirement Fund 2024 Performance by Asset Class
30.0%
20.0%
10.0%
0.0%
-10.0%
-20.0%
6.36%
6.89%
-0.53%
-6.27%
0.43%
-6.70%
7.25%
8.20%
-0.95%
14.97%
9.82%
5.15%
3.88%
1.25%
2.63%
19.96%
25.02%
-5.06%
11.48%
11.54%
-0.06%
2.89%
3.82%
-0.93%
5.07%
11.45%
-6.38%
6.82%
17.49%
-10.67%
Private Equity
Real Estate
Hedge Funds - Opportunistic
Hedge Funds
Fixed Income
Large Cap Equity
Small Cap Equity
International Equity
Diversified Beta
Global Emerging Markets
Asset Class
Benchmark
Value Added


MBTA Retirement Fund Net Position restricted for benefit payments (millions)
$2,200
$2,000
$1,800
$1,600
$1,400
$1,200
$1,000
$800
$600
$400
$200
$-
$1,498
$1,486
$1,603
$1,450
$1,614
$1,770
$1,940
$1,623
1,694
$1,802
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024

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Management's Discussion and Analysis

The Management's Discussion and Analysis (MD&A), beginning on page 33, provides an overview and analysis of the Fund's basic financial statements. This letter of transmittal is intended to complement the MD&A, and should be read in conjunction with the MD&A.

Markets and Outlook

The US equity market extended the 2023 bull market, with the S&P 500 gaining 25.02% in 2024, its second year in a row with gains of over 20%. This growth was primarily driven by large cap names, fueled by advancements in technology, optimism around artificial intelligence and potential deregulation under a new administration. The market generally favored large cap stocks over small-cap stocks and growth over value. Outside of the United States, European equities struggled alongside a weakening economy, while Japanese and emerging markets fared better.

Fixed income performance was positive overall but muted in 2024, as we saw the Federal Reserve cut rates by 100 basis points and the easing of inflation. As rates fell from multi-year highs, the cost of borrowing began to come down. Energy prices were also positive at the end of 2024, supported by inflation risks and geopolitical worries. Hedge funds experienced strong performance driven by asset under management growth and renewed investor interest. The labor market and economic growth remained resilient in 2024.

Looking into 2025, a dominant theme is the implementation of aggressive tariff policies. Trade tensions and tariffs have resulted in mixed equity performance at the start of the year. After an initial surge in early 2025, U.S. markets, particularly the S&P 500 and Nasdaq Composite, reversed course, and experienced negative returns for the first quarter. This downturn was attributed to heightened volatility in mega-cap technology stocks (the "Magnificent Seven") and concerns about slowing economic growth due to tariffs. In a significant reversal from 2024 trends, value stocks staged a strong comeback and outperformed growth stocks across most regions, particularly in the US large-cap segment. While inflation has been easing globally, the new tariffs were expected to create an upward pressure on prices, leading to increased inflation expectations for the short term.

Looking ahead, we anticipate continued market volatility in the near term as the global economy continues to adapt and renegotiate tariffs between the United States and the rest of the world. We understand that market fluctuations can be unsettling, but I want to reassure you that the Retirement Fund remains well positioned for long-term growth. Our commitment to securing our member's retirement future is unwavering.

Asset Allocation/Investments

The Fund is responsible for implementing an asset allocation with an appropriate balance of risk and return, it is a critical component for formulating investment strategies. Asset-liability modeling (ALM) is conducted in three to five-year intervals. The last ALM Study was completed in November 2023. The project's purpose is to consider alternatives to the current asset mix with the objective of identifying potential opportunities for improved Fund financial results. This approach allows for

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sufficient flexibility to capture investment opportunities as they may occur yet provide parameters to ensure prudence and care while managing the Fund's assets. On February 16, 2024, the Board approved an updated asset allocation that went into effect on April 1, 2024. The Board's primary goal is to maintain a financially sound pension fund to provide financial security for its Members.

The applicable asset allocation for the year 2024 (below) is the result of an asset-liability study conducted by the Fund's actuary, Gallagher Benefit Services, Inc., formerly known as Buck Global, LLC, and investment advisor, Segal Marco Advisors. At year end the Fund's actual asset allocation was within approved target ranges.

Asset Class	Target (%)	Minimum Exposure (%)	Maximum Exposure (%)
Equities	**43**	**38**	**48**
US Equity	27	22	32
International Equity	12	8	16
Emerging Markets Equity	4	2	6
Fixed Income	**26**	**23**	**33**
Fi - Core	10	6	14
FI - Mortgages	3	0	5
FI - Inflation Linked Securities	3	0	5
FI - Bank Loans	3	0	5
FI - Global Multi Sector	7	4	10
Cash	**2**	**0**	**3**
Alternative Investments	**29**	**17**	**36**
Hedge Fund of Funds	4	1	7
Private Equity	8	4	12
Private Credit	2	0	4
Real Estate	9	5	12
Opportunistic - Hedge Funds	2	0	4
Risk Parity / Diversified Beta	4	1	7

Since the Pension Agreement was signed in 2023, the staff undertook the complex task of fulfilling the PRIM investment mandate. The investment highlights listed below depict this effort. As always, the Board of Trustees and Fund Management are responsible for continually reviewing investment manager performance to ensure the Fund is utilizing the best investment managers possible.

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Some 2024 Investment Highlights include:

- On February 16, 2024, the Board of Trustees approved an updated target asset allocation which was effective as of April 1, 2024.
- With the PRIT investment mandate in mind in February 2024, the Board voted to terminate Morgan Stanley International Equity and allocate the proceeds of $100 million to PRIT International Equity Segmentation.
- In addition to the PRIM International Equity Segmentation commitment on March 1, 2024, the Fund re-balanced 2% of the equity portfolio and committed $17 million to PRIM Value Add Fixed Income Segmentation and $17 million to PRIM Core Fixed Income Segmentation.
- On July 19, 2024, the Fund entered into a revised Letter Agreement with PRIM. This agreement explicitly confirmed that PRIM operates in a fiduciary capacity when managing the Fund's investments.
- In September 2024, the Board voted to redeem half of both SSGA Russell 1000 and SSGA MSCI EAFE. On October 1, 2024, the Fund invested $105 million into the PRIM Domestic Equity Segmentation, $40 million into the PRIM International Equity Segmentation and $30 million into the PRIM Real Estate Segmentation. The investment in the PRIM Domestic Equity Segmentation marked the Fund investing in all available segmentation programs with PRIM.
- During the annual review of private equity, in November 2024, the Trustees committed $20 million to the PRIM Private Equity Vintage Year 2025 Segmentation Program (PEVY 2025).
- Following additional 2025 commitments to various PRIM Segmentations which will be discussed in the 2025 ACFR, on April 1, 2025, the PRIT Fund was managing 100% of the required amount of Fund assets per the investment mandate.

Administration

The Board of Trustees of the Retirement Fund is the highest authority within the organizational structure. As of December 31, 2024, the date of the Fund's most recent actuarial valuation, the Fund's membership included 6,565 members in active status, 6,783, retirees and beneficiaries receiving benefits and 3 terminated vested members who are not yet receiving benefits. Our pension management software enables the Fund to efficiently track demographics for both active and retired Members as well as facilitate benefit payments via an automated process. In addition, the Fund offers an employee self-service platform for active and retired Members which offers remote access to their personal retirement information. The portal was updated in 2024 to incorporate the necessary changes or Group B Members allowing them the convenience of running estimates and calculations directly through the secure Member portal. I encourage you to visit the portal at www.mbtarf.com.

Benefits

On March 31, 2023, the Union and the Authority reached an agreement and entered into a Memorandum of Understanding (MOU) that resulted in important changes to the Pension Agreement. These changes supersede the interest arbitration award of August 26, 2022, which has been vacated in full and is of no further effect. The term of the new Pension Agreement runs from June 30, 2018, through June 30, 2028. Details of the updated Pension Agreement are included in the Membership section below.

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Membership

Membership in the Fund is available to most MBTA employees except for MBTA Police Officers. Employees who are or may become members of the Union are included in the membership of the Fund. Employees who are not members of the Union but who are on the regular payroll of the Authority and Members of the Fund on the date of the execution of the Fund's Pension Agreement are also included in the membership of the Fund.

The new Pension Agreement created a two-tier pension benefit structure. Employees who are or become Members of the Fund on or before June 30, 2023, are in the Group A Plan unless a Member (i) elected to join the Group B Plan by providing written notification to the Fund between July 1, 2023, and March 29, 2024, and (ii) accumulates at least 24 months of creditable service after such election. Employees who are or become Members of the Fund on or after July 1, 2023, are automatically in the Group B Plan.

The retirement age for Group A Plan Members remains unchanged; those whose hire date is on or after December 6, 2012, will be required to complete at least twenty-five (25) years of creditable service and attain age 55 to be eligible for an early normal retirement allowance. For those members whose date of hire is prior to December 6, 2012, completion of at least twenty-three (23) years of creditable service is required to receive compensation under an early normal allowance.

Pension benefits for new hires, Group B, defined as those employees who become Members of the Fund on or after July 1, 2023, have adopted a sliding scale determined by the Member's age at the time of retirement beginning at a rate of 1.75% at 55 years of age progressing to a rate of 2.46% at 61 years of age. Members, however, are fully vested after the Member accrues 10 years of creditable service.

Contributions

Benefits paid to Members are financed by employer contributions, employee contributions and earnings on investments made by the Fund. Per the updated Pension Agreement, Active Members' individual contributions are increased by 1.25% over the actuarial annual required contribution rate beginning with the first full pay period after July 1, 2023. In addition, the Authority contributions will be maintained at a minimum floor of 25.8161% of payroll, paying increased amounts if prescribed by the actuarial annual required contribution rate until the unfunded amount of the plan is less than 20%, as determined by the MBTARF's actuary.

Effective July 1, 2025, the valuation report calculated a Members rate of 8.6889%, and therefore Members are required to contribute at a rate of 9.9389% of their pensionable salary. The Authority contribution rate is 25.8161%, which is due to the actuarial determined rate of 24.7211%, triggering the minimum requirement. The increase to the members' rate and the Authority's minimum requirement was negotiated in the Pension Agreement to pay down the MBTA Retirement Fund's unfunded accrued liability and ultimately provide a more stable financial future for the retirees.

Funding

In setting contribution rates, the Board's principal objective is to set rates so the unfunded actuarial

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accrued liability (UAAL) will be amortized over a reasonable period from the most recent valuation date and set rates, so they remain relatively level over time. An actuarial valuation is performed annually. Every year the Actuary reviews the assumptions used in the Valuation. In the Spring of 2023, an Experience Study was conducted, and Gallagher proposed updated assumptions for mortality tables, salary increases, termination rates and retirement rates. All assumptions were approved by the MBTA Retirement Board in April 2023 for use in the 2022 Valuation Report. Gallagher did not recommend any changes to assumptions for the 2023 and 2024 Valuation Reports. The investment return assumption of 7.25% and the inflation assumption of 2.75% remain the same. The mortality table, Pri-2012 Blue Collar, continues to be recommended as the best fit based on the makeup of the plan participants.

The most recent actuarial valuation report, dated December 31, 2024, calculated the Fund's unfunded actuarial pension liability at $1,505,030,617. As of December 31, 2024, the funded ratio is 56.03%. The adoption of the most recent asset allocation continues to support a 7.25% discount rate. However, the Board of Trustees are mindful of monitoring this rate to help facilitate financial solvency. In addition, the investment managers' performance is reviewed monthly and, if needed, adjustments to the portfolio are made to help increase and limit decreases to the Fund's overall return.

The actuarial firm, Gallagher Benefit Services, Inc, completed the actuarial reviews and valuations. For more information on the actuarial assumptions of the Fund as part of the December 31, 2024, valuation, please see the Summary of Actuarial Assumptions and Methods found in the Actuarial Section of the ACFR, starting on page 116.

Membership Communications

The MBTA Retirement Fund continues its focus on member communication through Milestones and posting pertinent information to our website at www.mbtarf.com. We place special emphasis on providing quality customer service to which we encourage feedback and welcome new ideas.

Awards

The Government Finance Officers Association (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the Fund for its annual comprehensive financial report for the fiscal year that ended December 31, 2023. To be awarded a Certificate of Achievement, the Fund must publish an easily readable and efficiently organized ACFR, the contents of which conform to program standards. This report must satisfy both generally accepted accounting principles and applicable legal requirements. The Fund has received this prestigious award for the last eight years.

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

Acknowledgements

The compilation of the ACFR reflects the combined efforts of the Fund's staff, Actuary, and Investment Advisor. Our goal is to present a thorough and accurate report that is easy for our

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members to read and understand. It is intended to provide complete and reliable information as a basis for making management decisions.

As always, I would like to take this opportunity to express my appreciation to the Board of Trustees, Staff, Investment Advisor, Actuary, and to the many members who are working diligently to ensure the continued success of the Fund. We recognize and appreciate the dedication of our Board of Trustees who voluntarily provide their expertise and oversight to protect the financial future of our membership.

Yours respectfully,

John P. Barry
Interim - Executive Director / Chief Financial Officer

Government Finance Officers Association

Certificate of Achievement for Excellence in Financial Reporting

Presented to

MBTA Retirement Fund
Massachusetts

For its Annual Comprehensive Financial Report
For the Fiscal Year Ended December 31,

2023

Christopher P. Morrill

Executive Director/CEO

MBTA Retirement Fund Board Trustees

Effective January 1, 2024

Advisory Committees to the MBTA Retirement Fund Board

Audit and Actuary Committee

James Evers
Board Member

James Bradley
Board Member

Mary Ann O'Hara
Board Member

Paul Todisco
Board Member

Organizational Chart

Effective January 1, 2024

MBTA Retirement Fund Board

Elected	***Appointed***
James Evers, Interim-Chair	Mary Ann O'Hara
James Bradley	Chanda Smart
Timothy Long	Paul Todisco

Jacquelyn Carey, Interim - Board Secretary

Interim-Executive Director
John P. Barry

Fund Staff/Counsel

Administrative

Carolina Assis

- Executive Support
- Maintain Documentation
- Correspondence
- Customer Service

Finance
Jacquelyn Carey

Joseph D'Angelo
Michael Barrio

- Accounting / Reporting
- Monitoring Investments
- Payroll / Contributions
- Investment Compliance

Benefits
Dominique Sye

Sagine Gay
Siobhan Keeney
Margaret Lane

- Benefits Calculations
- Member Services
- Records Management
- Disability Requirements

Counsel
Holland & Knight

- Legal Advice
- Compliance
- Fiduciary Guidance

Info Technology
Robert Biga

- Information Governance
- Technology Oversight
- Cyber Risk Management

Contractors/Service Providers

Consulting
Segal-Marco

- Asset Allocation
- Monitor Performance
- Investment Policy
- Performance Reporting

Investment Managers

- Equity & Fixed Income
- Alternative Investments
- Diversified Beta

Custodian Bank
State Street

- Safekeeping
- Asset Valuations
- Benefit Payments
- Compliance Reporting

Actuary
Gallagher

- Actuarial Assumptions
- Project Financial Needs
- Earnings Assumptions
- Funded Status

Auditors
KPMG

- Audits
- Independent Testing

Please refer to the Investment Section, page 110 for the Summary Schedule of Broker Commission and Fees and page 111 for the Schedule of Direct Management Fees.

Historical MBTA Retirement Fund Board Members

	Period of Service From	To
(A) Harold Ulrich **	08/48	01/49
(E) Irving F. Murray	08/48	08/49
(E) William A. Roche	08/49	07/56
(A) Thomas A. Dunbar **	08/48	01/59
(A) Charles A. McCarron **	08/48	05/60
(E) Thomas P. Dillon	08/48	03/61
(A) Ernest M. Flint	01/49	01/50
(E) Bartholomew P. Saunders	08/49	08/52
(A) Arthur V. Grimes	07/50	06/52
(A) Augustine Airola	06/52	04/53
(E) James J. Casey	08/52	08/64
(A) Harold Ulrich	04/53	04/57
(E) Michael J. Gormley	07/56	12/63
(A) William V. Ward **	08/57	08/64
(A) John J. Sullivan	01/59	07/59
(A) Willis B. Downey **	06/59	08/62
(A) William E. Ryan	06/60	02/72
(E) Edward S. Russell	03/61	01/62
(E) Matthew F. Ryan	01/62	12/69
(A) Edward F. McLaughlin, Jr.	08/62	03/70
(E) Walter H. Doyle	12/63	12/69
(E) Thomas F. Holland, Jr.	08/64	08/70
(A) Philip Kramer **	08/64	04/68
(A) Richard D. Buck **	04/68	07/79
(E) John J. Sugrue	12/69	12/71
(E) Albert F. Kelley	12/69	12/75
(A) Joseph C. Kelly	03/70	07/70
(A) John R. Launie	07/70	05/83
(E) Albert J. Fitzpatrick	08/70	07/80
(E) Patrick C. Quill	12/71	12/75
(A) Joseph H. Elcock	02/72	07/79
(E) John J. Sugrue	01/76	07/76
(E) Redmond R. Condon	01/76	02/78
(E) Joseph D. Fleming, Jr.	07/76	12/77
(E) Donald R. Abbott	12/77	08/79
(E) James J. Slattery	02/78	08/79
(A) Walter J. Ryan **	07/79	05/83
(A) Richard L. Taylor	07/79	05/83
(E) George P. Adams	08/79	11/79
(E) Richard J. Guiney	08/79	11/79
(E) John J. Gallahue, Jr.	11/79	01/83
(E) John J. O'Leary	03/80	01/93
(E) James T. Norton	07/80	10/90
(E) Paul M. Connolly	01/83	12/86

	Period of Service From	To
(A) Paul E. Means	05/83	01/84
(A) William F. Irvin **	05/83	04/91
(A) James E. Smith, Esq.	05/83	04/91
(A) Melissa A. Tillman	01/84	04/91
(E) Anthony B. Romano **	12/86	02/92
(E) John J. Connolly **	10/90	08/94
(A) Domenic M. Bozzotto	04/91	02/97
(A) Toye L. Brown, Ph.D.	04/91	10/93
(A) James A. Radley	04/91	11/92
(E) James W. Duchaney	02/92	01/93
(A) Michael P. Hogan	11/92	12/93
(E) Richard M. Murphy	01/93	08/96
(E) Edward F. Sheckleton **	01/93	12/01
(A) Oliver C. Mitchell, Jr.	10/93	05/98
(A) Albert Shaw	12/93	10/95
(E) Paul V. Buckley	08/94	04/98
(A) Boyce W. Slayman	10/95	03/00
(E) James E. Lydon	10/96	12/01
(A) Janice Loux**	10/97	03/15
(E) William A. Irvin	04/98	12/05
(A) William A. Mitchell, Jr.	12/98	10/00
(A) Joseph M. Trolla	08/00	10/08
(A) Hon. Baron H. Martin	11/00	10/04
(E) Stephan G. MacDougall	01/02	12/10
(E) John P. Barry	01/02	04/06
(A) Jonathan R. Davis	10/04	05/15
(E) James M. O'Connell	09/07	06/15
(E) Michael F. Mastrocola	07/06	01/12
(A) Darnell L. Williams	01/09	05/15
(E) John J. Lee	01/11	12/13
(E) James M. Evers **	04/12	Present
(E) James M. O'Brien	01/14	12/19
(A) Steven Grossman	06/15	12/19
(A) Betsy Taylor	06/15	04/23
(A) Michael J. Heffernan	06/15	09/17
(E) Craig S. Hughes	07/15	04/23
(A) Steven Kadish	10/17	09/18
(A) Michael Abramo	03/19	04/21
(E) James Bradley	01/20	Present
(A) Mary Ann O'Hara	01/22	Present
(A) Paul Todisco	06/22	Present
(E) Timothy Long	05/23	Present
(A) Chanda Smart	08/23	Present

(E) Employee Representative (A) Authority Representative ** Chairperson

Historical Executive Directors of the MBTA Retirement Fund

	Period of Service From	To
John H. Moran	01/48	11/51
Michael J. Powell	11/51	12/82
John J. "Jack" Gallahue, Jr.	01/83	03/02
Karl E. White	04/02	06/06
Michael H. Mulhern	07/06	08/16
John P. Barry - Interim	08/16	Present

1 Prior to 1968 the Executive Director position was referred to as Treasurer

Historical MBTA Retirement Fund Alternate Board Members

	Period of Service From	To
(A) Joseph Gannon	08/48	01/49
(A) Richard A. Sullivan	08/48	01/49
(A) Ernie B. Myott	08/48	08/64
(E) Philip E. Doyle	08/48	12/49
(E) John C. Carey	08/48	08/54
(E) Joseph P. Fahey	08/48	04/54
(A) Edward Dana	01/49	02/51
(A) Edward R. Kelly	01/49	07/50
(E) Thomas Freeman	12/49	08/52
(A) Ernest M. Flint	07/50	10/52
(E) Thomas F. Holland, Jr.	08/52	08/64
(A) John J. Sullivan	10/52	01/59
(A) Horace Schmerhorn	04/53	04/56
(E) Edward S. Russell	04/54	03/61
(E) Michael J. Gormley	04/54	07/56
(A) Robert H. Ryan	05/56	08/57
(E) Joseph P. Fahey	07/56	01/58
(A) John J. Graham	08/57	08/64
(E) Thomas J. Rush	01/58	12/69
(A) William J. Fitzsimons	01/59	07/70
(E) Richard R. Rodwell	03/61	01/62
(E) Walter H. Doyle	01/62	12/63
(E) Paul F. Halloran	12/63	12/69
(E) Albert J. Fitzpatrick	08/64	08/70
(A) Frederick J. Sheehan	08/64	03/67
(A) George L. Anderson	08/64	04/68
(A) Vincent M. Banks	03/67	01/74
(A) Forrest I. Neal, Jr.	04/68	01/78
(E) Patrick C. Quill	12/69	12/71
(E) Dennis F. Guiney	12/69	12/73
(A) Joseph A. Emerson	07/70	01/74
(E) Charles H. Ward	08/70	02/77
(E) Paul F. Sullivan	12/71	12/73
(E) Charles F. Cole, Jr.	12/73	12/75
(E) Edward J. Doherty	12/73	12/75
(A) Daniel F. Dullea	01/74	02/76
(A) Francis A. Sullivan	01/74	07/79
(E) Joseph A. Dineen	01/76	12/77
(E) Joseph D. Fleming, Jr.	01/76	07/76
(E) James T. Norton	03/77	07/80
(E) Redmond R. Condon	02/78	01/84
(E) George P. Adams	02/78	08/79
(A) Troy Y. Murray	10/78	07/79

	Period of Service From	To
(A) Guido R. Perera, Jr.	10/78	7/79
(A) Paul E. Means	7/79	5/83
(A) John J. McCarthy	7/79	5/83
(A) Guy F. DeBenedetto	7/79	8/81
(E) Frederick W. Burt III	12/79	3/83
(E) Charles E. Smyth	7/80	10/90
(E) Donald J. Quinlan	3/83	7/85
(E) Anthony B. Romano	1/84	12/86
(A) Melba F. Hamilton	5/84	4/91
(A) Judith H. Robbins	6/84	4/91
(E) Stanley V. Stearns	7/85	1/87
(E) Albert Mastrocola	1/87	10/97
(E) Edward F. Sheckleton	1/87	1/93
(E) Paul V. Buckley	10/90	8/94
(A) Michael P. Hogan	6/91	11/92
(A) Gregory C. Flynn, Esq.	10/91	3/92
(A) Arthur D. Shea	11/91	2/92
(A) Wesley G. Wallace, Jr.	2/92	3/94
(A) Esther R. Maletz, Esq.	3/92	3/94
(E) Robert F. Gosnell	1/93	3/96
(A) Carol A. Buckley	3/94	1/96
(A) Francis X. McDonough	3/94	8/96
(A) Clifford H. Straw	3/94	1/96
(E) Robert H. Stearns	8/94	4/98
(A) William A. Mitchell, Jr.	1/96	12/98
(E) Daniel K. Burton	4/96	9/96
(A) Sharna A. Small-Borsellino	4/96	5/00
(E) Francis X. Madden	10/96	1/99
(E) James M. O'Connell	4/98	12/05
(A) Philip Puccia	2/97	3/99
(E) James D. Wyllie	11/97	12/98
(E) Daniel K. Burton	1/99	1/00
(A) Willie J. Davis	12/98	7/00
(A) Michael Mulhern	4/99	4/02
(E) Torrie Austin	5/99	4/00
(E) James D. Wyllie	1/99	11/00
(E) James M. Evers	5/00	9/00
(A) Alice A. Fernandes	5/00	12/06
(A) Jonathan R. Davis	8/00	10/04
(E) Stephan G. MacDougall	10/00	11/00
(E) James M. Evers	11/00	12/01

(Continued)

(E) James Knox	8/01	12/01
(E) James Crowley	01/02	03/03
(E) Roy L. Chance	02/02	12/02
(A) Wesley G. Wallace, Jr.	05/02	10/06
(E) Robert L. Callahan	03/03	02/06
(E) M. John Burr	03/03	12/03
(E) John S. Murray	01/04	02/05
(A) Brian J. Donohue	10/04	05/09
(E) James M. O'Brien	03/05	12/10
(E) Michael F. Mastrocola	02/06	06/06
(E) Daniel K. Burton	07/06	09/07
(A) Jeanne M. Morrison	10/06	03/15
(E) Lawrence C. Kelly	02/10	04/11
(E) Walter J. Novicki	01/11	12/11
(E) James M. O'Brien	05/11	12/13
(E) John A. Clancy	01/12	12/13
(A) Gerald K. Kelley	06/12	Present
(E) Margaret C. LaPaglia	01/14	02/18
(E) Lawrence C. Kelly	01/14	12/16
(E) Timothy P. Long	07/15	04/23
(E) John D. Hunt	01/17	12/19
(E) Patrick Hogan	04/18	12/21
(A) Paul Brandley	03/18	05/19
(A) Mary Ann O'Hara	12/19	12/21
(A) Patrick Landers	01/22	07/23
(E) Jose Cruz	01/22	02/25
(E) John Mersereau	01/22	Present
(A) David Panagore	06/22	02/24
(E) James Joyce	05/23	Present
(A) Thomas McGee	08/23	12/24
(E) Wayne Peacock	02/25	Present

(E) Employee Representative (A) Authority Representative

MBTA Retirement Fund Professional Services

KPMG LLP
Audit services

Segal Marco Advisors
Investment consulting services

Gallagher
(f/k/a Buck Global, LLC)
Actuarial services

Holland & Knight
Legal Counsel

State Street Bank & Trust Company
Custodian

FINANCIAL SECTION

KPMG LLP
Two Financial Center
60 South Street
Boston, MA 02111

Independent Auditors' Report

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

Opinion

We have audited the financial statements of the Massachusetts Bay Transportation Authority Retirement Fund (the Fund), as of and for the years ended December 31, 2024 and 2023 and the related notes to the financial statements, which collectively comprise the Fund's basic financial statements for the years then ended as listed in the table of contents.

In our opinion, the accompanying financial statements referred to above present fairly, in all material respects, the fiduciary net position of the Fund as of December 31, 2024 and 2023, and the changes in its fiduciary net position for the years then ended in accordance with U.S. generally accepted accounting principles.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Fund and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with U.S. generally accepted accounting principles, and for 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.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Fund's ability to continue as a going concern for twelve months beyond the financial statement date, including any currently known information that may raise substantial doubt shortly thereafter.

Auditors' Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

(Continued)

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit 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 Fund's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Fund's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control related matters that we identified during the audit.

Required Supplementary Information

U.S. generally accepted accounting principles require that the management's discussion and analysis, the schedule of changes in net pension liability and related ratios, the schedule of investment returns, and the schedule of contributions be presented to supplement the basic financial statements. Such information is the responsibility of management and, 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 GAAS, 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.

Supplementary Information

Our audits were conducted for the purpose of forming an opinion on the financial statements that collectively comprise the Fund's basic financial statements. The schedule of administrative expenses and the schedule of investment expenses and payments of consultants are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with GAAS.

(Continued)

In our opinion, the schedule of administrative expenses and the schedule of investment expenses and payments to consultants are fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the annual comprehensive financial report. The other information comprises the Introductory, Investment, Actuarial, Statistical, and the Frequently Asked Questions sections but does not include the basic financial statements and our auditors' report thereon. Our opinion on the basic financial statements does not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audits of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

KPMG LLP

Boston, Massachusetts
June 20, 2025

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

Required Supplementary Information

Management's Discussion and Analysis

December 31, 2024 and 2023

(Unaudited)

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, 2024 and 2023. 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, 2024, and 2023 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 information includes 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, 2024

The net position of the Fund increased $107.3 million, or 6.33%, from $1,694.4 million as of December 31, 2023 to $1,801.7 million as of December 31, 2024.

Net investment income decreased $14.9 million, or 10.4%, from $142.7 million for the year ended December 31, 2023 to $127.8 million for the year ended December 31, 2024. The Fund had a 8.0.% rate of return for the year ended December 2024 compared to a 9.4% rate of return for the year ended December 31, 2023. The returns identified in the MD&A are gross of fees.

The total contributions received during the year ended December 31, 2024 were $226.8 million compared to total contributions received during the year ended December 31, 2023 of $186.0 million.

Employer contributions during the year ended December 31, 2024 increased $27.0 million or 20.0% to $162.2 million from $135.2 million during the year ended December 31, 2023.

Member contributions were $64.6 million during the year ended December 2024, an increase of $13.9 million or 27.4% over year ended December 31, 2023 member contributions of $50.7 million.

(Continued)

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND**

Required Supplementary Information

Management's Discussion and Analysis

December 31, 2024 and 2023

(Unaudited)

Benefits paid during the year ended December 31, 2024 were $238.0 million, a decrease of ($9.2 million) or (3.7%) over year ended December 31, 2023, when benefits paid were $247.2 million. The decrease in benefits is due to one-time retroactive payments being made to members in 2023, as per the March 2023 Pension Agreement. These payments were not made in 2024.

Year ended December 31, 2023

The net position of the Fund increased $71.9 million, or 4.4%, from $1,622.5 million as of December 31, 2022 to $1,694.4 million as of December 31, 2023.

Net investment income increased $400.1 million, or 155.5%, from ($257.3) million for the year ended December 31, 2022 to $142.8 million for the year ended December 31, 2023. The Fund had a 9.40% rate of return for the year ended December 2023 compared to a (12.97%) rate of return for the year ended December 31, 2022. The returns identified in the MD&A are gross of fees.

The total contributions received during the year ended December 31, 2023 were $186.0 million compared to total contributions received during the year ended December 31, 2022 of $175.5 million.

Employer contributions during the year ended December 31, 2023 increased $5.2 million or 4.0% to $135.2 million from $130.0 million during the year ended December 31, 2022.

Member contributions were $50.7 million during the year ended December 2023, an increase of $5.2 million or 11.4% over year ended December 31, 2022 member contributions of $45.5 million.

Benefits paid during the year ended December 31, 2023 were $247.2 million, an increase of $20.9 million or 9.2% over year ended December 31, 2022 when benefits paid were $226.3 million. The increase in benefits is largely due to rising final average compensation, one time retro-active compensation payments and a cost-of-living adjustment to the membership as negotiated in the Pension Agreement which was effective in March 2023.

(Continued)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND
Required Supplementary Information
Management's Discussion and Analysis
December 31, 2024 and 2023
(Unaudited)

Financial Analysis

The following schedules report the condensed comparative fiduciary net position and activities for the Fund as of and for the three years ended December 31, 2024, 2023 and 2022.

Condensed Comparative Fiduciary Net Position

(Dollar values expressed in millions)

		December 31		
		2024	2023	2022
Cash	$	2.0	1.6	1.2
Receivables		14.9	15.7	9.5
Investments		1,788.1	1,681.3	1,616.1
Cash collateral on securities lending		11.4	22.4	10.3
Right-of-use asset net of accumulated amort.		0.5	0.9	—
Total assets		1,816.9	1,721.9	1,637.1
Cash collateral on securities lending		11.4	22.4	10.3
Accounts payable and accrued expenses		2.5	2.5	2.4
Payable for investments purchased		0.6	1.5	1.9
Lease Liability		0.7	1.1	—
Total liabilities		15.2	27.5	14.6
Net position – restricted for pension benefits	$	1,801.7	1,694.4	1,622.5

Total assets at fair value were $1,816.9 million as of December 31, 2024, an increase of $95 million or 5.5%, over the year ended December 31, 2023, which were $1,721.9 million, which represented an increase of $84.8 million or 5.2% over the period ending December 31, 2022, where total assets were $1,637.1 million. At December 31, 2024, Investments totaled $1,788.1 million. This was an increase of $106.8 million from the period ending December 31, 2023, which had investments at fair value were $1,681.3 million, an increase of $65.2 million, or 4.0%, over the year ended December 31, 2022, which were valued at $1,616.1 million. This investment increase in 2024 is due to the continuation of the positive gains shown in 2023 after a difficult 2022, with the notable exception of the Fund's real estate investments, which continued to show negative returns again in 2024. Fixed income showed positive returns again in 2024, even as the inflation started to rise again after leveling off in 2023. Pricing pressures over the course of the year gradually receded, and short-term rates were relaxed. The Federal Reserve cut interest rates three times in 2024 although the Fed did announce it would loosen rates less in 2025.

As of December 31, 2024 cash collateral on securities lending decreased by ($11.0) million or (49.1%), over the year ended December 31, 2023. The cash collateral on securities lending increased by $12.1 million or 117% between December 31, 2022, and December 31, 2023. 2024 receivables decreased by ($0.8) million, or 5.1%, over the prior calendar year. Between December 31, 2022 and December 31, 2023 receivables increased by $6.2 million, or 65.3%. GASB Statement No. 87 was implemented in 2023

(Continued)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Required Supplementary Information
Management's Discussion and Analysis
December 31, 2024 and 2023
(Unaudited)

and resulted in a right-of-use asset, net of accumulated amortization of $0.5 million for the year ended December 31, 2024 as compared to $0.9 million for the year ended December 31, 2023.

Total liabilities as of December 31, 2024 decreased by ($12.3) million, or (44.7%) over the prior year, and increased by $12.9 million, or 88.4% during calendar year 2023. Cash collateral on securities lending decreased by ($11.0) million or (49.1%), over the year ended December 31, 2023. The cash collateral on securities lending increased by $12.1 million or 117.5%, between December 31, 2022, and December 31, 2023. From December 31, 2023 through December 31, 2024, payable for investments purchased decreased by ($0.9) million, or (60.0%). From December 31, 2022 through December 31, 2023, payable for investments purchased decreased by ($0.4) million, or (21.1%). GASB Statement No. 87 was implemented in 2023 and resulted in a lease liability of 0.7 million. This was a decrease of ($0.4) million or (36.4%) over 2023, when the lease liability was reported as $1.1 million. This statement was not reported in 2022.

Condensed Comparative Statement of Changes in Fiduciary Net Position

(Dollar values expressed in millions)

		December 31		
		2024	2023	2022
Additions:				
Employer contributions	$	162.2	135.2	130.0
Member contributions		64.6	50.7	45.5
Income from investments		127.8	142.8	(257.3)
Total additions		354.6	328.7	(81.8)
Deductions:				
Retirement benefits		238.0	247.2	226.3
Refunds of contributions		5.0	5.0	4.8
Administrative expense		4.3	4.4	4.5
Total deductions		247.3	256.6	235.6
Total changes in fiduciary net position	$	107.3	72.1	(317.4)
Net position restricted for pension benefits				
Beginning of Year		1,694.4	1,622.5	1,939.9
Adjustment for adoption of GASB 87		0.0	(0.2)	0.0
End of year	$	1,801.7	1,694.4	1,622.5

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Additions to Plan Fiduciary Position

For the calendar year ended December 31, 2024, employer contributions increased by $27.0 million and member contributions increased by $13.9 million. For the calendar year ended December 31, 2023, employer contributions increased by $5.2 million and member contributions increased by $5.2 million. For the year ending 2024 from January through December the contribution rates (employee and employer) were 10.3489% and 25.9511% respectively. On July 1, 2023, the employee contribution rate changed from 9.3339% to 10.3489%. This rate includes the provision from the Pension Agreement effective March 2023 requiring members to pay 125 basis points over the actuarial required contribution rate. In addition, on July 1, 2023, the employer contribution rate was changed from 26.6561% to 25.9511%. 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.

There was a net investment gain in 2024 of $127.8 million which was less than the net investment gain in 2023 of $142.8 million. Comparatively the investment loss in 2022 was ($257.3) million. The gains in 2024 and 2023 were due to improved market conditions in both the equity and fixed income markets, even in the wake of 4th quarter volatility.

Deductions from Fiduciary Net Position

Benefits paid decreased by ($9.2) million or (3.7%) over the year ended December 31, 2024. Between December 31, 2022, and December 31, 2023, the benefits paid increased by $20.9 million, or 9.2. The decrease in 2024 is attributable to not paying the one-time retroactive payment for members, which was accounted for and paid in 2023, as referenced below. Typical increases are primarily due to the rising final average compensation and lengthening life span. The additional increase in 2023 can also be attributed to a one-time retroactive cost of living adjustment to the retired members as negotiated in the Pension Agreement. Administrative expenses decreased from $4.4 million to $4.3 million, a decrease of ($0.1) million or (2.2%) over year 2023 and also decreased ($0.1) million, or (2.2%) over year 2022.

Net Pension Liability (NPL)

The Fund retains an independent actuarial firm, Gallagher Benefit Services, LLC, formerly known as Buck, LLC to conduct annual actuarial valuations to monitor the net pension liability.

As of December 31, 2024, and 2023, the fiduciary net position as a percentage of the total pension liability was 52.64% and 51.29%, respectively.

Investment Performance 2024

The Fund began the calendar year 2024 with a net position of $1,694.4 million and ended the calendar year with a net position of $1,801.7 million, representing a 6.3% 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.

(Continued)

Domestic equity 28.9%, international equity 14.8%, fixed income investments 24.4%, and cash equivalents 3.0% comprise approximately 71.1% of total investments as of December 31, 2024. The remaining 28.9% of assets are invested in real estate 8.8%, and alternative investments 20.1%, 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, 2024, the MBTA Retirement Fund's total fund return was 8.0% compared to 9.4% for the calendar year ended December 31, 2023.

The domestic large cap equity returned 20.0% compared to the S&P 500 Index of 25.0%. The domestic small cap equity returned 11.5% compared to the Russell 2000 Growth Index of 15.2% and the Russell 2000 Value Index of 8.1%. The global equity and emerging markets returned 6.8% compared to MSCI All Country World Index of 17.5%. The international equity portfolio returned 2.9% compared to the MSCI EAFE Index of 3.8%. Fixed Income returned 3.9% compared to the Bloomberg Aggregate of 1.3%.

The total fund performance of 8.0% for calendar year 2024 trailed the total fund custom index (a blended composition of major market indices in proportion to the Fund's asset allocation) by 60 basis points, which returned 8.6%.

Additionally, for the year ended December 31, 2024, the real estate portfolio returned (6.3%) compared to the NCREIF Property Index of 0.4%. The hedge fund portfolio returned 15.0% compared to the CSFB/Tremont Hedge Fund Index of 9.8%. The opportunistic portfolio returned 7.2% compared to Bank of America/Merrill Lynch High Yield Benchmark return of 8.2%. The private equity portfolio returned 6.4% compared to State Street's Private Equity benchmark return of 6.9%. The private credit portfolio returned 2.9% compared to State Street's Private Credit benchmark return of 8.5%. Diversified Beta returned 5.1% compared to the 60% MSCI World Eq / 40% Barclays Aggregate Bond return of 11.5%.

Investment Performance 2023

The Fund began the calendar year 2023 with a net position of $1,622.5 million and ended the calendar year with a net position of $1,694.4 million, representing a 4.4% 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 29.7%, international equity 15.8%, fixed income investments 23.3%, and cash equivalents 2.5% comprise approximately 71.3% of invested assets as of December 31, 2023. The remaining 28.7% of assets are invested in real estate 8.3%, and alternative investments 20.4%, 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,

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2023, the MBTA Retirement Fund's total fund return was 9.4% compared to (13.0%) for the calendar year ended December 31, 2022. The 2023 increase in return is attributed to the return of positive gains experienced in most all asset classes after a down year in 2022. The only investment classes with significant negative returns were in real estate and private equity.

The domestic large cap equity returned 23.0% compared to the S&P 500 Index of 26.3%. The domestic small cap equity returned 17.3% compared to the Russell 2000 Growth Index of 18.7% and the Russell 2000 Value Index of 14.6%. The global equity and emerging markets returned 30.7% compared to MSCI All Country World Index of 22.2%. The international equity returned 17.2% compared to the MSCI EAFE Index of 18.2%. Fixed Income returned 7.1% compared to the Bloomberg Aggregate of 5.5%.

The total fund performance of 9.4% for calendar year 2023 trailed the total fund custom index (a blended composition of major market indices in proportion to the Fund's asset allocation) by 160 basis points, which returned 11.0%.

Additionally, for the year ended December 31, 2023, the real estate portfolio returned (17.9%) compared to the NCREIF Property Index of (7.9%). The hedge fund portfolio returned 10.4% compared to the CSFB/Tremont Hedge Fund Index of 5.8%. The opportunistic portfolio returned 11.2% compared to Bank of America/Merrill Lynch High Yield Benchmark return of 13.5%. The private equity portfolio returned (2.1%) compared to State Street's Private Equity benchmark return of 7.0%. The private credit portfolio returned 5.1% compared to State Street's Private Credit benchmark return of 10.2%. Diversified Beta returned 6.9% compared to the 60% MSCI World Eq / 40% Barclays Aggregate Bond return of 16.3%.

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, 2024 and 2023. 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

Statements of Fiduciary Net Position

December 31, 2024 and 2023

	2024	2023
Assets:		
Investments, at fair value:		
Domestic:		
Cash and cash equivalents	$ 52,847,693	58,328,068
Fixed income	431,650,361	376,362,371
Common stock and equity funds	517,128,264	501,075,238
Real estate funds	158,021,097	139,792,010
Alternative investments and hedge funds	358,726,024	337,372,697
	1,518,373,439	1,412,930,384
International:		
Cash and cash equivalents	152,662	85,580
Fixed income	4,402,510	2,723,533
Common stock and equity funds	265,188,533	265,554,999
	269,743,705	268,364,111
Total investments	1,788,117,144	1,681,294,495
Cash and cash equivalents	1,927,997	1,578,779
Contribution receivable from Massachusetts Bay Transportation Authority	11,090,020	8,348,040
Cash collateral on securities lending, invested	11,379,503	22,392,120
Receivable for investments sold	3,835,078	7,401,551
Right-of-use asset, net of accumulated amortization	547,387	893,105
Total assets	1,816,897,129	1,721,908,089
Liabilities:		
Cash collateral on securities lending, due to borrowers	11,379,503	22,392,120
Accounts payable and accrued expenses	2,487,436	2,520,930
Payable for investments purchased	620,077	1,530,057
Lease liability	666,429	1,063,723
Total liabilities	15,153,445	27,506,830
Net position – restricted for pension benefits	$ 1,801,743,684	1,694,401,260

See accompanying notes to financial statements.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

Statements of Changes in Fiduciary Net Position
For the years ended December 31, 2024 and 2023

	2024	2023
Additions:		
Contributions by Massachusetts Bay Transportation Authority	$ 162,153,826	135,226,433
Contributions by members	64,660,810	50,735,073
Total contributions	226,814,636	185,961,506
Investment income:		
Income from investments	31,346,609	28,142,135
Less investment expenses, other than from securities lending	(4,039,636)	(4,464,889)
Net appreciation in fair value of investments	100,425,879	118,978,961
Net investment gain	127,732,852	142,656,208
Securities lending activity:		
Securities lending income	1,344,123	902,101
Less borrower rebates and fees	(1,271,749)	(857,844)
Net income from securities lending activities	72,374	44,257
Total net investment income	127,805,226	142,700,464
Total additions	354,619,862	328,661,971
Deductions:		
Retirement benefits	238,023,662	247,184,648
Refunds of members' contributions	4,982,166	5,005,285
Administrative expenses	4,271,610	4,415,368
Total deductions	247,277,438	256,605,301
Change in fiduciary net position	107,342,424	72,056,670
Net position restricted for pension benefits:		
Beginning of year	1,694,401,260	1,622,548,978
Adjustment for adoption of GASB 87	-	(204,388)
End of year	$ 1,801,743,684	1,694,401,260

See accompanying notes to financial statements.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
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Notes to Financial Statements
December 31, 2024 and 2023

(1) Description of the Fund

(a) General

The following description of the Massachusetts Bay Transportation Authority Retirement Fund (the Fund), a single employer defined benefit pension 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 on November 17, 2023, July 19, 2019 and 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, 2024 and 2023, Fund membership consisted of:

		2024		2023	
Retired members or beneficiaries currently receiving benefits	$	6,757	(1)	6,773	(2)
Active members		6,565		5,805	
Active members not presently earning service credit		498		444	
Total membership	$	13,820		13,022	

(1) Includes 6,607 retirees and beneficiaries and 150 individuals receiving payments under Qualified Domestic Relation Orders (QDROs)

(2) Includes 6,625 retirees and beneficiaries and 148 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. As of July 1, 2023, member contributions increased from 9.3339% to

(Continued)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

Notes to Financial Statements

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10.3489%, which is the negotiated 1.25% over the actuarial annual required contribution rate of 9.0989%. The Authority contribution rate decreased from 26.6561% to 25.9511% as determined by the 2022 Valuation of plan benefits and the executed Pension Agreement effective March 2023. As determined by the 2023 Valuation of plan benefits and the executed Pension Agreement the employer and employee rates as of July 1, 2024 remained the same. On July 1, 2025, member contributions will decrease from 10.3489% to 9.9389% which is the negotiated 1.25% over the actuarial annual required contribution rate of 8.6889%. The Authority contribution rate will be 25.8161% which is the minimum requirement per the Pension Agreement over the actuarial annual required contribution rate of 24.7211%. 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.

On March 31, 2023, the parties to the Pension Agreement, Local 589, Amalgamated Transit Union, AFL-CIO (Union) and the Massachusetts Bay Transportation Authority (MBTA) reached agreement on a new Pension Agreement, which will run through June 30, 2028. The new Pension Agreement creates a two-tier benefit structure for new employees who become Members of the Fund after June 30, 2023 or existing employees who are otherwise eligible to switch into the new system. All other Members and retirees will remain subject to the preexisting benefit structure. Other changes to the Pension Agreement, which is published to the Fund's website, include a COLA increase for eligible retired Members, contribution increases for active Members and the MBTA, changes in disability retirement calculations and the return of Member contributions, and Fund investments in the Pension Reserves Investment Trust (PRIT).

Summary of Changes

- A one-time COLA increase, paid in 2023, was provided to select retirees and beneficiaries.
- The maximum pensionable earnings percentage was increased from 75% to 80%.
- A two-tier benefit structure consisting of the Group A Plan and the Group B Plan was adopted.

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A summary of benefits is as follows:

(i) Normal Retirement Allowance for Group A Plan Members

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 80% of such average annual compensation.

(ii) Normal Retirement Allowance for Group B Plan members

Condition for Allowance

Any member may retire beginning at age 55 with at least 10 years of creditable service.

Amount of Allowance

The normal retirement allowance equals the average of the Member's highest 3 years of pensionable earnings multiplied by the Age Multiplier multiplied by the years of service.

The Age Multiplier is determined using the following table:

Age at Retirement	Percentage
55	1.750%
56	1.875%
57	2.000%
58	2.125%
59	2.250%
60	2.375%
61+	2.460%

A Retired Member's retirement allowance cannot exceed 80% of the average of the Retired Member's highest 3 years of pensionable earnings.

(iii) Early Normal Retirement Allowance for Group A Plan members

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, and 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.

(Continued)

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
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(iv) Early Reduced Retirement Allowance for Group A Plan members

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 ½ of 1% for each month of retirement prior to normal retirement date.

(v) Disability Retirement Allowance for Group A Plan members

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.

(vi) Disability Retirement Allowance for Group B Plan members

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. The Age Multiplier is based on the member retiring at the age of 55 or the member's age at the time of disability retirement (referenced on the Age Multiplier chart above) if the member is over the age of 55.

(vii) Vested Retirement Allowance for Group A Plan members

Condition for Allowance

Any member who has completed 10 years of service and does not receive a refund of his contributions with interest, in the event his employment terminates for reasons other than voluntary quit or discharge for cause.

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Amount of Allowance

The vested retirement allowance is a deferred allowance commencing on the member's normal retirement date and equal to the amount computed as a normal retirement allowance on the basis of the compensation and service to the time of termination.

(viii) Vested Retirement Allowance for Group B Plan members

Condition for Allowance

Any member shall have a fully vested deferred retirement allowance if the member has accrued 10 or more years of service and has not withdrawn their contributions from the Fund.

Amount of Allowance

The vested retirement allowance is computed as the average of the member's highest 3 years of pensionable earnings multiplied by 2.46% multiplied by the years of service; provided, however, that if a vested member retires prior to the age of 65, then the vested member's retirement allowance will be reduced for their entire retirement by 6% per year, or one-half percent each month, of retirement before age 65.

(ix) 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 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 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.

(x) 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

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

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payable to the member if the member had retired as of the date of his 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.

(xi) Return of Contributions

On Account of Termination of Service

In the event of a Group A Plan member's termination of employment for any reason other than death or retirement or a Group B Plan member's nonvested termination, he is paid the amount of his contributions, with interest. Group A Plan members may not elect to keep their contributions in the Fund. Group B Plan members may elect to keep their contributions in the Fund to maintain and resume creditable service in the event they become an employee again in the future.

On Account of Death Prior to Retirement

Upon the death of a member or retired member before his retirement allowance has become effective, the amount of his contributions, with interest, is paid to his beneficiary or estate, unless a survivor benefit is payable.

On Account of Death after Retirement

Upon the death of a retired member, or the survivor of a retired member and his designated beneficiary under an optional benefit, any excess of his contributions at retirement, with interest, over the sum of all retirement allowance payments made is paid to the member's beneficiary or to the survivor's estate.

Our valuation does not include return of contributions on account of death after retirement for current retirees due to negligible impact on the Fund's liabilities.

(xii) Optional Benefits in Lieu of Regular Benefits

At retirement, or on his normal retirement date if prior thereto, any member may elect to convert his allowance into an optional benefit of equivalent actuarial value permitted by the Rules and Regulations.

(xiii) Reinstatement of Creditable Service

If a member's service is interrupted by reason of resignation or dismissal, he has the opportunity upon the completion of 3 years of service after he has been rehired to repay to the Fund all amounts he has withdrawn together with an amount equal to their reasonable earnings. Upon such repayment, the member is to be credited with service for the periods before and after the interruption as though they had been a single period of service.

(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).

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
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(b) Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of additions and deductions during the reporting periods. Actual results could differ from estimates.

(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 ask 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 ask prices deemed best to reflect current value. Gains and losses on sales of investments are determined on the basis of average cost.

Investments in real estate represent the Fund's percent ownership in private real estate funds. 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.

(Continued)

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(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 in 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, 2024 and 2023, 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 ask 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.

(j) Leases (Lessee)

The Fund is a lessee for a noncancellable lease of space and recognizes a lease liability and an intangible right-to-use lease asset.

The Fund initially measured the lease liability at the present value of payments expected to be made during the lease term. Subsequently, the lease liability is reduced by the principal portion of lease payments made. The lease asset is initially measured as the initial amount of the lease liability. Subsequently, the lease asset is amortized into administration expense on a straight-line basis over the lease term.

The lease term expires in 2026. The discount rate used for the calculation of the lease liability is

(Continued)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

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2.50%. Interest Expense from this lease totaled $22,084 and $31,774 for the years ended December 31, 2024 and 2023, respectively.

Future annual lease payments are as follows:

Year ending December 31:	Principal	Interest	Total
2025	$ 415,552	$ 11,943	$ 427,495
2026	250,877	2,103	252,980
Total	$ 666,429	$ 14,046	$ 680,475

(k) Subscription Based Information Technology Agreements (SBITAs)

The Fund evaluated all subscription-based Information Technology platforms and determined that all subscription agreements are of a short term (less than 12 months) nature and would not require an adjustment to record a right-of-use asset or related liability for the years ended December 31, 2024 and 2023, in accordance with GASB 96.

GASB 96 provides an exception for short-term SBITAs. Short-term SBITAs have a maximum possible term under the SBITA contract of 12 months (or less), including any options to extend, regardless of their probability of being exercised. Any subscription payments for short-term SBITAs are recognized as outflows of resources as of December 31, 2024 and 2023.

(l) Reclassification

Certain 2023 balances have been reclassified to conform to the 2024 presentation.

(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, 2024 and 2023, 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.

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The Fund's cash and cash equivalent deposits that are not collateralized are subject to the Federal Deposit Insurance Corporation (FDIC) insurance limits. As of December 31, 2024, $69,378 of the Fund's cash and cash equivalent deposits were in excess of the FDIC insurance limit. The Fund held no un-collateralized cash or cash equivalents in excess of the FDIC insurance limit as of December 31, 2023.

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 returns 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, private credit and hedge funds.

The following was new target asset allocation as of December 31, 2024 as voted by the Board of Trustees in February, 2024 and target asset allocation policy as December 31, 2023:

Asset class	2024	2023
Domestic equity	27 %	24 %
International large cap equity	—	9
International small cap equity	—	2
International equity	12	—
Global/emerging markets	4	8
Fixed income	26	23
Real estate	9	9
Private equity	8	8
Private credit	2	2
Hedge funds	4	5
Hedge funds – opportunistic	2	2
Risk parity/diversified beta	4	6
Cash	2	2
Total	100 %	100 %

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(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, 2024 and 2023:

	2024				
Investment type	Fair value	Less than 1	1-5	6-10	More than 10
Agency debt	$ 7,554,697	—	629,313	4,516,629	2,408,755
U.S. Treasury notes & bonds	103,928,202	5,282,488	51,488,168	28,363,056	18,794,490
Domestic corporate	251,221,680	3,106,665	98,202,427	116,146,148	33,766,440
International corporate	4,402,510	754,974	2,071,712	1,242,959	332,865
Asset Backed:					
CMOs	9,505,538	—	149,707	447,129	8,908,702
Mortgage backed	33,524,509	—	—	736,692	32,787,817
Other	25,915,735	—	2,357,830	5,335,413	18,222,492
	$ 436,052,871	9,144,127	154,899,157	156,788,026	115,221,561

	2023				
Investment type	Fair value	Less than 1	1-5	6-10	More than 10
Agency debt	$ 2,762,771	—	614,074	1,267,305	881,392
U.S. Treasury notes & bonds	91,584,398	1,944,706	39,409,508	30,010,040	20,220,144
Domestic corporate	215,486,535	3,340,982	98,202,827	46,970,590	66,972,136
International corporate	2,723,533	—	355,318	1,850,538	517,677
Asset Backed:					
CMOs	9,460,199	134,407	57,133	231,639	9,037,020
Mortgage backed	33,251,264	—	—	522,529	32,728,735
Other	23,817,204	3,151	2,056,708	3,924,141	17,833,204
	$ 379,085,904	5,423,246	140,695,568	84,776,782	148,190,308

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.

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, 2024 and 2023 are and continue to be highly sensitive to changes in interest rates.

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(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, 2024 and 2023 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:

	2024								
Investment type	Fair value	AAA	AA	A	BBB	BB	B	CCC**	Not Rated
Agency debt	7,554,697	—	2,244,492	461,630	781,870	1,973,066	290,985	—	1,802,654
Domestic corporate	251,221,680	50,844,515	19,464,865	18,723,058	73,611,967	30,184,688	53,839,537	2,152,844	2,400,206
International	4,402,510	656,975	—	105,774	—	1,381,442	—	—	2,258,319
Asset backed:									
CMOs	9,505,538	1,968,983	236,512	119,186	86,332	73,858	—	—	7,020,667
Mortgage backed	33,524,509	—	—	—	—	—	—	—	33,524,509
Other	25,915,735	4,663,648	83,238	1,370,864	5,299,729	168,837	83,852	—	14,245,567
Total credit securities risk	332,124,669	58,134,121	22,029,107	20,780,512	79,779,898	33,781,891	54,214,374	2,152,844	61,251,922
U.S. government fixed income securities*	103,928,202								
Total fixed income securities	$ 436,052,871								

	2023								
Investment type	Fair value	AAA	AA	A	BBB	BB	B	CCC**	Not Rated
Agency debt	$ 2,762,771	—	2,364,287	—	—	—	—	—	398,484
Domestic corporate	215,486,535	49,776,255	2,124,627	18,774,149	64,093,157	14,313,250	61,781,151	2,283,097	2,340,849
International	2,723,533	—	—	—	619,239	1,598,659	—	—	505,635
Asset backed:									
CMOs	9,460,199	1,372,727	221,431	246,240	—	71,362	—	—	7,548,439
Mortgage backed	33,251,264	—	—	—	—	—	—	—	33,251,264
Other	23,817,204	4,737,809	89,153	1,618,700	3,589,982	105,364	107,524	—	13,568,672
Total credit securities risk	287,501,506	55,886,791	4,799,498	20,639,089	68,302,378	16,088,635	61,888,675	2,283,097	57,613,343
U.S. government fixed income securities*	91,584,398								
Total fixed income securities	$ 379,085,904								

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

** The rating associated with this investment grade can be between C to CCC.

(Continued)

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(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 with the exception of commingled funds, at fair value, that exceed 5% of the Fund's total investments as of December 31, 2024 and 2023. 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 19.0% 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, 2024 and 2023 are presented on the following tables:

		2024			
Currency		**Short-Term**	**Fixed Income**	**Equity**	**Total**
Canadian Dollar (CAD)	$	152,662	656,975	—	809,637
Euro (EUR)		—	618,922	—	618,922
Indonesian Rupiah (IDR)		—	1,067,556	—	1,067,556
Pound Sterling (GBP)		—	1,190,763	—	1,190,763
South African Rand (ZAR)		—	868,294	—	868,294
International equity pooled funds (various currencies)		—	—	265,188,533	265,188,533
Total securities subject to foreign currency risk		152,662	4,402,510	265,188,533	269,743,705
United States dollars (securities held by international investment managers)		—	—	137,840	137,840
Total International Investment Securities	$	152,662	4,402,510	265,326,373	269,881,545

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		2023			
Currency		Short-Term	Fixed Income	Equity	Total
Brazilian Real	$	—	748,564	—	748,564
Canadian Dollar		85,635	—	—	85,635
Euro		(55)	444,408	—	444,353
Indonesian Rupiah		—	505,635	—	505,635
Mexican Peso		—	507,249	—	507,249
South African Rand		—	517,677	—	517,677
International equity pooled funds (various currencies)		—	—	265,554,999	265,554,999
Total securities subject to foreign currency risk		85,580	2,723,533	265,554,999	268,364,111
United States dollars (securities held by international investment managers		—	—	3,642,882	3,642,882
Total International Investment Securities	$	85,580	2,723,533	269,197,881	272,006,993

(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, real estate investment trusts 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, 2024 and 2023. 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. Since loans are terminable at will, loan durations do not generally match the duration of the investments made with the cash collateral.

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

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offsetting the cash collateral recorded as an asset. The cash collateral as of December 31, 2024 and 2023 was $11,379,503 and $22,392,120 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, 2024 and 2023, the fair value of loaned securities outstanding, included in investments, was approximately $11,118,866 and $21,834,761 respectively.

(h) Commitments

At December 31, 2024 and 2023, the Fund had contractual commitments, inclusive of PRIT commitments, to provide approximately $131.6 and $107.9 million, respectively, of additional funding for alternative investments, including private equity, private credit, and real estate.

(i) Money-Weighted 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, 2024 and 2023 was 7.36% and 8.73%, 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 the 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.

(Continued)

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The following tables' set forth by fair value hierarchy level, the Fund's assets carried at fair value on December 31, 2024 and 2023:

		Fair value measurements using:		
	Total at December 31, 2024	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	$ 7,567,229	7,567,229	-	-
International cash and equivalents	152,662	152,662	-	-
STIF-type instrument	45,280,464	45,280,464	-	-
Treasury bill	-	-	-	-
Total cash equivalents	53,000,355	53,000,355	-	-
U.S. equities:				
Common stock	209,212,588	209,212,588	-	-
Depository receipts	6,753,739	6,753,739	-	-
Mutual funds	192,079,327	192,079,327	-	-
Preferred stock	41,108	41,108	-	-
Real estate investment trust	1,400,017	1,400,017	-	-
Total U.S. equities	409,486,779	409,486,779	-	-
International equities - common stock	76,272,716	76,272,716	-	-
Fixed income:				
Agency debt	7,554,697	-	7,554,697	-
U.S. treasury notes and bonds	103,928,202	-	103,928,202	-
Domestic corporate	215,779,075	-	215,779,075	-
Asset backed:				
CMO	9,505,538	-	9,505,538	-
Mortgage-backed	33,524,509	-	33,524,509	-
Other asset backed	25,915,735	-	25,915,735	-
Total U.S. fixed income	396,207,756	-	396,207,756	-
International fixed income - bonds	4,402,510	-	4,402,510	-
Total investments by fair value level	939,370,116	538,759,850	400,610,266	-
Investments measured at net asset value (NAV):				
Hedge fund of funds	86,882,310			
Private equity funds	134,993,445			
Private real estate funds	111,488,126			
Investments measured at NAV	333,363,881			
Other investments at fair value:				
PRIT domestic equity - common stock	107,641,485			
PRIT international equities - common stock	188,915,817			
PRIT fixed income - domestic corporate	35,442,605			
PRIT hedge funds	84,122,661			
PRIT private equity funds	52,727,608			
PRIT real estate funds	46,532,971			
Other investments at fair value:	515,383,147			
Total investments	$ 1,788,117,144			

(Continued)

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		Fair value measurements using:		
	Total at December 31, 2023	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	$ 6,113,532	6,113,532	-	-
International cash and equivalents	85,580	85,580	-	-
STIF-type instrument	41,975,528	41,975,528	-	-
Treasury bill	10,239,008	10,239,008	-	-
Total cash equivalents	58,413,648	58,413,648	-	-
U.S. equities:				
Common stock	184,279,529	184,279,529	-	-
Depository receipts	6,332,533	6,332,533	-	-
Mutual funds	307,404,392	307,404,392	-	-
Preferred stock	448,413	448,413	-	-
Real estate investment trust	2,610,371	2,610,371	-	-
Total U.S. equities	501,075,238	501,075,238	-	-
International equities - common stock	219,570,879	219,570,879	-	-
Fixed income:				
Agency debt	2,762,771	-	2,762,771	-
U.S. treasury notes and bonds	91,584,398	-	91,584,398	-
Domestic corporate	215,486,535	-	215,486,535	-
Asset backed:				
CMO	9,460,199	-	9,460,199	-
Mortgage-backed	33,251,264	-	33,251,264	-
Other asset backed	23,817,204	-	23,817,204	-
Total U.S. fixed income	376,362,371	-	376,362,371	-
International fixed income - bonds	2,723,533	-	2,723,533	-
Total investments by fair value level	1,158,145,668	779,059,765	379,085,904	-
Investments measured at net asset value (NAV):				
Hedge fund of funds	82,446,065			
Private equity funds	140,920,937			
Private real estate funds	122,493,031			
Investments measured at NAV:	345,860,033			
Other investments at fair value:				
PRIT international equities - common stock	45,984,120			
PRIT hedge funds	73,171,290			
PRIT private equity funds	40,834,405			
PRIT real estate funds	17,298,979			
Other investments at fair value:	177,288,794			
Total investments	$ 1,681,294,495			

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Commingled funds are typically structured as an investment vehicle created by the Investment Manager to execute a specific investment strategy. Some investment strategies are only pursued by commingled accounts. Mutual funds and/or other types of commingled investment vehicles, including, but not limited to, Alternative Investments, may provide lower costs and better diversification than can be obtained with a separate account that pursues the same investment objectives. The fair value of the hedge fund of funds, private equity funds and real estate funds are not rated funds. The fair values of these funds are based on net asset value calculated in accordance with the general partner's fair valuation policy as of the measurement date and are annually audited separately.

The PRIT domestic equity, international equity, domestic corporate, hedge, real estate and private equity funds are external investment pools that are not registered with the Securities and Exchange Commission, but are subject to oversight by the Pension Reserves Investment Management Board (the PRIM Board). The PRIM Board was created by legislation to provide general supervision of the investments and management of PRIT. The PRIT domestic equity, international equity, domestic corporate, hedge, real estate, and private equity funds are not rated funds. The fair value of the PRIT domestic equity, international equity, domestic corporate, hedge, real estate, and private equity funds are based on unit value as reported by management of the PRIT funds. The PRIT funds issue separately available audited financial statements with a year end of June 30. The Fund is required to provide a 24-hour redemption notice for the PRIT domestic equity, international equity, domestic corporate and real estate segmentations, which are paid out on the first business day of each month. The PRIT Private Equity fund is not redeemable until notified by the PRIM Board. The PRIT hedge fund provides quarterly liquidity with 30 - 90-day notice. The following represents the significant investment strategies and terms on which the Fund may redeem investments for those investments measured at the NAV (or its equivalent) as a practical expedient:

	Fair Value December 31, 2024	Fair Value December 31, 2023	Total Unfunded Commitments as of December 31, 2024	Redemption Frequency if Currently Eligible	Redemption Notice Period
Hedge fund of funds					
Diversified beta[1]	$ 54,381,993	$ 51,932,671	$ -	monthly	15-30 days
Opportunistic hedge fund[2]	32,500,317	30,513,394	$ 39,608,143	N/A	N/A
Private equity funds[3]	134,993,445	140,920,937	$ 37,022,253	N/A	N/A
Private real estate funds					
Open-ended real estate funds[4]	100,591,135	108,574,014	$ -	quarterly	30 days - 1 year
Closed-end real esate funds[5]	10,896,991	13,919,017	$ -	N/A	N/A
Total Investments Measured at NAV	**$ 333,363,881**	**$ 345,860,033**	**$ 76,630,396**		

1 This category includes one diversified beta investment manager who utilizes a risk premium capture strategy that seeks to generate returns by investing in equity, bond and commodity markets using a risk-balanced investment process. The manager provides monthly liquidity with 15 - 30-day notification.

2 This category includes one opportunistic hedge fund manager who is not subject to redemption and is normally returned through distributions as a result of the liquidation of the underlying assets over a period of approximately three to seven years.

3 This type includes private equity funds that invest in nonmarketable securities of private companies, which ultimately may become public in the future and whose strategies include buyout, growth equity, venture, mezzanine debt, distressed debt, secondary fund of funds or special situations. Generally, each fund in this category may not be subject to redemption and is normally returned through distributions as a result of liquidation of the underlying assets over a weighted average period of approximately nine years.

(Continued)

[4] This category includes six open-ended real estate funds that invest directly in real estate and real estate related assets, including retail, industrial, office, residential and hotels. Investments in this category can be redeemed quarterly upon 30 days to one-year notice.

[5] This category includes funds that invest directly in real estate and real estate related assets, including retail, industrial, office, residential and hotels. Generally, investment in each fund in this category may not be subject to redemption and is normally returned through distributions as a result of the liquidation of the underlying assets over a weighted average period of approximately seven or more years.

(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, 2024 and 2023 was $45,280,464 and $41,975,528 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, 2024 and 2023 was $49,854,262 and $48,705,743 respectively. The total value of AFL-CIO Building Investment Trust at December 31, 2024 and 2023 was $9,928,551 and $9,890,903 respectively.

(6) Net Pension Liability

The components of the net pension liabilities of the Fund as of December 31, 2024 and 2023 are shown as follows (amounts in thousands):

		2024	2023
Total pension liability	$	3,422,653	3,303,364
Plan fiduciary net position		(1,801,744)	(1,694,401)
Fund's net pension liability	$	1,620,909	1,608,963
Plan fiduciary net position as a percentage of total pension liability		52.64 %	51.29 %

Actuarial Assumptions

The total pension liability was determined by an actuarial valuation as of December 31, 2024 and 2023, using the following actuarial assumptions:

- As of December 31, 2024, a table of increases based on years of service, with rates of increase declining from 14% per year for the newly hired to 2.75% per year with 15 or more years of service
- Investment rate of return compounded annually in 2024 and 2023 of 7.25% per annum
- Inflation rate of 2.75%

The PRI-2012 Amount Weighted Blue Collar Mortality Tables with fully generational projection using Scale MP-2021 are used for all active participants. 101.1% of the PRI-2012 Amount Weighted Blue Collar Post Commencement Tables with fully generational projection using Scale MP-2021 are used for all retirees and beneficiaries preceding their related member's death. 98.3% of the PRI-2012 Amount

(Continued)

Weighted Blue Collar Contingent Survivor Tables with fully generational projection using Scale MP-2021 are used for all beneficiaries following the death of their related member. The PRI-2012 Amount Weighted Total Dataset Disability Tables with fully generational projection using Scale MP-2021 are used for the period after disability retirement. Among pre-retirement deaths, 7.50% are assumed to qualify for accidental death benefits.

The actuarial assumptions used in the December 31, 2024 valuation were based on the results of an actuarial experience study conducted in 2023 for the period from January 1, 2018, through December 31, 2022. 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, 2024, are summarized in the following table:

	Target asset allocation		Long-term expected real rate of return	
Asset class	**2024**	**2023**	**2024**	**2023**
Equity				
US Equity	27 %	— %	6.19 %	— %
US Large Cap	— %	17 %	— %	5.24 %
US Small Cap	— %	7 %	— %	8.13 %
Non-US Equity				
Global Equity	— %	4 %	— %	5.65 %
Emerging Markets Equity	4 %	4 %	9.10 %	8.62 %
Developed International Equity	12 %	11 %	6.43 %	7.10 %
Total Equity	43 %	43 %		
Fixed Income				
Global Aggregate	10 %	8 %	2.38 %	2.19 %
Mortgage-Backed Securities	3 %	3 %	2.43 %	2.08 %
Global Multi Sector	7 %	6 %	1.07 %	1.18 %
US TIPS	3 %	3 %	2.49 %	2.22 %
Bank Loans	3 %	3 %	6.36 %	6.36 %
Total Fixed Income	26 %	23 %		
Alternatives				
Private Equity	8 %	8 %	9.36 %	8.59 %
Private Credit	2 %	2 %	5.85 %	6.56 %
Real Estate	9 %	9 %	4.14 %	3.87 %
Multi Asset Class	4 %	6 %	3.18 %	4.27 %
Hedge Funds FOF & Hedged Equity	6 %	7 %	3.18 %	4.13 %
Total Alternatives	29 %	32 %		
Cash	2 %	2 %	0.59 %	0.64 %

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 2.47%.

(Continued)

(a) Discount Rate

The discount rate used to measure the total pension liability was 7.25%. The projection 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 these assumptions, the fiduciary net position was projected to be available to make all projected future benefit payments to current Fund members. 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 7.25% and the S&P Municipal Bond 20 Year High Grade Rate Index, whose yield to maturity was 4.28% as of December 31, 2024. We believe these assumptions do not significantly differ from what we deem reasonable for the purposes of the measurements required by GASB 67.

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

The following presents the net pension liability, calculated using the discount rate of 7.25%, as well as what the Fund's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.25%) or 1-percentage-point higher (8.25%) than the current rate: (amounts in thousands):

		1% Decrease (6.25%)	Current discount rate (7.25%)	1% Increase (8.25%)
2024 Net pension liability	$	1,967,754	1,620,909	1,325,642
2023 Net pension liability	$	1,941,656	1,608,963	1,325,603

(7) Subsequent Events

There have been no other subsequent events through June 20, 2025 the date that the Fund's financial statements were available to be issued, that require recognition or disclosure.

REQUIRED SUPPLEMENTARY INFORMATION

(Unaudited)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios
(Unaudited)

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
Total Pension Liability										
Service cost	71,380,694	62,188,799	55,162,629	55,417,684	52,008,968	47,942,711	46,101,006	31,850,127	31,896,560	37,305,333
Interest	236,014,159	225,168,408	220,640,668	217,508,956	214,772,564	214,112,586	207,497,686	204,779,603	195,768,057	191,392,028
Differences between expected and actual experience	54,899,405	65,179,233	66,601,348	1,811,509	(7,346,171)	(3,179,975)	11,599,381	44,627,096	90,067,566	31,325,149
Changes of assumptions	-	35,546,454	(45,499,300)	(3,389,843)	-	69,299,287	43,926,927	128,688,470	-	(6,762,751)
Benefit Payments	(243,005,828)	(252,189,933)	(231,138,239)	(224,767,671)	(225,422,340)	(223,864,973)	(221,710,054)	(212,814,757)	(197,561,539)	(188,906,232)
Net change in total pension liability	119,288,430	135,892,961	65,767,106	46,580,635	34,013,021	104,309,636	87,414,946	197,130,539	120,170,644	64,353,527
Total pension liability-beginning of year	3,303,364,082	3,167,471,121	3,101,704,015	3,055,123,380	3,021,110,359	2,916,800,723	2,829,385,777	2,632,255,238	2,512,084,594	2,447,731,057
Total pension liability-ending (a)	3,422,652,512	3,303,364,082	3,167,471,121	3,101,704,015	3,055,123,380	3,021,110,359	2,916,800,723	2,829,385,777	2,632,255,238	2,512,084,594
Change in fiduciary net position:										
Contributions - employer	162,153,826	135,226,433	129,973,295	123,493,762	116,285,928	103,263,763	92,013,124	83,382,882	77,239,279	73,373,672
Contributions - employee	64,660,810	50,735,073	45,511,253	43,224,002	40,774,027	36,366,108	32,606,337	29,775,344	27,791,543	26,510,946
Net investment (loss) income	127,805,226	142,700,465	(257,254,990)	232,417,541	228,670,823	253,730,990	(52,072,879)	221,690,618	86,782,343	4,711,246
Benefit payments	(243,005,828)	(252,189,933)	(231,138,239)	(224,767,671)	(225,422,340)	(223,864,973)	(221,710,054)	(212,814,757)	(197,561,539)	(188,906,232)
Administrative expenses	(4,271,610)	(4,619,756)	(4,484,766)	(4,366,485)	(4,511,375)	(5,046,775)	(4,317,624)	(4,463,775)	(6,493,777)	(5,808,086)
Net change in fiduciary net position	107,342,424	71,852,282	(317,393,447)	170,001,149	155,797,063	164,449,113	(153,481,096)	117,570,312	(12,242,151)	(90,118,454)
Fund fiduciary net position-beginning of year	1,694,401,260	1,622,548,978	1,939,942,425	1,769,941,276	1,614,144,213	1,449,695,100	1,603,176,196	1,485,605,884	1,497,848,035	1,587,966,489
Fund fiduciary net position - end of year (b)	1,801,743,684	1,694,401,260	1,622,548,978	1,939,942,425	1,769,941,276	1,614,144,213	1,449,695,100	1,603,176,196	1,485,605,884	1,497,848,035
Fund's net pension liability-ending (a)-(b)	1,620,908,828	1,608,962,822	1,544,922,143	1,161,761,590	1,285,182,104	1,406,966,146	1,467,105,623	1,226,209,581	1,146,649,354	1,014,236,559
Fund fiduciary net position as a percentage of the total pension liability	52.64%	51.29%	51.23%	62.54%	57.93%	53.43%	49.70%	56.66%	56.44%	59.63%
Covered payroll	661,958,698	560,824,908	496,467,531	458,857,189	460,921,559	436,828,077	425,862,201	428,830,122	446,740,427	443,237,899
Net pension liability as a percentage of covered payroll	244.87%	286.89%	311.18%	253.19%	278.83%	322.09%	344.50%	285.94%	256.67%	228.82%

See accompanying independent auditors' report.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
RETIREMENT FUND

Required Supplementary Information
Schedule of Changes in Net Pension Liability and Related Ratios
(Unaudited)

Change of Assumptions:

2024: No change of assumptions.

2023: No change of assumptions.

2022: Assumption changes to the salary scale, mortality rates, termination rates, and retirement rates were made according to the experience study completed in 2023. This decreased the total pension liability by $45.5 million.

2021: Participants who have been receiving Workers' Compensation benefits for five or more years are assumed to never receive a Massachusetts Bay Transportation Authority Retirement Fund pension benefit. This decreased the actuarial accrued liability by $2.76 million.

Participants who are active, but did not contribute to the plan in 2021, are assumed to remain non-contributing to the remainder of their employment and to receive only a refund of their contributions to the Fund with interest. This decreased the actuarial accrued liability by $0.63 million.

2020: No change of assumptions.

2019: Discount rate decreased from 7.50% to 7.25% resulting in an increased net pension liability totaling $69.3 million.

2018: Salary scale decreased the net pension liability by $(59.6) million, mortality rates increased the net pension liability by $6.0 million, termination rates increased the net pension liability by $9.4 million, and retirement rates increased the net pension liability by $88.1 million, resulting in increased net pension liability totaling $43.9 million.

2017: Discount rate decreased from 7.75% to 7.50% resulting in an increased net pension liability totaling $128.7 million.

See accompanying independent auditor's report.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

Required Supplementary Information
Schedule of Investment Returns
(Unaudited)

Annual money-weighted rate of return, net of investment expense

Year	Money-Weighted Rate of Return
2024	7.36 %
2023	8.73
2022	(9.26)
2021	13.23
2020	14.22
2019	17.67
2018	(3.37)
2017	17.79
2016	5.88
2015	0.65

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
2024	$162,153,826	$162,153,826	100.00 %	$661,958,698	24.50 %
2023	131,307,539	131,307,539	100.00	560,824,908	24.11
2022	126,389,486	129,973,295	102.84	496,467,531	26.18
2021	122,034,414	123,493,762	101.20	458,857,189	26.91
2020	116,285,928	116,285,928	100.00	460,921,559	25.23
2019	103,263,763	103,263,763	100.00	436,828,077	23.64
2018	92,013,124	92,013,124	100.00	425,862,201	21.61
2017	83,382,882	83,382,882	100.00	428,830,122	19.44
2016	77,239,279	77,239,279	100.00	446,740,427	17.29
2015	73,359,498	73,373,372	100.02	457,360,379	16.04

See accompanying independent auditors' report.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY RETIREMENT FUND

Notes to Required Supplementary Information

(Unaudited)

Actuarial Assumption and Methods Used to Determine Contribution Rates

- Actuarially determined contributions are calculated as of the December 31 preceding by six months the start of the fiscal year in which contributions are made. For example, the contribution calculated in the December 31, 2024 actuarial valuation are to be made during the period from July 1, 2025, to June 30, 2026.
- The methods and assumptions used to calculate the actuarially determined contribution in the December 31, 2024 actuarial valuation are shown in Section III. For funding purpose, an allowance of 1.00% of annual compensation of active members below normal retirement age is included in the total required contribution to cover expenses.
- Salary – As of December 31, 2024 and 2023, a table of increases based on years of service, with rates of increase declining from 14% per year for the newly hired to 2.75% per year with 15 or more years of service.
- Actuarial cost method – Entry Age Normal, Level Percentage of Pay
- Amortization method – Closed period (specified below); installments increase at the rate of 4% per year
- Remaining amortization period – 14 years (2024 valuation), 15 years (2023 valuation)
- Asset Valuation method – Five-year phase-in smoothing method
- Investment rate of return – 7.25% net of pension plan investment expense.
- Retirement Age – Probabilities of retirement are based on table that reflects both age and service
- Mortality - The PRI-2012 Amount Weighted Blue Collar Mortality Tables with fully generational projection using Scale MP-2021 are used for all active participants. 101.1% of the PRI-2012 Amount Weighted Blue Collar Post Commencement Tables with fully generational projection using Scale MP-2021 are used for all retirees and beneficiaries preceding their related member's death. 98.3% of the PRI-2012 Amount Weighted Blue Collar Contingent Survivor Tables with fully generational projection using Scale MP-2021 are used for all beneficiaries following the death of their related member. The PRI-2012 Amount Weighted Total Dataset Disability Tables with fully generational projection using Scale MP-2021 are used for the period after disability retirement. Among pre-retirement deaths, 7.50% are assumed to qualify for accidental death benefits.

Schedule of Administrative Expenses

As of December 31,		2024	2023
Wages and Benefits			
Staff Salaries *	$	1,235,833	1,154,989
Retiree Payroll		115,074	128,695
Benefits		384,208	375,984
Total Personnel Services	**$**	**1,735,114**	**1,659,668**

*Interim Executive Director Salary = $196,000

Professional Services			
Actuarial	$	143,265	294,708
Audit		158,653	151,401
Legal Counsel		1,053,797	1,116,641
Disability Medical Exams		94,025	89,925
Total Professional Services	**$**	**1,449,740**	**1,652,675**
Communication			
Newsletter / Annual Report	$	20,268	29,317
Postage		11,231	6,446
Education and Training		49,438	41,567
Manager Meetings		12,154	6,158
Member Services		8,299	7,417
Total Communication	**$**	**101,390**	**90,904**
Miscellaneous			
General and Administrative	$	38,203	38,299
Business Insurance		262,713	248,268
Rent & GASB 87 Adoption		429,593	449,410
Technological Support		308,797	276,143
Other		(53,940)	0
Total Miscellaneous	**$**	**985,366**	**1,012,120**
Total Administrative Expenses	**$**	**4,271,610**	**4,415,368**

See accompanying Independent Auditors' Report

Schedule of Investment Expenses and Payments to Consultants

As of December 31,		2024	2023
Schedule of Investment Expenses			
Investment Management Fees	$	2,911,897	3,275,260
Investment Consultant Fees		344,000	344,000
Communications / Governmental Services		155,790	157,160
Custodial Fees		627,949	688,469
Total Investment Expenses	**$**	**4,039,636**	**4,464,889**
Schedule of Payments to Consultants*			
Independent Auditors	$	158,653	151,401
Actuary		143,265	294,708
Legal		1,053,797	1,116,641
Total Payments to Consultants	**$**	**1,355,715**	**1,562,750**

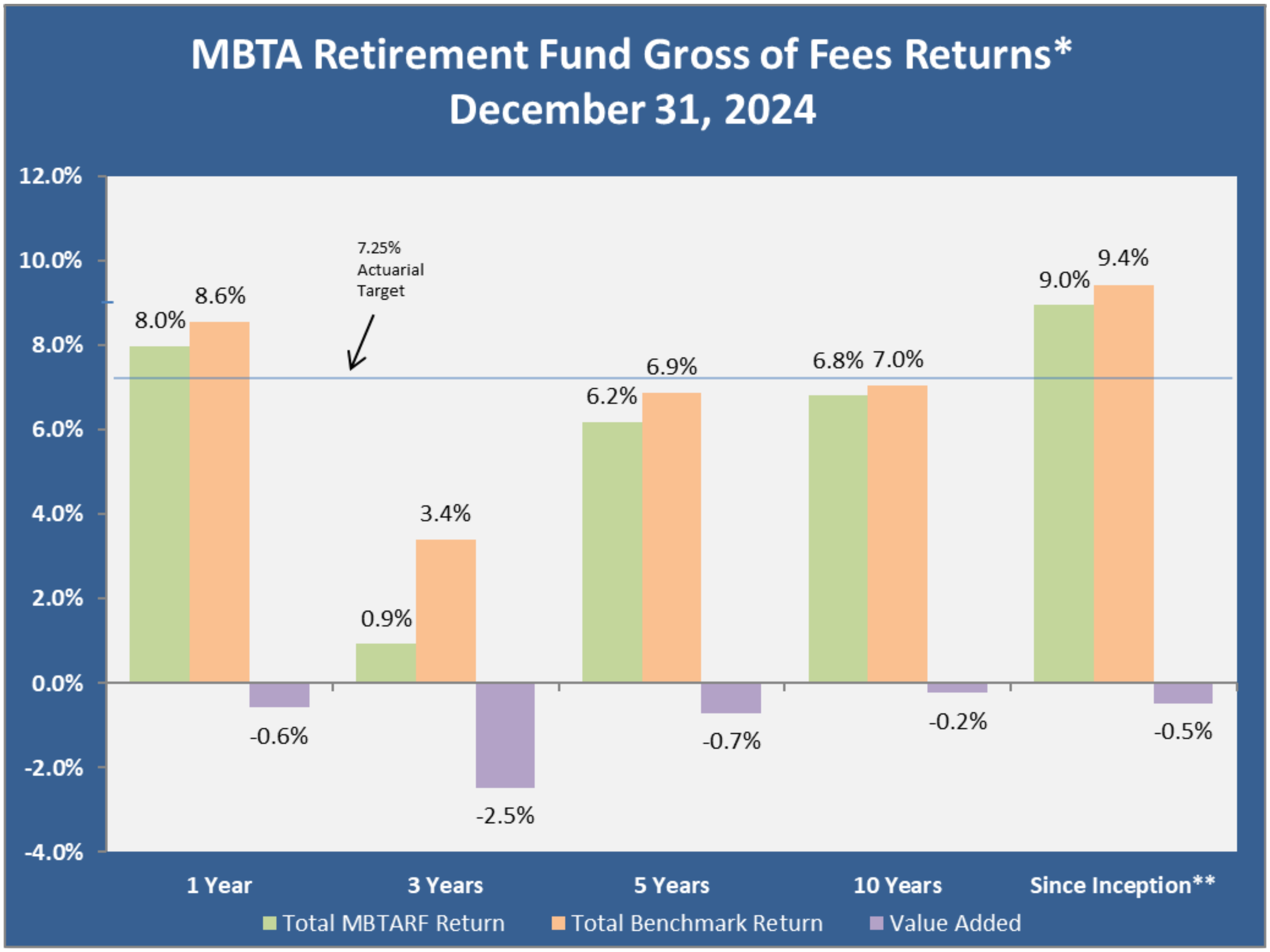
*These payments are presented for analytical purposes; each amount is already included in schedules of administrative or investment expenses

See accompanying Independent Auditors' Report

INVESTMENT SECTION

(Unaudited)

2024 Investment Results



** Performance inception date of January 1, 1982

Report on Investment Activity

The Massachusetts Bay Transportation Authority Retirement Fund (the “Fund” or “MBTARF”) was created to provide retirement benefits for certain employees of the Massachusetts Bay Transportation Authority (the “Authority”). The Fund was established in 1948 pursuant to a Trust Agreement between local 589 ATU AFL-CIO (the “Union”) and the Authority, that is governed by the terms of a separately negotiated Pension Agreement between the Authority and the Union. The MBTA Retirement Board is responsible for the general oversight of the MBTA Retirement Fund. The primary goal of the Fund’s investment program is to meet or exceed the Fund’s actuarial target rate of return to maintain and improve upon its funded status. The Board of the Fund seeks to maximize return on investments through a diverse group of investment managers with an acceptable level of risk.

The Investment Section was prepared by the MBTA Retirement Fund Finance Staff with assistance of the consultant, Segal Marco Advisors. The Fund’s investment portfolios are presented at fair value, which is appropriate industry standard. The accompanying financial statements were prepared in accordance with U.S. generally accepted accounting principles (GAAP). The Fund adheres to the reporting requirements established by the Governmental Accounting Standards Board (GASB).

The investment performance information provided in this section of the Annual Comprehensive Financial Report was calculated by the Fund’s custodian, State Street Bank & Trust Company, using a time-weighted rate of return based on the fair value of assets.

As of December 31, 2024, the Board employed 18 public markets investment managers, 14 private equity market managers, 4 private credit managers, 8 real estate managers, 1 hedge fund-of-funds manager, 1 opportunistic hedge fund manager and 1 risk parity/diversified beta manager. The Fund had approximately $1,788.1 million in assets under management as of December 31, 2024. Each investment manager operates within guidelines that are established by the Board and consultant and are outlined in detailed investment management or partnership agreements.

The Investment Policy statement adopted by the Fund Board requires that the Board and the Executive Director review the asset allocation at least quarterly to determine if the asset allocation is consistent with the exposure ranges described. A change in the Fund’s liability structure, funded status or long-term investment prospects may also trigger a revision of the asset allocation. The Interim-Executive Director will direct investment managers to transfer funds to rebalance the asset allocation as necessary and shall use appropriate judgment and care when rebalancing portfolios.

Current Allocation as of 12/31/2024

Asset Class	12/31/2024 Allocation (%)	Target (%)
Equities	**43.7**	**43**
US Equity	28.9	27
International Equity	12.1	12
Emerging Markets Equity	2.7	4
Fixed Income	**24.4**	**26**
TIPS	3.0	3
Core Fixed Income	8.8	10
Bank Loans	2.7	3
Global Multi Sector	7.1	7
Mortgages	2.8	3
Alternative Investments	**28.9**	**29**
Multi-Asset Class Solutions (MACS)	3.0	4
Private Equity	8.8	8
Private Credit	1.7	2
Hedge Fund of Funds	4.7	4
Real Estate - Core	7.1	6
Real Estate - Value Add	1.7	3
Opportunistic	1.8	2
Cash*	3.0	2

*Investment manager's cash holdings are reported in cash and cash equivalents

The Year in Review – The World Markets

Fiscal Year 2024 Global Markets Overview

First Quarter 2024:

The quarterly growth of the U.S. GDP decelerated as recession fears persisted. The economy was still facing numerous challenges, including sustained higher interest rates, multiple geopolitical issues largely due to the looming presidential election and moderating inflation. Yet, there was no shortage of economic resilience due to a solid labor market with unemployment near historical lows, and strong consumer spending as hourly earnings continued to be on the rise.

In the first quarter of 2024, U.S. equities surged (+10%) along with investors' enthusiasm, given stronger than expected growth in a resilient economy with higher interest rates. The S&P 500 gained over 10% in the first quarter, while large cap stocks (+10.3%) led the way with mid cap (+8.6%) and small cap (+5.2%) both posting positive returns. Large cap growth (+11.4%) continued its outperformance over large cap value (+9.0%). All sectors in the S&P 500 Index generated positive returns in the first quarter except for Real Estate (0.6%), which underperformed due to higher interest rates and negative valuations in many sectors. Private Equity returns remain positive over all trailing periods during the first quarter.

International equities increased given expectations on lower interest rates, despite slowing growth in most developed economies. Signs of improving business activity in Europe and continued optimism over demand for AI related technologies boosted positive returns (+5.2%) for the quarter. Emerging market equities also increased despite continued concerns of weakness in the dominant Chinese economy, which continued to see diminishing returns as ongoing tension between China and the U.S. weighed on investor sentiment. Emerging Market equities (+2.4%) lagged U.S. Equities (+10.6%) and International Developed equities (+5.8%) during the quarter. U.S. fixed income declined as yields rose, and spreads mostly narrowed on expectations of fewer 2024 rate cuts. The Federal Reserve appeared willing to hold off on rate cuts until further positive indicators of inflation reduction progress were available. The U.S. Aggregate Index was negative during the first quarter while the U.S. Corporate High Yield had the strongest fixed income performance (+1.47%) for the quarter.

Second Quarter 2024:

U.S. GDP growth expanded at a higher-than-expected annualized growth rate of 2.8%. The consumer confidence index weakened slightly in June despite continued worries about what lies ahead with its elevated interest rates and a challenging political environment in a fast-

(Continued)

approaching presidential election. Private equity and real estate continued their first quarter trends, as PE remained positive (+2.2%) across all trailing periods and real estate continued to lag behind.

In the second quarter of 2024, U.S. equities moderated after a sharp recent rise, given stronger than expected growth in a resilient economy with higher interest rates. The U.S. market demonstrated continued strength, as the S&P 500 gained 4.3% for the quarter. Large cap stocks (+3.6%) continued to lead the way as mid cap (-3.4%) and small cap (-3.3%) stocks posted negative returns. Growth continues its outperformance over value in large caps as the Russell 1000 Growth Index posted +8.3% compared to the value index at -2.2%.

International equities declined given expectations on lower interest rates and slowing growth in most developed economies. International equities continued to trail the U.S. (+4.3%) during the second quarter and dipped with a -0.4% return over the quarter. Emerging market equities increased despite continued concerns of weakness in the dominant Chinese economy that rebounded slightly, which grew by a lower-than-expected 4.7% given various policy changes to stimulate a rebound in its challenged economy. Emerging Markets (+5.0%) led the global markets, followed by the U.S. markets (+4.3%), showing signs of declaration this quarter.

U.S. fixed income was flat as yields fell, and spreads narrowed on expectations of fewer 2024 rate cuts that may occur later in the year. International fixed income declined as spreads widened based on divergent interest rate policies, moderating inflation and geopolitics. Similar to the prior quarter, hedge funds were modestly positive overall driven by emerging markets and relative value strategies.

Third Quarter 2024:

U.S. GDP growth expanded at a lower-than-expected rate of 2.8%, driven by consumer and government spending. The economy still faced numerous challenges, including sustained higher interest rates despite an initial central bank rate cut in September, multiple geopolitical issues and moderating inflation. Despite these challenges, nearly all asset classes saw positive returns as optimism over rate cuts drove the economy in the third quarter.

In the third quarter of 2024, U.S. equities surged (+5.9%) given stronger than expected growth in a resilient economy that saw the Fed begin to finally lower interest rates. Small cap stocks (+9.3%) rallied over the third quarter, bouncing back from second quarter negative returns, and led the U.S. market over mid cap (+9.2%) and large cap (+6.1%) stocks. Investor sentiment shifted as expectations for interest rate cuts changed over the quarter and the Fed announced a 50-basis

(Continued)

point reduction, creating a strong environment for small cap stocks. Value outperformed growth in both large and small caps, a reversal from growth's outperformance over recent quarters. The Russell 1000 Value Index was up +9.4% compared to the growth index at +3.2%. Similarly, the Russell 2000 Value Index was up +10.2% versus the growth index at +8.4%.

International equities surged with a weakened U.S. dollar, despite slowing growth and divergent interest rate policies. Developed international markets (+7.3%) were positive for the quarter, recovering from negative returns during the second quarter. Emerging market equities (+8.7%) surged with a weakened U.S. dollar and various stimulus measures in the Chinese economy. U.S. fixed income rose as yields fell aggressively as the Fed finally lowered interest rates. All U.S. Aggregate Index sectors generated positive returns for the quarter. Hedge funds had another positive quarter. Real estate returns were slightly positive with slowing write-downs and continued low transaction volumes.

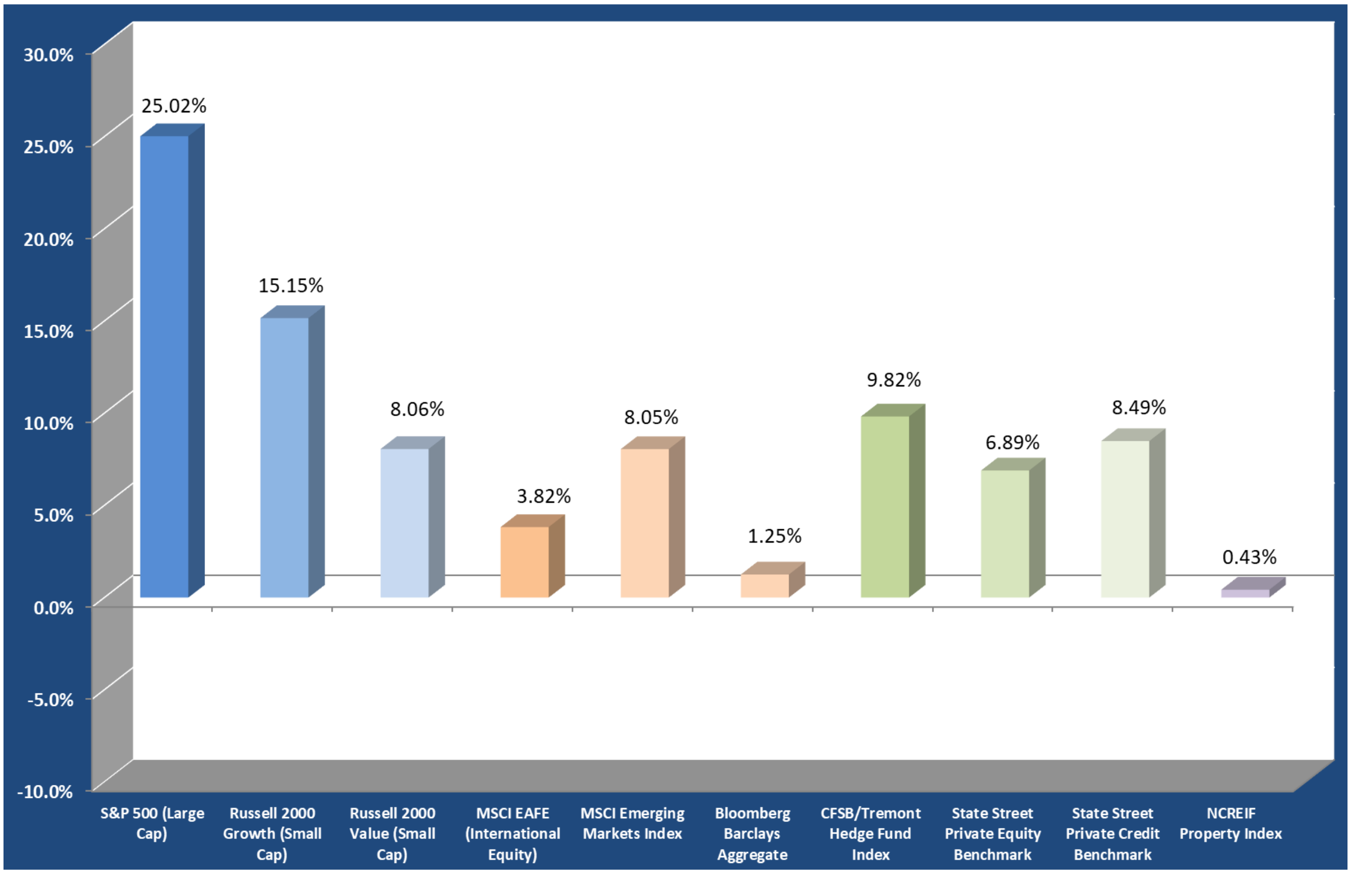
Fourth Quarter 2024:

U.S GDP growth expanded at a lower-than-expected annualized growth rate of 2.3%. The economy still faced numerous challenges, including sustained higher interest rates despite initial central bank rate cuts, multiple geopolitical issues and moderating inflation. Economic uncertainty looms with pending global trade tariff policy changes.

In the fourth quarter of 2024, U.S. equities were positive (+2.6%) post-election with an administration change and continued strength of a few large technology stocks. International and emerging market equities declined sharply (-8.1% and -8%, respectively) due to a strong U.S. dollar, political tensions, slowing growth, uncertain trade outlook and divergent interest rate policies.

U.S. fixed income declined significantly (-3.1%) as yields rose aggressively despite a couple of Fed rate cuts. International fixed income declined sharply (-7.1%) due to a strong U.S. dollar and rising yields in most markets. Hedge funds were mostly positive with event-driven and fund-of-funds (+2.3%) posting the strongest results. Real estate returns were positive (+1.2%) given the struggles with slowing write-downs and continued low transaction volumes. For the year, buyouts contributed significantly to positive private equity returns. Private Equity fundraising continued to be lower and take longer for general partners while distributions continued to lag historical norms.

Fiscal Year 2024 Market Indices Returns



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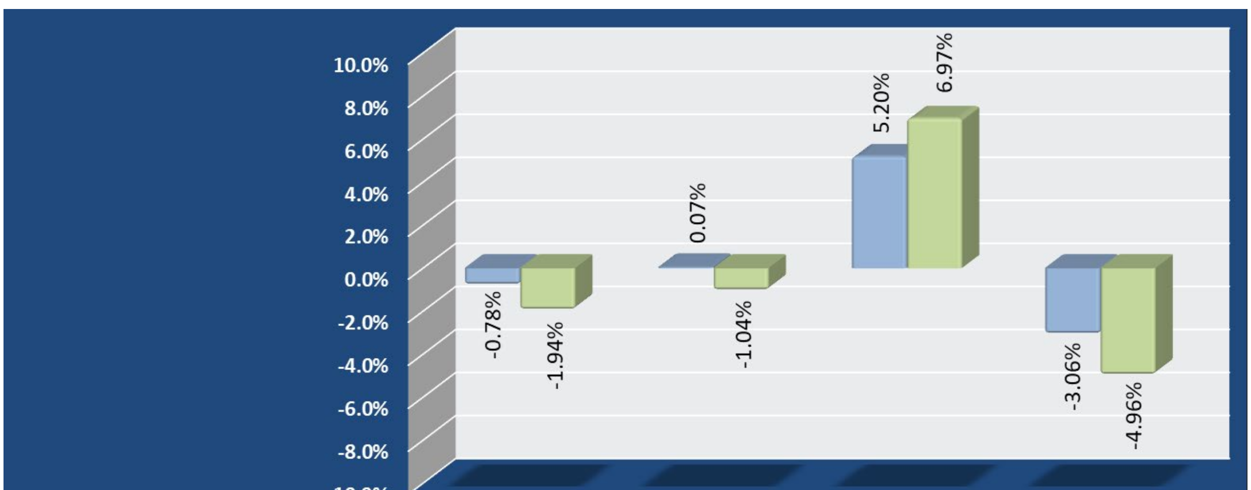
Fiscal Year 2024 Equity Indices by Quarter

	3/31/2024 1st Qtr	6/30/2024 2nd Qtr	9/30/2024 3rd Qtr	12/31/2024 4th Qtr
S&P 500 (Large Cap)	10.56%	4.28%	5.89%	2.41%
Russell 2000 Growth (Small Cap)	7.58%	-2.92%	8.41%	1.70%
Russell 2000 Value (Small Cap)	2.90%	-3.65%	10.15%	-1.06%
MSCI EAFE (International Equity)	5.79%	-0.42%	7.26%	-8.11%

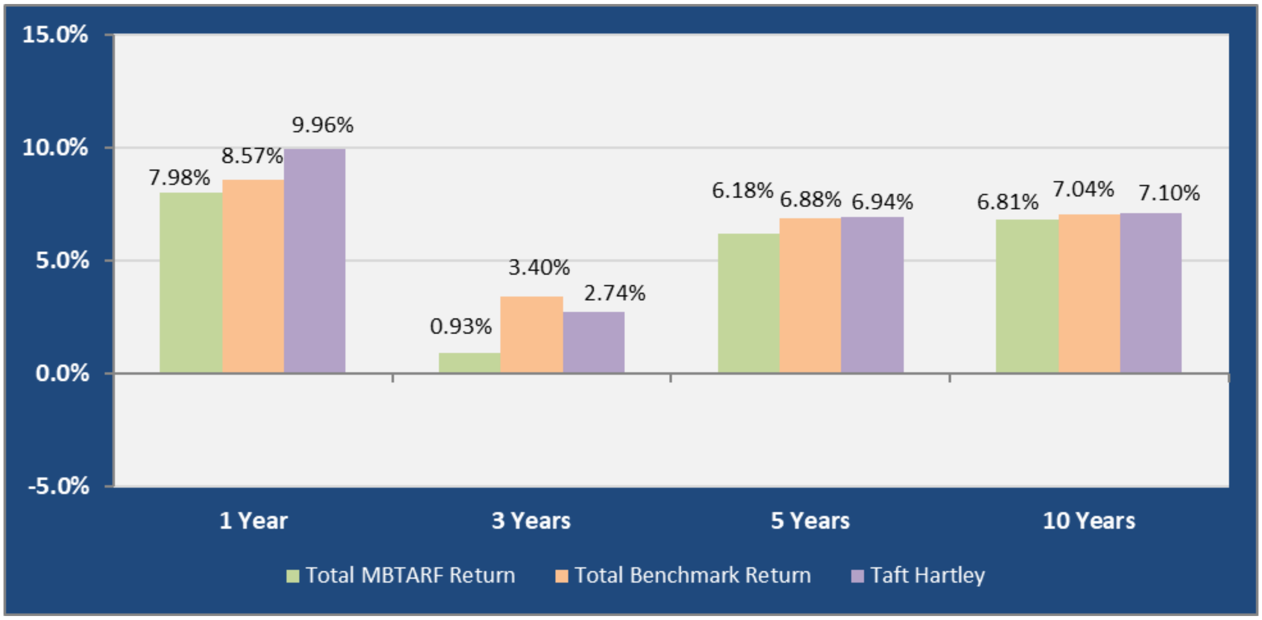
Fiscal Year 2024 Fixed Income Indices by Quarter



	3/31/2024 1st Qtr	6/30/2024 2nd Qtr	9/30/2024 3rd Qtr	12/31/2024 4th Qtr
Bloomberg Barclays Aggregate	-0.78%	0.07%	5.20%	-3.06%
Bloomberg Multiverse Index (Global)	-1.94%	-1.04%	6.97%	-4.96%

MBTARF Core Performance: Fiscal Year 2024

Returns are calculated based on a time-weighted rate of return methodology. The chart below depicts the Fund's returns (gross of fees) and benchmarks for the periods ended December 31, 2024:



During fiscal year 2024, the Fund returned 7.98%, underperforming the Policy Benchmark of 8.57% by 59 basis points. The MBTARF began fiscal year 2024 with a net position of $1,694.4 million and ended with a net position of $1,801.7 million. On a gross basis, the Fund increased by $107.3 million. Additionally, $238 million in net retirement benefits were dispersed to members of the Fund.

The quarterly returns of the Fund in fiscal year 2024 were as follows:

	MBTARF Return	Policy Benchmark Return
1st Quarter	2.90%	3.31%
2nd Quarter	0.96%	1.16%
3rd Quarter	4.40%	4.46%
4th Quarter	-0.44%	-0.55%

(Continued)

Following a strong rebound in 2023, the financial markets continued their upward trajectory in 2024, with nearly all major asset classes posting positive returns. In an effort to moderate inflation and support economic growth, the Federal Reserve maintained rates through mid-2024, before initiating rate cuts starting in September, which drove strong third quarter returns. The U.S. economy closed the year with moderate growth and low unemployment.

Hedge Funds had a strong 2024, delivering returns of 14.97%, outperforming its benchmark of the CSFB/Tremont Hedge Fund Index, which returned 9.8%. Fixed income also performed well, returning 3.88% compared to the Bloomberg Aggregates 1.25%. Domestic large cap equity returned 19.96%, compared to the S&P 500 Index of 25%. Domestic small cap equity returned 11.48% compared to the Russell 2000 Growth Index and Russell 2000 Value Index, which returned 15.15% and 8.06%, respectively. Real estate continued to be a detractor, returning (6.27%), as the NCREIF Property Index returned 0.43%.

Although The MBTA Retirement Fund generated a gross positive return of 7.98% in 2024 it ranked in the 79th percentile of the All-Public Plans greater than $1 Billion Gross Return Universe. The Fund outperformed its long-term investment objective of 7.25% for the one-year and since inception periods. The annualized return since inception is 8.95%. The Fund's gross annualized return over the ten-year period ended December 2024 was 6.81% and ranked in the top 69% of the All-Public Plans greater than $1 Billion Gross Return Universe.

In the 2023 Pension Agreement, the negotiating parties agreed to the PRIT Directive, which instructs the Retirement Board to vote, as soon as practicable, to transfer 50% of the market value of all Fund assets as of April 30, 2023, to the Massachusetts Pension Reserves Investment Trust (PRIT). Subject to the Trustee's meeting their existing fiduciary duties and obligations, the Trustees will use their best efforts to effectuate such transfer of increased Fund assets to PRIT within five years of March 31, 2023. As previously discussed in the introductory section, as of April 1, 2025, the PRIT Fund is investing the required amount of Fund assets concurrent with the Pension Agreement. The MBTA Retirement Board authorized the following actions in 2024, among others, to position the Fund for long-term risk-adjusted returns, while addressing the Fund's policy framework and cost effectiveness:

- On February 16, 2024, the Board of Trustees approved an updated target asset allocation which was effective as of April 1, 2024.
- International equity manager, Morgan Stanley, was terminated and funds transferred to the PRIT International Equity Segmentation in February 2024.
- The Fund re-balanced 2% of the equity portfolio and committed $17 million to the PRIM Value-Add Fixed Income Segmentation and $17 million to the PRIM Core Fixed Income Segmentation.

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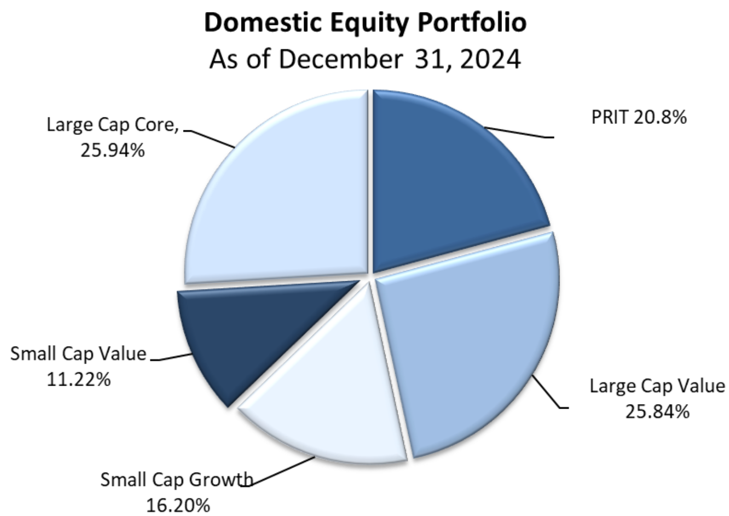
- On July 19, 2024, the Fund entered into a revised Letter Agreement with PRIM. This agreement explicitly confirmed that PRIM operates in a fiduciary capacity when managing the Fund's investments.
- Half of both the SSGA Russell 1000 and SSGA MSCI EAFE was transferred to PRIM Domestic Equity and PRIM Real Estate Segmentation, totaling $105 and $40 million, respectively. The investment in the PRIM Domestic Equity Segmentation marked the Fund investing in all available segmentation programs with PRIM.
- Committed $20 million to the PRIM Private Equity Vintage Year 2025 Segmentation Program (PEVY 2025).

Investment Summary by Type

Domestic Equity Portfolio

As of December 31, 2024, the domestic equity portfolio had $517.1million in net positions, which represented 28.92% of the Fund portfolio. Approximately 51.8% of the domestic equity portfolio is invested in a large capitalization equity strategy (large cap) with the remaining 27.4% in a small capitalization equity strategy (small cap) and 20.8% in PRIM Domestic Equity Segmentation. The Fund's domestic equity portfolio is largely actively managed in effort to outperform a diverse set of indices. Each investment manager's performance is measured against an assigned index based on the stated investment strategy.



On a three, five and ten-year basis through December 31, 2024, the domestic equity portfolio has returned 5.42%, 11.90% and 11.23% compared to the S&P 500 benchmark, which returned 8.94%, 14.53% and 13.10% respectively.

Style - The Board intends to manage risk and diversify the Fund's portfolio through the selection of money managers with different investment styles and complementary characteristics within each asset class.

Portfolio Risks – Although the performance of equity securities has historically exceeded that of other market assets over an extended period of time, these assets, as all investments, carry the risk of loss of principal and are subject to changing market conditions. The value of equities is not only determined by external market factors, but by the performance of the firms for which these assets legally represent.

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Portfolio Returns - During the fiscal year, the domestic equity portfolio produced a return of 17.57% compared to the S&P 500 benchmark 25.02%. Large cap equity managers returned 19.96%, underperforming the Russell 1000 benchmark by 4.55%; and small cap equity returned 11.48%, slightly underperforming the Russell 2000 Index by 0.06%. In 2024 the Fund began investing in PRIM Domestic Equity Segmentation which covers multi-asset classes in the domestic equity market. The Fund had one large cap core indexed manager and one small cap value indexed manager. Of the two active large cap value managers Boston Partners outperformed their benchmark and Aristotle underperformed in 2024. Of The two small cap growth managers, RBC Global Asset Management underperformed their benchmark and Alliance Capital outperformed in 2024.

The top ten holdings in the domestic equity portfolio on December 31, 2024, are illustrated below. A complete listing of holdings is available upon request.

	Shares	Stock	Fair Value ($000's)	% of fair value
1	14,211	JPMORGAN CHASE + CO	$ 3,407	0.83 %
2	5,200	PARKER HANNIFIN CORP	3,307	0.81
3	4,900	AMERIPRISE FINANCIAL INC	2,609	0.64
4	5,833	MICROSOFT CORP	2,459	0.60
5	12,050	CAPITAL ONE FINANCIAL CORP	2,149	0.52
6	15,300	LENNAR CORP A	2,086	0.51
7	34,500	CORTEVA INC	1,965	0.48
8	10,356	ALPHABET INC CL A	1,960	0.48
9	4,300	ADOBE INC	1,912	0.47
10	5,300	ANSYS INC	1,788	0.44
		Total Top Ten	**$ 23,642**	**5.78%**

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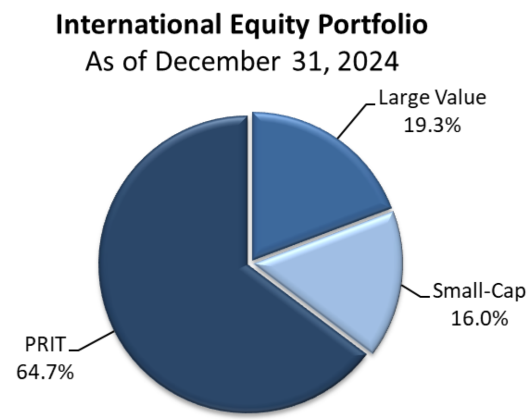
The MBTA Retirement Fund's domestic equity managers on December 31, 2024 are presented in the following table:

Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
Alliance Bernstein	Small Cap Growth	$ 34,722,215
Aristotle Capital Management	Large Cap Value	64,987,135
Boston Partners	Large Cap Value	68,624,116
Pension Reserves Investment Management-Domestic Equity	PRIT	107,641,485
RBC Global Asset Management	Small Cap Growth	49,032,878
State Street Global Advisors	Small Cap Value	58,028,908
State Street Global Advisors	Large Cap Core	134,050,419
Total Portfolio Fair Value:		**$ 517,087,155**

International Equity Portfolio

As of December 31, 2024, the international equity portfolio had approximately $216.1 million in net positions, representing 12.09% of the Fund portfolio. Eaton Vance International Small Cap is benchmarked against the MSCI World Ex. US Small Cap and SSGA MSCI EAFE is benchmarked against the MSCI EAFE index, which includes the developed markets of Europe, Australia and the Far East. PRIM international equity is benchmarked against the PRIM International Equity custom benchmark.



The primary strategy is to invest in international equity funds 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.

Style – The Board intends for a group of managers employing various strategies to invest assets in a well-diversified portfolio of Non-U.S. developed market equity securities. This group consists of a broad range of styles and approaches including: core international products, top-down country selectors, bottom-up security selectors, capitalization ranges, growth and value-oriented products and products using various mixtures of these strategies. Certain investment managers may have a guideline limiting exposure to emerging markets.

Portfolio Risks – International assets are subject to additional risks such as changes in foreign currency exchange markets and the environment in which the trading of these securities and associated financial reporting are governed. Differences between reporting standards across jurisdictions also adds to the complexity of these markets.

Portfolio Returns - During the fiscal year, international equity returned 2.89%, underperforming the MSCI EAFE.

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On a three, five and ten-year basis through December 31, 2024, the international equity portfolio has returned 0.07%, 3.94% and 5.16% compared to the MSCI EAFE benchmark, which returned 1.65%, 4.73% and 5.20% respectively.

The MBTA Retirement Fund's international equity managers on December 31, 2024 are presented in the following table:

	Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
EatonVance Investment Managers	Eaton Vance International Small Cap	Small Cap	$ 34,634,606
Pension Reserves Investment Management Board	Pension Reserves Investment Management-International Equity	PRIT	139,793,697
SSgA State Street Global Advisors	SSGA - MSCI EAFE Index	Large Value	41,638,110
	Total Portfolio Fair Value:		**$ 216,066,413**

Global Equity and Emerging Market Portfolio

As of December 31, 2024, the global equity and emerging markets portfolio had approximately $49 million, or 2.75%, of the MBTA Retirement Fund's assets. The Fund measures the PRIM Emerging Market portfolio against the PRIM Custom Benchmark. In addition the Fund compares this asset class against the MSCI Emerging Markets Index which captures large and mid-cap representation across 24 emerging markets countries is also used as a reference.

Portfolio Composition – PRIM's primary strategy for this portfolio is investing in companies in developing countries, including, but not limited to, China, Brazil, Russia, South Korea, Taiwan, and India. These countries typically have less efficient securities markets, and thus there is an opportunity for returns above benchmarks.

Portfolio Risks – In addition to providing the potential for higher expected returns, emerging markets generally expose investors to higher expected risks, due to their susceptibility to more volatile economic conditions, potential political instability and, in some cases, an absence of a mature system of corporate governance. These investments also carry all the risks associated with domestic and developed market investments.

Portfolio Returns - During the fiscal year, the Global Equity and Emerging Markets portfolio returned 6.82%. On a three, five and ten-year basis through December 31, 2024, the global equity and emerging market portfolio has returned (4.17%), 7.52% and 10.37% compared to the MSCI All Country World Index, which returned 0.82%, 4.11% and 4.80% respectively. The PRIM Emerging Markets Custom Benchmark returned 7.04% for the year and (1.32%) for the three-year period; five and ten-year benchmark returns are not yet available.

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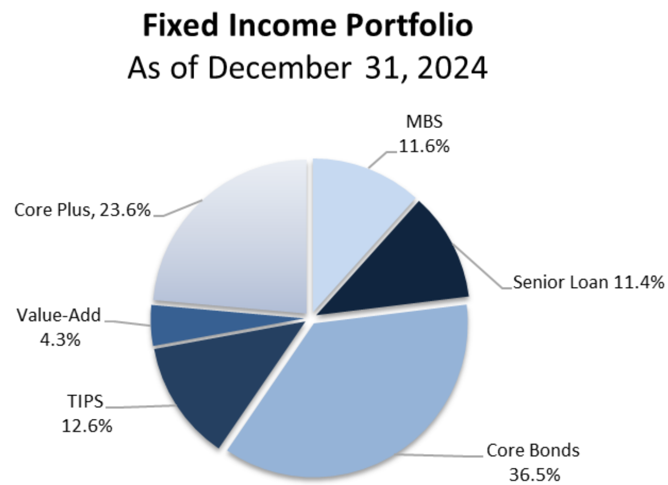
The MBTA Retirement Fund's global equity and emerging markets manager on December 31, 2024 are presented in the following table:

	Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
PENSION RESERVES INVESTMENT MANAGEMENT BOARD	Pension Reserves Investment Management	Emerging	$ 49,122,120
	Total Portfolio Fair Value:		**$ 49,122,120**

Fixed Income Portfolio

As of December 31, 2024, the fixed income portfolio had approximately $428.3 million in net positions, which represented 23.95% of the MBTARF portfolio. In addition to the Bloomberg U.S. Aggregate, the Fund's fixed income portfolio is also benchmarked against the Bloomberg U.S. Treasury INFL Notes 1-10Y , Morningstar LSTA US Leveraged Loan TR, Bloomberg Multiverse and Bloomberg U.S. Mortgage-Backed Securities.



Styles - Fixed income managers serve in a specialist role managing debt securities. Domestic core fixed income managers' investments may include (i) U.S. dollar denominated obligations of the United States Government and its Agencies and instrumentalities, as well as U.S. corporations, (ii) mortgage-backed securities including CMOs and commercial mortgage backed securities ("CMBS"), (iii) Asset Backed Securities("ABSs"), (iv) registered 144A securities if applicable, (v) municipal bonds, (vi) short term securities, (vii) securities of foreign companies or foreign countries (sovereigns or supranational) denominated in U.S. dollars, trading in the U.S. markets and capable of settlement in U.S. markets (Yankee bonds) and (viii) dollar denominated obligations of U.S. companies trading outside the U.S. ("Eurobonds").

Portfolio Risk - Risk in bond investments is primarily driven by changing interest rates which cause the value of these investments to fluctuate. The action of the Federal Reserve Bank of the United States through its monetary policy and through the monetary policy of other such institutions significantly affects interest rates. The risk of default is also associated with these investments and is measured by established credit rating firms. Default risks are subject to change.

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Portfolio Returns - During the fiscal year, fixed income portfolio returned 3.88% outperforming the Bloomberg Aggregate Bond Index benchmark by 2.63%.

On a three, five and ten-year basis through December 31, 2024, the fixed income portfolio has returned (0.04%), 1.64% and 2.43% compared to the Bloomberg Aggregate Bond Index, which returned (-2.41%), (0.33%) and 1.35% respectively.

The top ten holdings in the fixed income portfolio on December 31, 2024 are illustrated below. A complete listing of holdings is available upon request.

Shares	Stock		Fair Value ($000's)	% of fair value
6,885,000	US TREASURY N/B Due 02/28/2026	Rating NR	$ 6,913	1.61 %
7,050,000	US TREASURY N/B Due 08/15/2043	Rating NR	6,633	1.55
3,956,000	US TREASURY N/B Due 07/31/2029	Rating NR	3,893	0.91
4,170,900	TSY INFL IX N/B Due 01/15/2033	Rating NR	3,826	0.89
3,835,397	TSY INFL IX N/B Due 01/15/2034	Rating NR	3,677	0.86
3,823,000	US TREASURY N/B Due 08/15/2033	Rating NR	3,628	0.85
4,200,000	US TREASURY N/B Due 05/15/2053	Rating NR	3,414	0.80
3,343,683	TSY INFL IX N/B Due 01/15/2026	Rating NR	3,298	0.77
3,342,615	TSY INFL IX N/B Due 01/15/2027	Rating NR	3,241	0.76
3,342,767	TSY INFL IX N/B Due 01/15/2029	Rating NR	3,191	0.75
	Total Top Ten		**$ 41,714**	**9.75 %**

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The MBTA Retirement Fund's fixed income managers on December 31, 2024 are presented in the following table:

Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
AFL-CIO Housing	MBS	$ 49,854,262
Eaton Vance	Senior Loan	48,771,763
Income Research & Management	Core Bonds	139,370,824
IRM TIPS	TIPS	53,881,304
Loomis, Sayles & Company	Core Plus	100,975,812
Pension Reserves Investment Management Core Fixed Income	Core Bonds	17,180,560
Pension Reserves Investment Management Value-Add Fixed Income	Value-Add	18,262,044
Total Portfolio Fair Value:		**$ 428,296,571**

Real Estate Portfolio

As of December 31, 2024, the MBTA Retirement Fund had $158 million invested in real estate. The equity real estate program is comprised primarily of two separate but complementary investment strategies – core and specialty. Core investments include property types in multi-family housing, retail, industrial and office buildings. These assets are characterized by stable and increasing income levels and are in major metropolitan areas which exhibit reasonable economic diversification. Specialty investments include property types in hotels, assisted-living and congregate care facilities. Specialty strategies enhance returns of assets capable of, but not currently, exhibiting core type characteristics.

Objective - The MBTA Retirement Fund's allocation to real estate equity is intended to enhance the return, risk and portfolio diversification characteristics of the Fund's total portfolio. It is anticipated that investments in equity real estate will, over a full market cycle, produce an income return that is in excess of the yield of an investment grade, core fixed income investment combined with some level of equity appreciation. In addition, it is expected that equity real estate will exhibit a lower correlation with traditional equity and fixed income securities.

Portfolio Risk - Real estate investments expose investors to risks. which include:

- Market risks that may be exacerbated by real estate's sensitivity to economic conditions and/or by the investment manager's utilization of leverage.
- Lower liquidity, especially for closed end, limited partnership and direct investments.
- Operational and credit risks that are higher than those of traditional investments.
- Valuation and appraisal lag which can be exacerbated in times of rapid price changes in the commercial real estate market.

Leverage – Leverage may be utilized at the discretion of the underlying real estate managers in a constrained manner, consistent with the commingled fund documents, in order to enhance

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yields of the various investments and/or facilitate the diversification of the portfolio. The total level of debt for any single commingled fund investment is not expected to exceed 70% of the value of that fund. However, as a general guideline, the Fund's composite real estate portfolio shall never be more than 50% levered on an aggregate basis at any time.

Real Estate Investment Strategies - Private real estate equity strategies include core, core plus, value-added and opportunistic approaches. Core diversified funds have lower risk due to their limited use of leverage and broad diversification across multiple property types, geographic regions and income generating assets (most properties in core portfolios are fully leased and generating income). Further out on the risk and return continuum, core plus, value-added and opportunistic funds have lower occupancy rates, utilize more leverage and include properties in the development and/or pre-development stage. Due to their higher risk, these strategies are expected to generate returns that exceed that of core real estate.

Open-ended and closed-end real estate investments are diversified by vintage year, investment manager, geographic region, property type and investment strategy. With respect to vintage year diversification, closed end funds are diversified due to the fact that they are designed to invest over specific, finite time periods, while open-end funds are diversified by definition (i.e. by virtue of always being open and investing in all time periods).

Investment Strategy Allocations - Of the MBTA Retirement Fund's three active closed-end real estate funds, there are no funds in the investing stage of their lifecycle; two funds accounting for $10.3 million in fair value are in the harvesting stage, while one fund accounting for approximately $578 thousand in fair value is liquidating its underlying investments.

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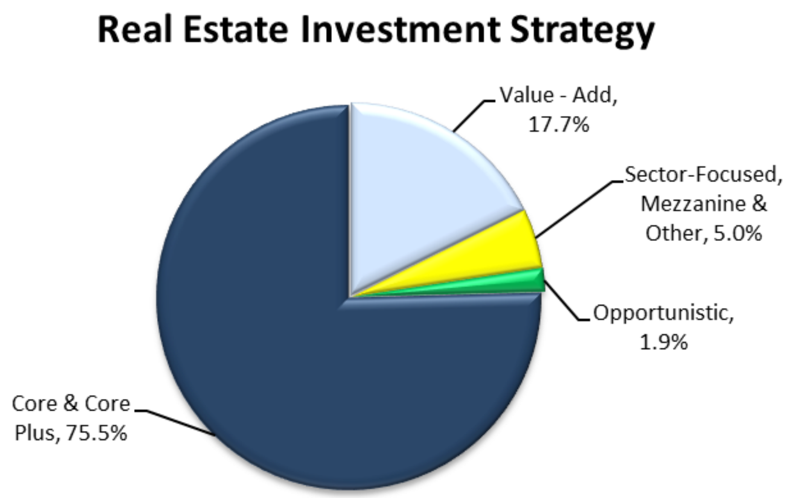
The MBTA Retirement Fund's investment strategy is diversified across closed and open-end funds as follows:



Portfolio Returns – The MBTARF real estate portfolio returned (6.27%) during the year. The 3, 5 and 10-year returns for the real estate portfolio are (7.19%), (0.79%) and 4.19%, respectively. The NCREIF Benchmark returned 0.43% during the fiscal year. The benchmark's 3, 5, and 10-year returns are (0.82%), 3.13% and 5.66%, respectively.

The MBTARF real estate portfolio received $3.3 million in distributions during the year-ending December 31, 2024, compared to the $3.6 million in distributions received during 2023. The Fund submitted a full redemption to MEPT in 2022 and received partial redemption payments in 2024 totaling approximately $1.5 million. The MBTARF's real estate managers called $30.5 million of capital during 2024, largely due to an additional capital commitment of $30 million to the PRIM Real Estate Segmentation. The net cash flow from the MBTARF's real estate portfolio for the year ended December 31, 2024 was a net outflow of $27.2 million, compared to an inflow of $3.6 million for 2023.

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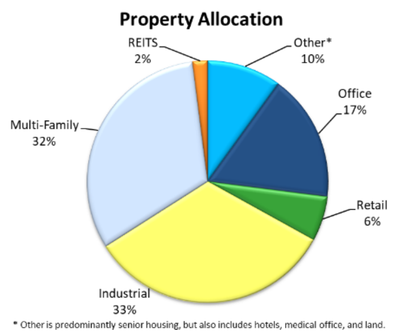
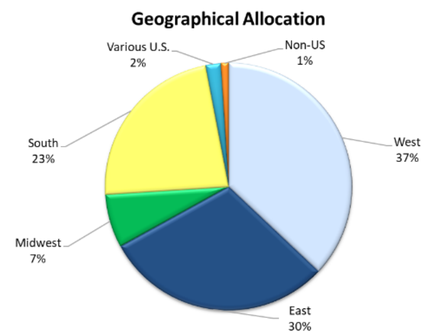
Geographic Diversification

The following charts illustrate the property type and geographic diversification of the closed end real estate portfolio:





The MBTA Retirement Fund Real Estate managers on December 31, 2024 are presented in the following table:

	Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
AFL-CIO BUILDING INVESTMENT TRUST	AFL CIO BLDG INVST TR	Open Ended	$ 9,928,551
INTERCONTINENTAL REAL ESTATE CORPORATION	INTERCONTINENAL REAL ESTATE CORP	Open Ended	11,271,541
J.P.Morgan Asset Management	JP MORGAN ASSET MANAGEMENT	Open Ended	27,996,017
BentallGreenOak Residential Services	BENTALL GREEN OAK	Open Ended	37,162,973
PENSION RESERVES INVESTMENT MANAGEMENT BOARD	PRIM REAL ESTATE SEGMENTATION	Open Ended	46,532,971
Prudential Real Estate Investors	PRUDENTIAL REAL ESTATE INVESTORS	Sector Focused	7,824,069
SIGULER GUFF	SIGULER GUFF & COMPANY	Opportunistic	3,072,922
TA REALTY	TA REALTY CORE PROPERTY FUND	Open Ended	14,232,054
	Total Portfolio Fair Value:		**$ 158,021,097**

Risk Parity / Diversified Beta Portfolio:

As of December 31, 2024, the MBTA Retirement Fund had $54.4 million invested in the risk parity portfolio, representing 3.04% of the total investments. The Risk Parity manager utilizes a risk premium capture strategy that seeks to generate returns by investing in equity, bond and commodity markets using a risk-balanced investment process. Specifically, the managers select the appropriate assets for the strategy, allocate them based on their proprietary risk management and portfolio construction techniques, and then applies an active position process to improve expected returns.

The MBTA Retirement Fund invests in Risk Parity / Diversified Beta products because it provides the Fund with diversification and attractive returns. Additionally, the strategy provides daily liquidity, no lock-up, high capacity and high transparency, all of which are attractive qualities for the Fund.

Portfolio Risks - Investments in Risk Parity / Diversified Beta are subject to various risks, including derivatives and leverage risk. Risk Parity managers may invest a substantial portion of their assets in “derivatives” because their value “derives” from the value of an underlying asset, reference rate or index, the value of which may rise or fall more rapidly than other investments. The strategy invests principally in exchange-traded futures across a diverse mix of assets including equities, bonds and commodities. For some derivatives, it is possible to lose more than the amount invested in the derivative. If the portfolio uses derivatives to “hedge” a portfolio risk, it is possible that the hedge may not succeed and may result in unexpected changes in the value of the rest of the portfolio. Over the counter derivatives are also subject to counterparty risk, which is the risk that the other party to the contract will not fulfill its contractual obligation to complete the transaction with the Fund. The implementation of a risk parity strategy requires the use of leverage to increase the risk of the government bond allocation in the strategy so that it can be balanced against the portfolio’s exposure to stocks and commodities.

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The use of derivatives facilitates the ability to create the desired exposure of leverage in the portfolio. Leverage may cause the portfolio to be more volatile than if the portfolio had not been leveraged because it can exaggerate the effect of any increase or decrease in the value of securities held by the portfolio.

Portfolio Returns - For the calendar year 2024, the Risk Parity / Diversified Beta portfolio returned 5.07% underperforming the asset class benchmark (91 Day T Bill Plus 300 BPS) by 3.33%.

On a three, five and ten-year basis through December 31, 2024, the Risk Parity / Diversified Beta portfolio has returned (3.32%), 2.19% and 4.24% compared to its benchmark, which returned 7.00%, 5.53% and 4.82% respectively.

The MBTA Retirement Fund's Risk Parity / Diversified Beta manager on December 31, 2024 is presented in the following table:

	Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
Invesco	Invesco	Diversified Beta	$ 54,381,994
	Total Portfolio Fair Value:		**$ 54,381,994**

Fund of Hedge Fund Portfolio

As of December 31, 2024, the MBTARF's fund of hedge fund portfolio held $84.1 million in net positions, which represents 4.70% of the total investments. The objective of the MBTARF's hedge fund program is to reduce the volatility of the total fund while attempting to maximize returns in a variety of market conditions. As a group of strategies, hedge funds represent a broad set of investment styles, mandates and products that focus primarily on the liquid equity, fixed income and derivatives markets. This may also include allocations to non-traditional investments, including illiquid securities and investments. There are two primary methods for investing in hedge funds, funds of hedge funds and single manager funds. The MBTARF primarily utilizes funds of hedge funds in an effort to significantly reduce risk through diversification.

Portfolio Risks - Hedge Funds are subject to various risks inherent in this strategy. Fluctuations in the markets can create market risk and credit risk is due to the fixed income nature of hedge fund strategies. As the MBTARF is invested in fund of fund strategies, liquidity risk is present as managers unwind from underlying positions. Investing in hedge funds exposes operational risks in executing strategies and valuations of positions. The Fund monitors risk by enforcing the investment managers to provide exceptional levels of transparency.

Portfolio Returns - The MBTARF's fund of hedge fund portfolio returned 14.97% for the fiscal year. The MBTARF uses the PRIM Hedge Funds custom benchmark and also compares to the CSFB/Tremont Hedge Fund Index as a benchmark for hedge fund performance. The PRIM custom benchmark returned 8.65% in the 2024 fiscal year. On a 3, 5 and 10-year basis, the MBTARF hedge fund portfolio returned 7.37%, 6.98% and 3.74%, respectively. The PRIM Hedge Funds custom benchmark returned 4.83% and 5.75% respectively, over the same 3 and 5-year periods, the 10-year period is not yet available. The CSFB/Tremont Hedge Fund Index returned 5.51%, 6.22% and 4.42% over a three, five, and ten-year basis.

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The MBTARF hedge fund portfolio has one active fund of hedge fund investment manager as of December 31, 2024.

	Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
	Pension Reserves Investment Management-Hedge Funds	Fund of Funds	$ 84,122,661
	Total Portfolio Fair Value:		**$ 84,122,661**

Fund of Hedge Fund - Opportunistic Portfolio

As of December 31, 2024, the MBTARF's fund of hedge fund - opportunistic portfolio held $32.5 million in net positions, which represented 1.82% of the total investments. While descriptions vary across investors, opportunistic investments generally encompass non-traditional investment strategies that seek to generate risk-adjusted returns by taking advantage of temporary market inefficiencies or dislocations arising from evolving market conditions, regulatory changes and other factors. Opportunistic investments generally do not fit into other asset class or strategy descriptions and may be viewed as tactical and time constrained. As compared to multi-strategy hedge funds, opportunistic investments generally exhibit higher expected returns, greater market risk, less liquidity and a higher level of concentration. Opportunistic managers may invest across asset classes (e.g. equity, debt, alternatives) and offer funds in different vehicles. Opportunistic investments may also come in the form of hedge funds or long-only investment strategies.

Portfolio Risks – Opportunistic Hedge Funds are subject to various risks inherent in this strategy. Depending on what form they take, opportunistic investments may expose an investor to a range of risks. These include:

- Market risks that impact the underlying value of investments held in underlying equity, fixed income and alternative investments.
- Market risks may include equity, interest rate or currency exchange rate risk and may be impacted by macroeconomic factors such as inflation expectation.
- Credit risk attributable to fixed income securities or private debt investments.
- Liquidity risks, especially for closed-end, limited partnership and direct investments.
- Operational risks related to valuation processes, transaction processing, compliance, financial reporting and service providers.

(Continued)

Portfolio Returns - The MBTARF's opportunistic fund of hedge fund portfolio returned 7.25% for fiscal year 2024. The 3 and 5-year returns for the opportunistic fund of hedge fund portfolio is 5.81% and 7.72% respectively. The first full year the MBTA Retirement Fund began investing in this asset class was 2018, due to this, the 10-year returns are not yet available. The MBTARF uses the Bloomberg U.S. Corporate High Yield Index as a benchmark for performance, which returned 8.19% in 2024, and returned 2.92% and 4.21% for the 3 and 5-year periods.

The MBTARF opportunistic hedge fund of fund portfolio held four active investments with one manager as of December 31, 2024. The manager is presented in the following table:

Manager	Investment Mandate	Portfolio Fair Value @ 12-31-2024
Hamilton Lane	Fund of Funds - Opportunistic	$ 32,500,317
Total Portfolio Fair Value:		**$ 32,500,317**

Private Equity Portfolio

As of December 31, 2024, the private equity portfolio had approximately $156.7 million in net positions, which represented 8.76% of the MBTARF portfolio. The private equity portfolio is used to increase the expected long-term return of the MBTARF portfolio, while generating cash flow and providing diversification. The private equity portfolio is diversified among sub-classes, which include venture capital, growth equity, buyouts, secondary strategies and special situations. The MBTARF private equity portfolio is benchmarked to a State Street Customized Benchmark, which takes into account the portfolio's allocations to the various private equity sub-classes.

Portfolio Risks - Private equity does not lend itself to traditional quantitative measures of risk. Rather, risk is measured through a combination of quantitative and qualitative constraints. These risks include, but are not limited to, the following:

- ***Liquidity risk***: Private equity investments are illiquid and typically have expected holding periods of 10-12 years. Investments are typically held until maturity and selling prior to maturity results in a discount to fair value. Liquidity risk is managed by minimizing the possibility of forced sales that may arise from exceeding maximum exposure limits or lowering asset allocation exposure limits.
- ***Vintage risk***: Vintage reflects the year of the first capital draw from a fund. Vintage risk refers to the variability of private equity commitments over time and is minimized by pacing investments to provide vintage year diversification.
- ***Manager risk***: Manager risk consists of two elements - the exposure within an investment vehicle, and the number of managers in the private equity program. The exposure to a specific manager within an investment vehicle is controlled by limiting the commitment size to a specific investment vehicle. The optimum number of managers in the portfolio varies with time.
- ***Firm risk***: Firm risk is the exposure to a private equity firm and is controlled by limiting the maximum commitment to funds actively managed by a firm and its affiliates.

(Continued)

- ***Currency risk***: Currency risk is the risk that investments held in a foreign currency will change in value as a result of changes in the currency exchange rates. The private equity program accepts the currency risks consistent with the geographic constraints of the investment opportunity. Private equity investments generally do not hedge currency risk and the private equity program does not implement currency hedges.
- ***Industry risk***: Typically, private equity funds are permitted to invest in a wide variety of industries with limited controls. Industry risk is controlled primarily through appropriate diversification across strategies and sub-strategies.
- ***Geographic risk***: Geographic risk is controlled through a long-term, international target exposure. Global opportunities generally indicate geographic limits and exposure will be attributed and monitored accordingly.
- ***Leverage risk***: Private equity managers invest capital throughout the capital structure of portfolio companies. The capital markets control the maximum leverage available to the private equity managers. Investors control leverage exposure through portfolio construction and private equity fund selection.

Portfolio Returns - The MBTARF's private equity portfolio returned 6.36% during the fiscal year. The 3, 5 and 10-year returns for the private equity portfolio are 1.19%, 11.45% and 9.07%, respectively. The MBTARF's State Street Private Equity Benchmark returned 6.89% during the fiscal year. The benchmark's 3, 5 and 10-year returns are 2.63%, 13.21% and 12.18%, respectively. In April 2020, per the asset allocation, private credit was separated from the private equity portfolio. Due to this, the 5 and 10-year returns include both private equity and private credit funds while the 1 and 3-year return reflects only private equity.

The MBTARF private equity portfolio received $14.8 million in distributions during the fiscal year 2024, compared to $15.8 million in the 2023 fiscal year. The private equity portfolio managers called $14.4 million of capital during the fiscal year 2024, compared to $22.8 million called in the 2023 fiscal year. The net cash flow from the private equity portfolio was an inflow of $0.4 million in fiscal year 2024, compared to an outflow of $7 million in fiscal year 2023.

(Continued)

The MBTA Retirement Fund's active private equity investment managers are reported in the summary below:

Manager	Investment Mandate	Portfolio Fair Value 12-31-2024
EUROPEAN STRATEGIC II	Buyout	26,884
EUROPEAN STRATEGIC PARTNERS 2006	Buyout	24,945
EUROPEAN STRATEGIC PARTNERS 2008	Buyout	39,932
GROSVENOR OPPOR CREDIT III	Special Situations	155,711
LEXINGTON CAPITAL PARTNERS VIB	Secondary Fund of Funds	54,851
LEXINGTON CAPITAL PARTNERS X	Secondary Fund of Funds	5,656,068
LEXINGTON CAPITAL PRTNRS IX LP	Secondary Fund of Funds	10,044,928
LEXINGTON CAPITAL PTNRS VII	Secondary Fund of Funds	407,594
LEXINGTON CAPT PRTNS VIII	Secondary Fund of Funds	4,780,142
LEXINGTON MID MARKET II LP	Secondary Fund of Funds	117,227
LEXINGTON MID MARKET III	Secondary Fund of Funds	3,818,498
LEXINGTON MIDDLE MARKET	Secondary Fund of Funds	13,968
LEXINGTON MIDDLE MKT INV IV LP	Secondary Fund of Funds	8,746,005
NEW MOUNTAIN PARTNERS III LP	Buyout	197,132
NEW MOUNTAIN PARTNERS IV LP	Buyout	1,070,702
NEW MOUNTAIN PARTNERS V LP	Buyout	7,791,054
NEW MOUNTAIN PARTNERS VI	Buyout	10,258,953
NEW MOUNTAIN PARTNERS VII LP	Buyout	717,986
OPUS CAPITAL VENTURE PRTNS V	Venture	2,781,691
PHAROS CAPITAL	Growth Equity	1,343,931

Manager	Investment Mandate	Portfolio Fair Value 12-31-2024
PHAROS CAPITAL II	Growth Equity	7,726,988
PHAROS CAPITAL PARTNERS III	Growth Equity	4,073,836
PRIT PVT EQ 2020 VNTG YR.LP	Secondary Fund of Funds	27,490,666
PRIT PVT EQ 2021 VNTG YR. LP	Secondary Fund of Funds	18,363,294
PRIT PVT EQ 2022 VNTG YR. LP	Secondary Fund of Funds	4,259,286
PRIT PVT EQ 2023 VNTG YR. LP	Secondary Fund of Funds	1,872,166
PRIT PVT EQ 2024 VNTG YR LP	Secondary Fund of Funds	742,198
LAVIEN (QUADRANGLE CAPITAL PARTNERS II)	Buyout	24,538
SIGULER GUFF BRIC OPPN FDII	Buyout	366,284
SL CAPITAL ESF I	Buyout	1,167,907
STERLING CAPITAL	Growth Equity	109,889
STERLING CAPITAL PARTNERS II	Growth Equity	123,048
STERLING CAPITAL PARTNERS IV	Growth Equity	799,662
SVB STRATEGIC INVESTORS FUND VIII	Venture	10,926,028
SVB CAPITAL PARTNERS II	Venture	262,393
SVB CAPITAL PARTNERS III	Venture	5,456,772
SVB STRATEGIC INVESTORS III	Venture	2,094,403
TOP TIER VENTURE VELOCITY FUND I	Secondary Fund of Funds	3,814,546
TOP TIER VENTURE VELOCITY IV	Secondary Fund of Funds	3,305,234
WLR RECOVERY FUND V, L.P	Special Situations	115,857
Z CAPITAL SPECIAL SIT. FD II	Special Situations	5,558,508
Total Portfolio Fair Value		**$ 156,701,703**

Private Credit Portfolio

As of December 31, 2024, the private credit portfolio had approximately $31 million in net positions, which represented 1.73% of the total investments. The private credit portfolio is used to increase the expected long-term return of the MBTARF portfolio, while generating cash flow and providing diversification. Private credit is a way for businesses to raise capital, where an investor lends money in exchange for interest payments. The investor can impose covenants, warrants and/or collateralization to secure the loan. As a comparison, private equity is when the investor owns all or part of the company.

In April 2020, per the asset allocation, the Fund separated performance and reporting for the private credit strategy from the private equity portfolio. As of December 31, 2024, the MBTA Retirement Fund's private credit strategy has 11 limited partnerships. The MBTARF private credit portfolio is benchmarked to a State Street Private Credit Benchmark.

Portfolio Risks - Private credit does not lend itself to traditional quantitative measures of risk. Rather, risk is measured through a combination of quantitative and qualitative constraints. These risks include, but are not limited to, the nonpayment of scheduled interest and principal payments on a debt investment. If a borrower fails to make a payment, or default, this may affect the overall return to the lender. Private credit investments are generally illiquid and require longer investment horizons. The typical lifespan of an MBTARF investment in private credit can range between 8-12 years.

Portfolio Returns - The MBTARF's active private credit portfolio returned 2.89% during the fiscal year and 5.27% for the three-year period ending December 31, 2024. The MBTARF's State Street PEI Mezzanine - Special Situations Benchmark returned 8.49% during the fiscal year and 7.12% for three-year period. The MBTARF began separating out private credit from private equity in 2021, due to this, the 5 and 10-year returns are not yet available.

(Continued)

The MBTARF private credit portfolio received $4.9 million in distributions during the fiscal year 2024, compared to $4.4 million received in 2023. The private credit portfolio managers called $3.6 million of capital during the fiscal year 2024, compared to $6.8 million called in 2023. The net cash flow from the private credit portfolio was an inflow of $1.3 million in fiscal year 2024, compared to an outflow of $2.4 million in 2023.

The MBTA Retirement Fund’s active private credit investment managers are reported in the summary below:

Manager	Investment Mandate	Portfolio Fair Value 12-31-2024
CRESCENT MEZZ PART VII B LP	Mezzanine	$ 2,367,938
IRONSIDES OPP FUND II LP	Mezzanine	2,183,412
NEUBERGER BERMAN FUND IV	Mezzanine	6,782,383
VENTURE LENDING LEASING VI	Mezzanine	1,164,795
VENTURE LENDING LEASING VII	Mezzanine	2,516,025
VENTURE LENDING + LEASING IV	Mezzanine	12,950
VENTURE LENDING + LEASING V	Mezzanine	21,038
VENTURE LENDING AND LEASING IX	Mezzanine	5,290,050
VENTURE LENDING+LEASING VIII	Mezzanine	3,296,402
WTI FUND X	Mezzanine	7,029,900
WTI FUND XI	Mezzanine	354,460
Total Portfolio Fair Value		**$ 31,019,350**

SCHEDULE OF TIME-WEIGHTED RETURNS BY ASSET CLASS*

For the Period Ended December 31, 2024

	Annualized Returns				Annual Returns		
Portfolio	3 - Year	5 - Year	2024	2023	2022	2021	2020
Total Fund	0.93	6.18	7.98	9.40	(12.97)	13.88	15.26
Policy Benchmark	3.40	6.88	8.57	11.02	(8.32)	13.52	10.64
Taft Hartley - Median	2.74	6.94	9.96	11.71	(11.00)	14.60	11.50
Domestic Equity Large Cap Composite	7.51	13.13	19.96	23.02	(15.80)	27.17	17.27
S&P 500 Index	8.94	14.53	25.02	26.29	(18.11)	28.71	18.40
Russell 1000	8.41	14.28	24.51	26.53	(19.13)	26.46	20.96
Domestic Equity Small Cap Composite	0.54	8.95	11.48	17.34	(22.31)	22.63	23.15
Russell 2000 Growth Index	0.21	6.86	15.15	18.66	(26.36)	2.84	34.63
Russell 2000 Value Index	1.94	7.29	8.06	14.65	(14.48)	28.27	4.63
Global Emerging Markets Composite	(4.17)	7.52	6.82	30.70	(36.96)	8.47	49.72
MSCI ALL Country World	0.82	4.11	5.53	15.62	(18.36)	18.54	16.26
PRIM EM Custom Benchmark	(1.32)	-	7.04	11.59	(19.55)	(0.74)	-
International Equity Composite	0.07	3.94	2.89	17.18	(16.90)	8.77	11.32
MSCI EAFE	1.65	4.73	3.82	18.24	(14.45)	11.26	7.82
PRIM International Eq Custom Benchmark	-	-	(0.07)	-	-	-	-
Fixed Income Composite	(0.04)	1.64	3.88	7.14	(10.26)	0.86	7.66
Bloomberg Aggregate	(2.41)	(0.33)	1.25	5.53	(13.01)	(1.54)	7.51
Diversified Beta	(3.32)	2.19	5.07	6.92	(19.55)	9.82	12.30
60% MSCI World Eq / 40% BC Agg Bond	2.93	6.72	11.45	16.27	(15.85)	12.05	13.31
Hedge Funds	7.37	6.98	14.97	10.44	(2.51)	8.06	4.76
CSFB/Tremont Hedge Fund Index	5.51	6.22	9.82	5.83	1.06	8.23	6.36
PRIM Hedge Fund Custom Benchmark	4.83	5.75	8.65	9.76	(3.21)	9.04	5.17
Hedge Funds - Opportunistic	5.81	7.72	7.25	11.22	(0.68)	9.85	11.47
Bank of America/Merrill Lynch HY Index	2.91	4.04	8.20	13.46	(11.22)	5.36	6.17
Private Equity Composite	1.19	11.45	6.36	(2.08)	(0.53)	31.74	31.10
State Street Private Equity Benchmark	2.63	13.21	6.89	6.99	(5.47)	49.22	9.27
Private Credit Composite	5.27	-	2.89	5.12	7.86	56.20	-
State Street Private Credit Benchmark	7.11	-	8.49	10.03	3.00	25.30	-
Real Estate Composite	(7.19)	(0.79)	(6.27)	(17.89)	3.85	18.83	1.19
NCREIF Property Index	(0.82)	3.13	0.43	(7.94)	5.53	17.70	1.60

Policy Benchmark:

7% RUSSELL 2000	7% BLOOMBERG MULTIVERSE
20% RUSSELL 1000	3% BLOOMBERG US MORTGAGE BACKED SECURITIES
5% PRIM INTL EQ CUSTOM BM 1 MO LAG	4% 91 DAY T BILL PLUS 300BPS
5% MSCI EAFE	9% NCREIF PROPERT INDEX QTR LAG
2% MSCI WORLD EX US SMALL CAP	2% BBC HIGH YIELD QTR LAG
4% PRIM EME CUSTOM BM 1 MO LAG	4% PRIM HEDGE CUSTOM BM 1 MO LAG
3% BLOOMBERG US TREASURY INFL NOTES 1-10Y	2% ICE BOFA US 3-MONTH TREASURY BILL
10% BLOOMBERG US AGGREGATE	10% STATE STREET PE 1 QTR LAG
3% MORNINGSTAR LSTA US LEVERAGE LOAN TR	

* All return information is gross of fees, except hedge funds, which are net of fees. Returns are calculated on a time-weighted rate of return methodology.

Investment Summary at Fair Value
As of December 31, 2024

	Fair Value	% of Fair Value
Short-Term:		
Cash and cash equivalents*	$ 53,000,355	2.96 %
Fixed Income:		
U.S. Agencies	7,554,697	0.42
US Treasury	103,928,202	5.81
Domestic fixed income	251,221,680	14.05
International fixed income	4,402,510	0.25
Asset Backed	68,945,782	3.86
Equity:		
Domestic equity securities	517,128,264	28.92
International equity securities	265,188,533	14.83
Real Estate	158,021,097	8.84
Private Equity & Private Credit	187,721,053	10.50
Risk Parity	54,381,993	3.04
Hedge Funds	84,122,661	4.70
Hedge Funds - Opportunistic	32,500,317	1.82
Total Investments	$ 1,788,117,144	100.00 %

*Investment manager's cash holdings are reported in cash and cash equivalents

SUMMARY SCHEDULE OF BROKER COMMISSION

(Top 25 Brokers and Cumulative Fees Paid to Others)

Year Ended December 31, 2024

Brokerage Firm	Shares/Par Value	Fees Paid	% Total	Average $ per share
MORGAN STANLEY CO INCORPORATED	10,698,089	$16,780	19.46%	0.0016
J P MORGAN SECURITIES INC	118,931	15,508	17.99%	0.1304
BOFA SECURITIES, INC.	1,716,008	7,905	9.17%	0.0046
GOLDMAN SACHS + CO LLC	22,438,991,684	6,631	7.69%	0.0000
NATIONAL FINANCIAL SERVICES LLC	178,019	4,778	5.54%	0.0268
RBC CAPITAL MARKETS LLC	146,964	4,028	4.67%	0.0274
JEFFERIES LLC	3,132,421	3,768	4.37%	0.0012
WILLIAM BLAIR & COMPANY L.L.C	138,820	2,778	3.22%	0.0200
PERSHING LLC	4,296,849	2,465	2.86%	0.0006
J.P. MORGAN SECURITIES LLC	21,137,317	2,146	2.49%	0.0001
LIQUIDNET INC	110,081	1,848	2.14%	0.0168
UBS SECURITIES LLC	1,233,011	1,607	1.86%	0.0013
UBS AG	44,257	1,322	1.53%	0.0299
BARCLAYS CAPITAL INC./LE	56,184	1,302	1.51%	0.0232
BOFA SECURITIES, INC	37,595	1,086	1.26%	0.0289
NATIONAL FINANCIAL SERVICES CORPORATION	37,435	827	0.96%	0.0221
RBC CAPITAL MARKETS, LLC	2,437,833	816	0.95%	0.0003
ACADEMY SECURITIES, INC	25,599	691	0.80%	0.0270
JONESTRADING INSTITUTIONAL SERVICES LLC	30,045	605	0.70%	0.0201
COWEN AND COMPANY, LLC	29,997	590	0.68%	0.0197
OPPENHEIMER + CO. INC.	21,718	511	0.59%	0.0235
ROBERT W. BAIRD CO.INCORPORATED	175,699	507	0.59%	0.0029
PENSERRA SECURITIES LLC	17,660	477	0.55%	0.0270
CAP GUARDIAN BROKER	23,376	468	0.54%	0.0200
BMO CAPITAL MARKETS	40,012	453	0.53%	0.0113
OTHER	4,667,774,817	6,311	7.32%	0.0000
TOTAL	**27,152,650,421**	**$ 86,206**	**100%**	**0.0000**

The Fund Board has a commission recapture agreement with Capital Institutional Services, Inc. For the year ended December 31, 2024, the Fund earned approximately $4,444 from the commission recapture program.

SCHEDULE OF DIRECT MANAGEMENT FEES
Year Ended December 31, 2024

Investment Management Fees by Asset Class:	**AUM ($000s)**	**Fees ($000s)**
Domestic Equity	$ 409,446	$1,444
International Equity	216,066	256
Global Equity	49,122	-
Fixed Income	428,297	703
Risk Parity / Diversified Beta	54,382	204
Alternative Asset Classes	461,376	304
Total Investment Management Fees		**$ 2,911**
Investment Advisory (Consulting) Fees		$ 344
Communications and Governmental Services		156
Custodian Fees		628
Total Other Fees		**$ 1,128**
Total Direct Management Fees charged to MBTARF		**$ 4,039**

INVESTMENT POLICY STATEMENT

The following are significant fundamentals of the Fund's Investment Policy Statement. The policy delineates the objectives and policies that have been established by the Board to provide a framework for the on-going management of the Fund. It is designed to clearly communicate the directives of the Board to all interested parties. The Policy shall be revised from time to time, as deemed necessary, and will be reviewed annually to ensure its relevance to the Fund's current needs. Any resulting material changes will be communicated to all affected parties. The Policy will apply to the Fund on an aggregate basis.

The purpose of this Investment Policy Statement ("IPS") is to enumerate for stakeholders clear and concise guidelines by which the Retirement Board administers the Fund. This IPS is designed to allow sufficient flexibility to capture investment opportunities while providing guidance to facilitate compliance with the governing documents of the Fund and Massachusetts law. The Retirement Board periodically reviews this IPS to ensure that it conforms with the best practices applicable to the Fund.

In fulfilling the mission of the Trust, the objective of the Retirement Board is to ensure the availability of sufficient assets to pay benefits by achieving the highest level of investment performance compatible with acceptable levels of risk in a cost-effective manner and prudent investment practices. Specifically, in order to maintain if not improve upon its funded status, the Retirement Board seeks to meet or exceed the actuarial target rate of return. Maintaining, if not exceeding, the Assumed Rate of Return should have the benefit of stabilizing employer and employee contributions to the Fund. The Fund shall have a risk tolerance consistent with that of other funds created for similar purposes, and the assets of the Fund shall be invested accordingly. The Fund has adopted a Risk Management Framework. As a mature defined benefit plan, the Fund will have a negative cash flow as more participants retire, which, in turn, impacts the Fund's tolerance for market volatility.

The Fund's investment program is based on the precepts of the generally accepted capital markets theory followed by institutional investors who, by definition, are long-term-oriented investors with goals and objectives that are similar to the Fund. This philosophy holds that:

- Increasing risk is rewarded with compensating returns over time and therefore, prudent risk-taking is justifiable for long-term investors.
- Risk can be mitigated through diversification of asset class exposure, implementation strategies and individual security holdings.

(Continued)

- Diversification benefits shall be measured by examining the correlation between asset classes, implementation strategies and manager styles, with a goal of maximizing diversification and limiting concentration and overlap in asset classes and strategies that are more highly correlated.
- The primary determinant of long-term investment performance is the strategic or long-term asset allocation strategy.

Rate of Return Assumption

The Retirement Board will, with the assistance of the Actuary and Investment Advisor, establish and annually review the Assumed Rate of Return and may adopt changes over a market cycle, or more frequently if warranted. The current Assumed Rate of Return is 7.25% annually, net of all fees and operating expenses.

Relative Return Objectives

The Fund shall seek to achieve a rate of return that ranks in the top half of the appropriate peer fund universes given a comparable level of risk and to achieve a long-term rate of return on investments that is equal to or exceeds both the Asset Allocation Index Return and the Policy Index Return. Given its investment philosophy, the Retirement Board recognizes that the return targets may not be achieved in any single year; the Retirement Board will measure the performance of the Fund over an appropriate longer-term horizon.

Current Asset Allocation Targets & Ranges

Asset allocation herein refers to the establishment of relative percentage allocation guidelines for the investment of assets in equities, fixed income, alternative investments, cash equivalents and other general forms of investment, but not to individual security selection. This single decision is the most important consideration for the Board. In terms of direct impact on the Fund’s performance, the Fund’s policy asset mix choice outweighs all other decisions. As a practical matter, the Board understands that while important, portfolio structure decisions and active management strategies involving stock and bond selection, sector weighting or market timing have been shown to contribute less than long-term asset allocation decisions.

It is generally recognized that asset allocation decisions may account for up to 90% of the investment return for a large pool of assets; in terms of direct impact on the Fund’s performance, the Fund’s policy asset mix choice outweighs all other decisions. The Retirement Board shall manage the Fund to achieve the Assumed Rate of Return while adhering to fiduciary obligations and ensuring liquidity sufficient to pay benefits.

(Continued)

Factors to be considered include:
(1) the Fund's assumed rate of return,
(2) the risk tolerance of the Board,
(3) the Fund's liquidity requirements,
(4) Funded status,
(5) the Fund's liability structure and other characteristics unique to the fund. Following an asset allocation review which considered the impact of a range of asset allocation policies on the Fund.

The Board will review the asset allocation targets at least annually and may adopt changes over a three to five-year time horizon or, more frequently, if significant changes occur within the economic or capital market environments. A change in the Fund's liability structure, funded status or long-term investment prospects may also trigger a revision of the asset allocation.

The Fund may have the opportunity to invest in PRIT. If the Fund invests with a PRIT Segmentation Program, the Investment Advisor will, at the time of the investment is being considered by the Retirement Board, suggest to the Retirement Board allocations to the Fund's asset (sub)classes (if necessary), recognizing that a PRIT Segmentation Account may not fit uniformly into the Fund's asset allocation rubric; this assignment will impact the IM Benchmark(s) applicable to the PRIT Segmentation Account.

Performance Benchmarks

Total Fund Return: The Total Fund Return shall be compared against other corporate, jointly trusteed and public pension plans of similar size and circumstances, as identified by the Investment Advisor. The Total Fund Return objective is to meet or exceed the Allocation Index Return and the Policy Index Return, which are each described below.

Allocation Index: The Allocation Index Return shall measure the success of the Fund's current allocation. It shall be calculated by using index rates of return for each asset class invested in by the Fund multiplied by the actual percent allocated to each asset class. The difference between the Allocation Index Return and the Total Fund Return measures the effect of active management. If the Total Fund Return is greater than the Allocation Index Return, then active management has in aggregate added value.

Policy Index: The Policy Index Return shall measure the success of the Fund's target asset allocation. It shall be calculated by using index rates of return for each asset class invested in by the Fund multiplied by the percent targeted to each asset class. The difference between the

(Continued)

Allocation Index Return and the Policy Index Return measures the effects of deviating from the target allocation. If the Allocation Index Return is greater than the Policy Index Return, then deviating from the target allocation has added value. If the Allocation Index Return is less than the Policy Index Return, then deviating from the target allocation has not added value.

Manager Benchmarks: The Investment Managers shall be compared to a combination of passively managed index returns matching the managers' specific investment styles, as well as the median manager in their appropriate peer group universe.

Rebalancing

The actual asset allocation mix will deviate from the targets due to market movements, cash flows, and manager performance. The Retirement Board and Executive Director with the assistance of the Investment Advisor will review asset allocation at least quarterly to determine compliance with the targets and rebalance as warranted. The Executive Director shall report material rebalancing activity to the Retirement Board.

ACTUARIAL SECTION

(Unaudited)

Gallagher, LLC, know formerly as Buck Global, LLC has performed a December 31, 2024 actuarial valuation of the MBTA Retirement Fund. This valuation and report was prepared using Generally Accepted Actuarial Principles and practices and meets the parameters set by the Governmental Accounting Standards Board (GASB). To the best of our knowledge, this report is complete and accurate, and the assumptions used represent our best estimate of anticipated experience of the Fund.

Gallagher, LLC has prepared and included, as part of this report, all of the supporting schedules in the Actuarial Section of the Annual Comprehensive Financial Report (ACFR).

Gallagher

500 Plaza Drive
Secaucus, NJ 07096

May 20, 2025

Retirement Board
Massachusetts Bay Transportation Authority Retirement Fund
One Washington Mall, Fourth Floor
Boston, MA 02108

Dear Board Members:

The Pension Agreement covering the Massachusetts Bay Transportation Authority Retirement Fund provides that the actuary make annual actuarial valuations of the Fund and certify rates of contribution to the Retirement Board. The most recent actuarial valuation of the Fund was prepared as of December 31, 2024.

This valuation reflects the funding policy adopted by the Board effective December 31, 2009. The actuarial cost method used is the entry age normal cost method. The amortization of the unfunded liability is made in installments increasing at the rate of four percent per year over a closed 30-year period beginning December 31, 2009.

This valuation is based on assumptions adopted by the Retirement Board, in April 2023 and effective with the actuarial valuation of December 31, 2022, on the basis of an experience study covering the period January 1, 2018, through December 31, 2022. Significant assumptions revised on the basis of the experience study include mortality, salary increase rates, termination rates, and retirement rates. We believe that these assumptions are reasonable. The assumptions and methods used for funding purposes satisfy the requirements of all applicable Actuarial Standards of Practice. The same actuarial assumptions are used for financial reporting by and for the Fund under GASB Statements 67 and 68.

We performed the valuation using participant data and plan asset data supplied by the Authority and Retirement Fund. Although we did not audit the data, we reviewed the data for reasonableness and consistency with the prior year's information. The accuracy of the results of the valuation is dependent on the accuracy of the data.

The following exhibits from the valuation report were incorporated in the Actuarial Section of the Annual Comprehensive Financial Report (ACFR):

1. Summary of Principal Results
2. Number and annual retirement allowances of retired members, disabled members and beneficiaries as of December 31, 2024
3. Schedule of Funding Progress
4. Outline of Actuarial Assumptions and Methods

(Continued)

5. Summary of Main Provisions of the Fund as Interpreted for Valuation Purposes
6. Number and Annual Compensation of Active Members Distributed by Fifth Age and Service as of December 31, 2024
7. Number and Annual Retirement Allowances Distributed by Age as of December 31, 2024

The following exhibits were separately prepared by Gallagher for use in the ACFR:

1. Schedule of Retired Members and Beneficiaries Added to and Removed from Rolls
2. Solvency Test

Actuarial Standard of Practice No. 56 ("ASOP 56") provides guidance to actuaries when performing actuarial services that involve designing, developing, selecting, modifying, using, reviewing, or evaluating models. Gallagher uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the Fund using data and assumptions as of the measurement date under the funding methods specified in this report. The output from the third-party vendor software is used as input to an internally developed model that applies applicable funding methods and policies to the derived liabilities and other inputs, such as plan assets and contributions, to generate many of the exhibits in the valuation report. Gallagher has an extensive review process in which the results of the liability calculations are checked using detailed sample output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other funding outputs and the internal model are similarly reviewed in detail and at a high level for accuracy, reasonability, and consistency with prior results. Gallagher also reviews the third-party model when significant changes are made to the software. The review is performed by experts within the company who are familiar with applicable funding methods as well as the manner in which the model generates its output. Extra checking and review are completed if significant changes are made to the internal model. Significant modifications to the internal model that apply to multiple clients are generally developed, checked, and reviewed by various experts within the company who are familiar with the details of the required changes.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. An analysis of the potential range of such future differences is beyond the scope of the valuation. However, in accordance with the requirements of Actuarial Standard of Practice No. 51 ("ASOP 51"), a risk assessment is provided in Section X of the valuation report.

Where presented, the "funded ratio" and "unfunded accrued liability" are generally measured using the actuarial value of assets basis. It should be noted that recomputation of these measurements using the market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio

(Continued)

presented is appropriate for evaluating the need and level of future contributions but does not provide a basis for the assessment of the funded status of the plan if the plan were to settle (i.e., purchase annuities to cover) a portion or all of its liabilities.

I am a Fellow of the Society of Actuaries and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the Academy to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and I am available to answer questions about it.

Gallagher Benefit Services, Inc. (Gallagher)

David L. Driscoll

David L. Driscoll, FSA, EA, MAAA, FCA
Principal, Consulting Actuary

Section II - Summary of Principal Results

1. The principal results of the current and preceding years' valuations are summarized below:

Valuation Date	December 31, 2023	December 31, 2024
Number of active members	5,805	6,565
Annual compensation of all members	$ 560,824,908	$ 661,958,698
Annual compensation of active members below normal retirement age	$ 555,382,730	$ 655,367,532
Average age (years)	48.24	47.43
Average service (years)	10.52	9.52
Average compensation	$ 96,611	$ 100,831
Number of active members not accumulating creditable service	444	498
Number of retired members, beneficiaries and disabled members	6,800[1]	6,783[2]
Annual retirement allowances	$ 238,078,036[3]	$ 241,191,500[4]
Assets for funding purposes	$ 1,844,331,372	$ 1,917,621,895
Unfunded accrued liability	$ 1,459,032,710	$ 1,505,030,617
Contribution rates required:		
Normal	12.8500%	12.9200%
Accrued liability	21.2000%	19.4900%
Expenses	1.0000%	1.0000%
Total required rate	35.0500%	33.4100%
Member excess rate	0.0000%	0.0000%
Actual contribution rate during following fiscal year	35.0500%	33.4100%

2. Valuation results as of December 31, 2024, are given in Section VI, and contribution levels are set forth in Section VII.

3. Schedule B of this report outlines the actuarial assumptions and methods used in the valuation. The actuarial assumptions were selected on the basis of an experience study covering the five-year period ending December 31, 2022. The Retirement Board voted to adopt these assumptions in April 2023.

4. Schedule C of this report presents a summary of the main provisions of the Fund, as interpreted in preparing the actuarial valuation.

[1] Includes 6,625 retirees and beneficiaries, 27 individuals receiving worker's compensation for over 5 years, and 148 individuals receiving payments under QDROs.

[2] Includes 6,607 retirees and beneficiaries, 26 individuals receiving worker's compensation for over 5 years, and 150 individuals receiving payments under QDROs.

[3] Excludes 27 individuals receiving worker's compensation for over 5 years.

[4] Excludes 26 individuals receiving worker's compensation for over 5 years.

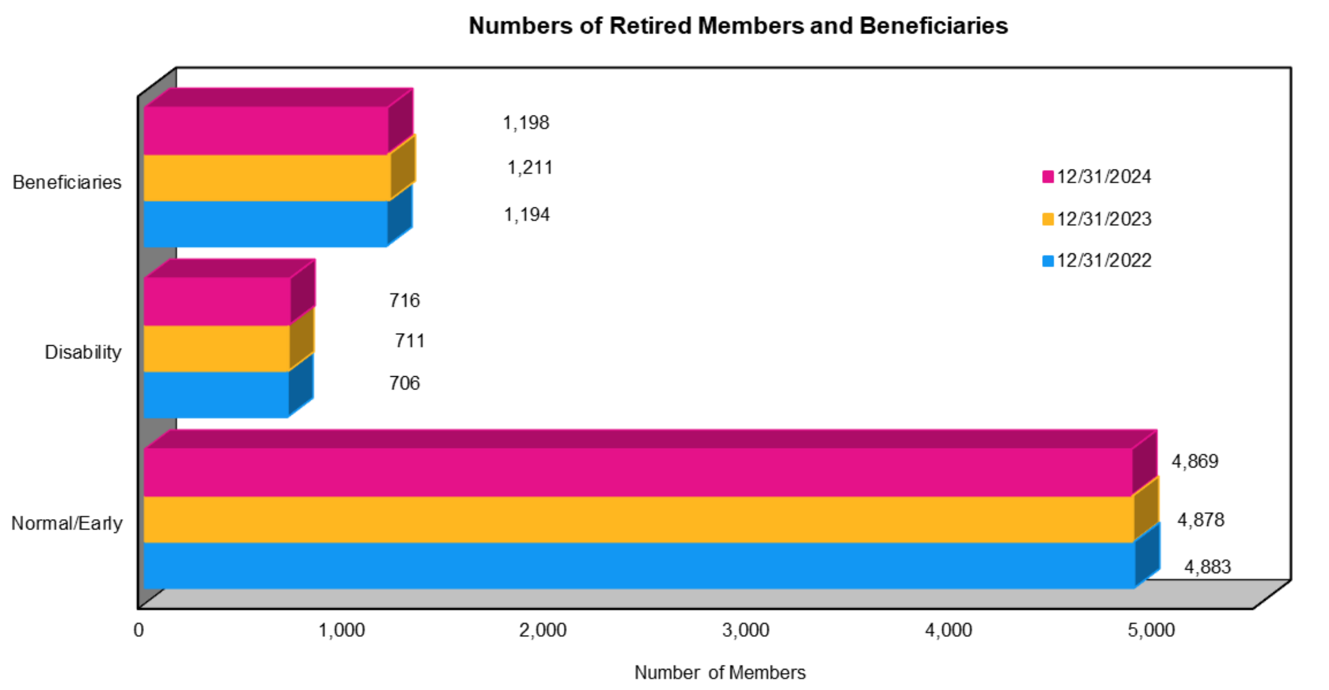
Section III - Membership Data

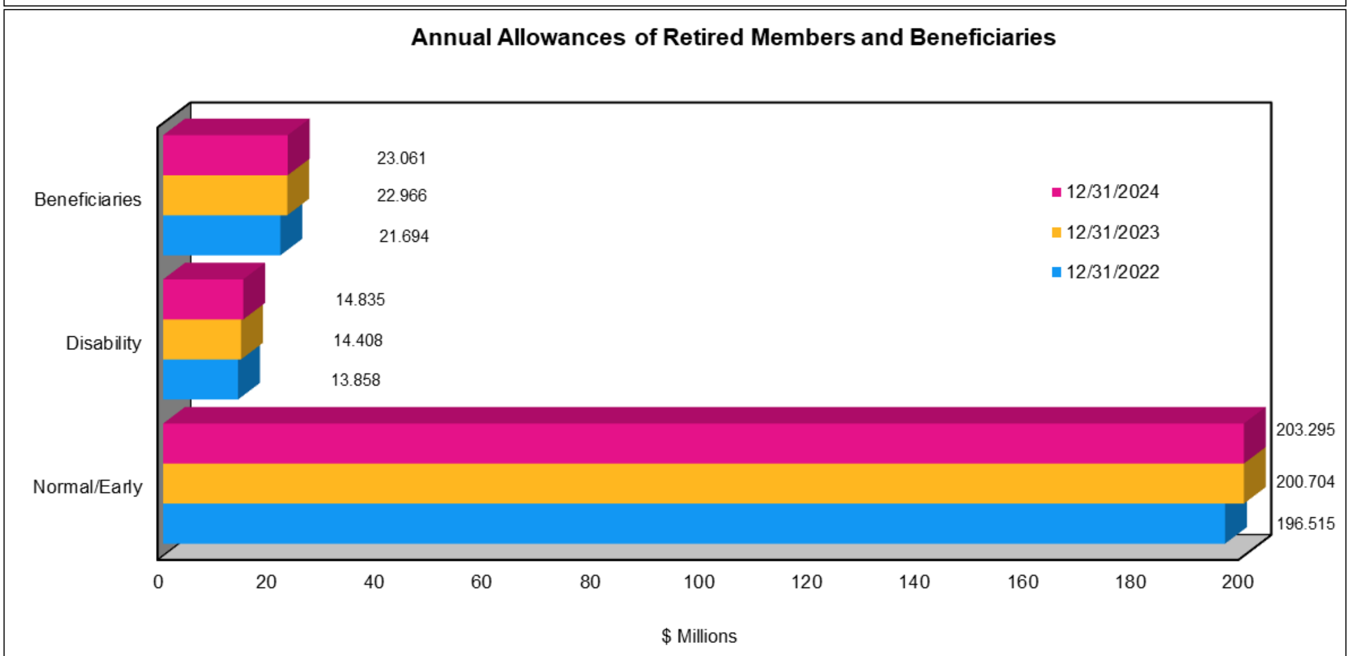
1. Employee data was furnished by the Authority and Retirement Fund.
2. Table 1 of Schedule D shows the number and annual compensation of active members, while Table 2 of Schedule D shows the number and annual retirement allowances of retired members, disabled members and beneficiaries.
3. The following table summarizes the number and annual retirement allowances of retired members, disabled members and beneficiaries as of December 31, 2024:

Category	Number	Annual Retirement Allowances
Benefits to Members Retired on Normal, Early Normal and Reduced Early Retirement Allowances	4,869	$ 203,294,569
Benefits to Members Retired on Disability Retirement Allowances	716[1]	14,835,447[2]
Benefits to Beneficiaries of Deceased Members[3]	1,198	23,061,484
Total	6,783	$ 241,191,500

[1] Includes 26 individuals receiving worker's compensation for over 5 years.
[2] Excludes 26 individuals receiving worker's compensation for over 5 years.
[3] Includes 150 individuals receiving payments under QDROs.

Section III - Membership Data (continued)[1]





[1] Disability counts include individuals receiving worker's compensation for over 5 years, and disability allowances exclude individuals receiving worker's compensation for over 5 years.

Section IV - Assets

1. Asset information was obtained from the Retirement Fund office.
2. The market value of the Fund's net assets available for benefits as of December 31, 2024, amounted to $1,801,743,684.
3. The asset valuation method is a five-year phase-in smoothing method under which the value of assets for actuarial purposes equals market value adjusted for a five-year phase-in of the differences between actual and assumed investment return. The value of assets for actuarial purposes may not differ from the market value of assets by more than 20%. The smoothing method used to calculate the value of assets for actuarial purposes was restarted as of December 31, 2013, coincident with the change to the present method.
4. The calculation of the actuarial value of assets as of December 31, 2024, is presented below:

Market value as of December 31, 2024					1,801,743,684	(A)
Adjustment to recognize asset gains (losses) over 5 years:						
Year Ending	Asset gain (loss)	X	Adjustment factor	=	Adjustment	
12/31/2024	5,702,911		0.80		4,562,329	
12/31/2023	27,626,501		0.60		16,575,900	
12/31/2022	(395,720,797)		0.40		(158,288,319)	
12/31/2021	106,359,393		0.20		21,271,879	
Total					(115,878,211)	(B)
Actuarial value of assets, as of December 31, 2024					1,917,621,895	
Asset gain during fiscal year ending December 31, 2024						
Actual return on market value and cash flow						
Income from investments and securities lending					31,418,983	
Net appreciation					100,425,879	
Total					131,844,862	(C)
Expected 7.25% return on market value and cash flow					126,141,951	(D)
Asset gain (loss) (C) – (D)					5,702,911	

The assets for valuation purposes are 106.40% of market value.

5. As of December 31, 2007, members' excess contributions (as discussed in Section V) had been fully depleted to cover the cost of the one-time cost-of-living increases negotiated in collective bargaining related to the benefits provided under the Fund. The actuarial asset value derived above thus requires no additional adjustment for members' excess contributions.

Section V – Member Excess Contributions

1. Effective July 1, 1998, in lieu of a reduction in the 4% contribution rate, members continued to make contributions equal to 4% of covered payroll.
2. To the extent that 4.00% exceeds the actuarially determined member required contribution rate, the excess is characterized as member excess contributions. These amounts are to be accumulated within the Retirement Fund and used to provide additional benefits.
3. The member excess rates developed in prior years are as follows:

Period	Excess Rate	Period	Excess Rate
July 1, 2010 – June 30, 2011	0.00000%	July 1, 2017 – June 30, 2018	0.00000%
July 1, 2011 – June 30, 2012	0.00000%	July 1, 2018 – June 30, 2019	0.00000%
July 1, 2012 – June 30, 2013	0.00000%	July 1, 2019 – June 30, 2020	0.00000%
July 1, 2013 – June 30, 2014	0.00000%	July 1, 2020 – June 30, 2021	0.00000%
July 1, 2014 – June 30, 2015	0.00000%	July 1, 2021 – June 30, 2022	0.00000%
July 1, 2015 – June 30, 2016	0.00000%	July 1, 2022 – June 30, 2023	0.00000%
July 1, 2016 – June 30, 2017	0.00000%	July 1, 2023 – June 30, 2024	0.00000%

4. As of December 31, 2007, members' excess contributions accumulated in prior years had been fully depleted.
5. The member excess rate for the period July 1, 2024 - June 30, 2025 is derived as follows:

a.	Effective prior member excess rate (December 31, 2023)	- 4.7539%
b.	Decrease in total required contribution rate from prior valuation (see Section VII)	1.64%
c.	Current member excess rate (July 1, 2024) ((a.) + 25% of (b.))	- 4.3439%

6. The accumulated value of the excess contributions as of December 31, 2024 is $0.

Section VI – Comments on Valuation

1. Schedule A of this report presents the results of the valuation as of December 31, 2024.
2. The total entry age normal accrued liability on account of benefits expected to be paid to present retired members, former members, beneficiaries, active and inactive members is $3,422,652,512. Of this amount, $2,186,088,782 is on account of retired members and beneficiaries, $1,220,501,074 is on account of present active members and $16,062,656 is on account of active members not accumulating creditable service.
3. The value of Fund assets to be used in developing required contributions to the Fund is $1,917,621,895, including required contributions made by active members. When $1,917,621,895 is subtracted from $3,422,652,512, there remains $1,505,030,617, which represents the unfunded actuarial accrued liability of the Fund.
4. Amortization of the unfunded liability over the remaining 15 years in the amortization period as of December 31, 2024, in annual installments rising at the rate of 4% per year produces an amortization installment of $127,752,415 as of December 31, 2024. This amounts to 19.49% of the value of annual compensation of active members below normal retirement age on that date.
5. The total entry age normal cost at December 31, 2024, is $84,672,782, or 12.92% of the annual compensation of active members below normal retirement age on that date.
6. In addition to the amounts needed to cover amortization of the unfunded liability and normal cost, an allowance of 1.00% of annual compensation of active members below normal retirement age is included in the total required contribution to cover expected administrative expenses. Under the current funding policy of fully covering the actuarially determined contribution, and assuming there are no future experience gains or losses, future expected Fund contributions are expected to remain relatively level as a percent of payroll for 15 years and remain relatively level as a percent of payroll thereafter at the normal cost rate, and the funded status is expected to increase to 100% after 15 years.
7. During 2024, the unfunded actuarial accrued liability increased $46.0 million, from $1,459.0 million to $1,505.0 million. The expected unfunded actuarial accrued liability at December 31, 2024, was $1,406.3 million. The $98.7 million difference consists of a $43.6 million loss in 2024 of returns on the actuarial value of assets and $55.1 million in increased accrued liability due to unfavorable demographic experience. Additional details are provided in Section IX.
8. The total contribution rate is compliant with the definition of a reasonable actuarially determined contribution under ASOP 4. When determining the smoothing period for the actuarial value of assets and the amortization period for the unfunded actuarial accrued liability, the following items were considered: (i) the balance among benefit security, intergenerational equity, and stability of actuarially determined contributions, (ii) the timing and duration of expected benefit payments, and (iii) the nature and frequency of plan amendments. Plan amendments are amortized over periods appropriate for the nature of the change or are funded at the time of the change based on decisions by the plan sponsor.

Section VII – Contributions to the Fund

1. Effective December 31, 2009, the contributions by members and the Authority are to provide normal contributions, amortization of the unfunded accrued liability and administrative expenses. It is assumed that investment earnings will be sufficient to cover fiduciary and investment expenses and, in addition, provide the yield assumed for actuarial purposes.
2. The valuation indicates that 12.92% of compensation is required to cover normal cost and 19.49% of compensation is required to cover amortization of the unfunded accrued liability. Adding 1.00% of compensation for anticipated administrative expenses, excluding fiduciary and other investment expenses, results in a total contribution rate of 33.41% of compensation to be paid by the Authority and the members of the Retirement Fund from July 1, 2025, through June 30, 2026.
3. This rate is 1.64% less than the 35.05% rate developed in the December 31, 2023, valuation. Under the adjustment formula contained in the July 1, 2002, Pension Agreement, 75% of the change will be allocated to the Authority as a change in the contribution rate and 25% will be allocated to the member's required contribution rate. This results in the following rates payable during the year beginning July 1, 2025:

Authority	24.7211%
Members' required	8.6889%[1]
Subtotal (Section II)	33.4100%
Members' excess (Section V)	0.0000%
Total	33.4100%

[1] The actual rate in effect as of July 1, 2025, will be 125 basis points higher, as specified in the new Pension Agreement. The actual rate is 9.9389%.

Section VIII – Schedule of Funding Progress (,000's)[1]

Statement No. 25 of the Governmental Accounting Standards Board has been superseded by Statement No. 67. Required reporting for the Retirement Fund under Statement No. 67 will be included in the audited financial statements of the Retirement Fund. The information below is shown nonetheless for informational purposes.

Year Ending December 31	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b-a)	Funded Ratio (a/b)	Covered Payroll (c)	UAAL as a Percentage Covered Payroll ((b-a)/c)
2024	1,917,622	3,422,653	1,505,031	56.03%	655,368	229.65%
2023	1,844,331	3,303,364	1,459,033	55.83%	555,383	262.71%
2022	1,799,925	3,167,471	1,367,546	56.83%	492,170	277.86%
2021	1,760,644	3,101,704	1,341,060	56.76%	454,985	294.75%
2020	1,636,054	3,055,123	1,419,069	53.55%	456,930	310.57%
2019	1,561,193	3,021,110	1,459,918	51.68%	433,577	336.72%
2018	1,559,453	2,916,800	1,357,348	53.46%	423,075	320.83%
2017	1,599,505	2,829,386	1,229,881	56.53%	425,658	288.94%
2016	1,607,560	2,694,556	1,086,996	59.66%	444,455	244.57%
2015	1,630,411	2,572,084	941,673	63.39%	440,502	213.77%

[1] Some numbers in the table do not add up due to rounding.

Section IX – Experience

Records are maintained in which the actual experience of active and retired members is compared to that expected on the basis of the tables adopted by the Retirement Board. In this way, deviations in the experience from that anticipated will be noted and any adjustments believed necessary will be brought to the attention of the Retirement Board in future experience studies.

During the last year, the total unfunded actuarial accrued liability (UAL) was expected to decrease from $1,459,032,710 to $1,406,331,709. The actual UAL at the end of the year was $1,505,030,617. The chart below reconciles the expected to actual UAL. The primary sources of changes were a $55,053,529 increase in the accrued liability resulting from unfavorable demographic experience in 2024, and returns on assets measured at actuarial value that were $43,645,379 below expected levels in 2024.

The sources of the (Gains)/Losses are shown below:

Actual UAL as of December 31, 2023		$ 1,459,032,710
Expected UAL (Prior to Changes) as of December 31, 2024		$ 1,406,331,709
Salary Increases	$ 51,536,639	
New Participants	39,746	
Active – Retirements	2,260,266	
Active – Terminations	(1,390,533)	
Active – Mortality	135,089	
Active – Disabilities	(1,406,257)	
Retiree Mortality	5,197,782	
Other (Data Corrections, etc.)	(1,319,203)	
Liability (Gain)/Loss – Demographic Experience		$ 55,053,529
Change in Accrued Liability Due to Contribution Rate Changes		$ 0
Change in Accrued Liability Due to Assumption Changes		$ 0
Total of Liability (Gain)/Loss and effects of changes in assumptions and changes in Contribution rates		$ 55,053,529
Investment (Gain)/Loss		$ 43,645,379
Total Change in UAL		$ 98,698,908
Actual UAL as of December 31, 2024		$ 1,505,030,617

Section X – Risk Information

Actuarial Standard of Practice No. 51 (“ASOP 51”) Disclosures

Funding future retirement benefits before they become due requires assumptions regarding future economic and demographic experience. These assumptions are applied to calculate actuarial liabilities and the corresponding funded status of the Fund. However, to the extent future experience deviates from the assumptions used, variations will occur in these calculated values. These variations create risk to the Fund. Understanding the risks to the funding of the Fund is important.

Actuarial Standard of Practice No. 51 (“ASOP 51”) requires certain disclosures of potential risks to the Fund and the provision of useful information for intended users of actuarial reports who determine Fund contributions or evaluate the adequacy of specified contribution levels to support benefit provisions. While its status as a governmental pension plan (as defined in the Internal Revenue Code) exempts it from the funding provisions of ERISA, the Massachusetts Bay Transportation Authority Retirement Fund uses the information presented to assist in making decisions regarding contribution levels.

Under ASOP 51, risk is defined as the potential of actual future measurements deviating from expected future measurements resulting from actual future experience deviating from actuarially assumed experience.

It is important to note that not all risk is negative, but all risk should be understood and accepted based on knowledge, judgment and educated decisions. Future measurements may deviate in ways that produce positive or negative financial effects on the Fund.

In the actuary’s professional judgment, the following risks may reasonably be anticipated to significantly affect the Fund’s future financial condition.

- Investment risk – the risk that assets will not earn the expected rate of return
- Interest rate risk – the risk that the general level of interest rates will increase or decrease significantly from current levels
- Asset liability mismatch - Potential that changes in asset values are not matched by changes in the value of liabilities
- Longevity and other demographic risk – the risk that mortality or other demographic experience will be different from expected

The following information is provided to comply with ASOP 51 and furnish beneficial information on potential risks to the Fund. This list is not all-inclusive; it is an attempt to identify the most significant risks and how those risks might affect the results shown in this report.

Note that ASOP 51 does not require the actuary to evaluate the ability or willingness of the sponsor of a pension plan to make contributions to the plan. In addition, this valuation report is not intended to provide investment advice or guidance on managing or reducing risk. Gallagher welcomes the opportunity to assist with such matters as part of a separate project or projects utilizing the appropriate staff and resources for those objectives.

Investment Risk

Retirement Fund costs are sensitive to the market return on assets. Returns below those assumed with increased costs. The Fund uses an actuarial value of assets that smooths gains and losses on market returns over a 5-year period to help control some of the volatility in costs due to investment risk.

The Fund invests in a diversified portfolio of assets with the objective of maximizing investment returns at a reasonable level of risk. Actuarial Standard of Practice No. 4 (ASOP 4) requires the actuary to disclosure a Low-Default-Risk Obligation Measure (LDROM) of the plan’s liability and provide commentary to help the intended users of this report understand the significance of the LDROM with respect to funded status, contributions, and participant benefit security.

Section X – Risk Information (continued)

The LDROM is based on discount rates derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future. The LDROM shown here represents what the Fund's liability would be if it invested its assets solely in a portfolio of high-quality bonds whose cash flows approximately match future benefit payments. Consequently, the difference between the LDROM and the actuarial accrued liability represents the taxpayer savings from investing in a diversified portfolio of assets versus only investing in high-quality bonds. Furthermore, this difference also represents the cost of reducing investment risk.

As of December 31, 2024, the LDROM is $3.9 billion based on an interest rate of 5.81%. The interest rate used for the LDROM was determined by calculating a single equivalent discount rate using projected benefit payments and the Gallagher Above Median Yield Curve as of December 31, 2024. Please note that the interest rate used for the LDROM is based on bond yields as of the measurement date and will therefore vary for different measurement dates. All other assumptions are the same as those used for funding purposes as shown in this report.

Actuaries play a role in helping to determine funding methods and policies that can achieve affordable and appropriate contributions and risk management. The funded status based on the actuarial accrued liability, as well as the actuarially determined contributions, are calculated using the expected return on assets, which reflects the actual investment portfolio. Since the assets are not invested solely in an all-bond portfolio, the LDROM does not indicate the Fund's funded status or progress, nor does it provide information on necessary plan contributions.

Regarding participant benefit security, if the Fund were to be funded on an LDROM basis, participant benefits currently accrued as of the measurement date might be considered more secure, since the investment risk would be significantly reduced. However, the fact that assets are invested in a diversified portfolio does not mean that the participants' benefits are not secure. The security of participant benefits relies on a combination of the assets in the plan, the investment returns generated from those assets, and the promise of future contributions from the plan sponsor. Reducing investment risk by investing solely in bonds may significantly increase the actuarially determined contributions and thereby increase contributions risk by decreasing the ability of the plan sponsor to make necessary contributions to fund the benefits. Unnecessarily high contribution requirements in the near term may not be affordable and could imperil plan sustainability and benefit security. Participant benefits will remain secure if reasonable and appropriate contributions with managed risk are calculated and paid.

Assessment of Risks

- Investment return: Lower assets mean higher unfunded liability and larger contribution amounts. For example, if returns on assets at market value were an additional 1% lower than actual, this would reduce the actuarial value of assets by approximately $3.4 million, which would increase the 2024 Authority contribution rate by 0.0375% and the member contribution rate by 0.0125%.
- Interest rate risk: Actuarial liabilities contained in this report are based on the assumption that interest rates will remain at current levels throughout the forecast period. These interest rates are used to discount future expected benefit payments to determine the Fund liability. As interest rates increase, the discounted value of future benefit payments will decrease; similarly, as interest rates decrease, the discounted value of future benefit payments will increase. The duration of the Fund's liability is approximately nine years, which means that every 100-basis point change in interest rates will result in roughly a 9% change in Fund liability.
- Asset liability mismatch: Unless assets are explicitly structured to mimic the characteristics of Fund liabilities, there is a risk that economic scenarios that affect interest rates will have a larger impact on liability than on assets. This is because Fund liability is the discounted value of benefit payments that extend way out into future years, i.e., have a long duration. Fund investments, on the other hand, typically have a shorter duration with respect to interest rate changes, often holding fixed income securities with lower durations than Fund liabilities and typically maintaining some monies in equity investments that are not as directly sensitive to interest rate changes.
- Longevity and other demographic risk: The Fund is subject to longevity risk, the risk that participants will live longer (or shorter) than expected. The most recent experience study showed that actual mortality experience had tracked closely to the current mortality assumption as determined by the experience study completed in 2023.

Section X – Risk Information (continued)

In addition, the Fund is subject to risks associated with assumptions with respect to active and deferred vested participants (for example, salary increases, termination prior to retirement, retirement, and optional form election). The current assumptions for these decrements are based on the experience study completed in 2023. Changes in future liabilities will result to the extent actual experience differs from these assumptions. In particular, higher than expected salary increases (including base pay plus short-term incentives) would increase actuarial liabilities. Further, due to the subsidized early retirement reductions for certain groups, retirements earlier than expected could increase liabilities.

Historical Results

The following table shows selected historical values of key valuation measures. These items illustrate how actual volatility has impacted the Fund in recent years and gives additional context to the risks described above. Further information can be found in the actuarial valuation reports for each year.

	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024
Actuarial Value of Assets (AVA)	$1.64B	$1.76B	$1.80B	$1.84B	$1.92B
Asset Return on MV in Prior Year	14.22%	13.23%	(9.26)%	8.73%	7.36%
Investment gain/(loss) on AVA	$33M	$66M	$(31M)	$(17M)	$(44M)
Actuarial Accrued Liability	$3.06B	$3.10B	$3.17B	$3.30B	$3.42B
The ratio of retired life* actuarial accrued liability to total actuarial accrued liability	69%	69%	68%	66%	64%
The ratio of benefit payments to actuarial value of assets	14%	13%	13%	14%	13%
The ratio of actuarial value of assets to participant payroll	355%	384%	363%	329%	290%
Normal cost	$55M	$55M	$62M	$71M	$85M
Discount rate	7.25%	7.25%	7.25%	7.25%	7.25%
Non-Investment gain/(loss)	$8M	$1M	$(67M)	$(65M)	$(55M)
Funding Policy contribution	$161M	$159M	$172M	$195M	$219M

* Retired members, former members and beneficiaries

Commentary on Fund Maturity Measures

The ratio of retired life actuarial accrued liability to total actuarial accrued liability

A mature pension plan will often have a ratio above 60 - 65 percent. A higher percentage will generally indicate an increased need for asset / liability matching due to inability to accept volatility in future returns.

The ratio of benefit payments to actuarial value of assets

Higher benefit payments as a percentage of assets means the fund may need to invest in more liquid assets to cover the benefit payments. More liquid assets may not garner the same returns as less liquid assets and therefore increase the investment risk. However, there may already be enough liquid assets to cover the benefit payments, less investment return is needed to cover the shortfall, or only a small portion of assets will need to be converted to cash. Therefore, the investment risk is likely not amplified at this time. This maturity measure should be monitored for continual upward trend with greater magnitude.

The ratio of actuarial value of assets to participant payroll

Plans that have higher asset-to-payroll ratios experience *more* volatile employer contributions (as a percentage of payroll) due to investment return. For example, if lower than expected asset return increases the unfunded liability of two pension plans by the same percentage, the plan with the higher assets-to-payroll ratio may experience higher contribution volatility than a plan with the lower asset-to-payroll ratio.

Section XI – Alternative Scenarios

What if Active Headcount Remained at its 12/31/2016 Level?

		12/31/2024 Valuation (A)	12/31/2016 Level (B)
1.	Normal Cost Rate	12.92%	12.92%
2.	Expenses	1.00%	1.00%
3.	Amortization	$127,752,415	$127,752,415
4.	Active Employees 12/31/2024	NA	6,565
5.	Active Employees 12/31/2016	NA	5,786
6.	New Entrant Salary	NA	$81,000
7.	Payroll (7.A +6. x (5. - 4. not less than 0))	$655,367,532	$655,367,532[1]
8.	Accrued Liability Amortization Rate (3. / 7.)	19.49%	19.49%
9.	Total Contribution (1. + 2. + 8.)	33.41%	33.41%
10.	Member Contribution	8.6889%	8.6889%

- Since active membership has now surpassed what it was from the 12/31/2016 valuation, the active headcount does not impact the results of the valuation.

[1] Active Headcount as of 12/31/2024 is greater than the Active Headcount as of 12/31/2016, resulting in no difference in the calculations between scenarios (A) and (B).

Section XI – Alternative Scenarios (continued)

Contribution as a % of Pay Under Alternative Funding Policies

The current funding policy contribution rates were determined by amortizing the unfunded liability over a 15-year period ending in 2040 in installments escalating at the rate of 4% per year. The table below presents calculations of what the contribution rates developed in this valuation would be if the Fund were to change its current funding policy with respect to the amortization of the unfunded liability.

Amort. (years)	Escalator % per year									
	0%		1%		2%		3%		4%	
	Authority	Member	Authority	Member	Authority	Member	Authority	Member	Authority	Member
8	38.23%	13.19%	37.36%	12.90%	36.50%	12.62%	35.68%	12.34%	34.88%	12.07%
9	35.90%	12.42%	35.00%	12.12%	34.13%	11.82%	33.28%	11.54%	32.45%	11.26%
10	34.06%	11.80%	33.13%	11.49%	32.23%	11.19%	31.36%	10.90%	30.51%	10.62%
11	32.56%	11.30%	31.61%	10.98%	30.68%	10.68%	29.79%	10.38%	28.93%	10.09%
12	31.32%	10.89%	30.35%	10.56%	29.40%	10.25%	28.49%	9.95%	27.61%	9.65%
13	30.29%	10.54%	29.29%	10.21%	28.32%	9.89%	27.39%	9.58%	26.50%	9.28%
14	29.41%	10.25%	28.39%	9.91%	27.41%	9.58%	26.45%	9.27%	25.55%	8.96%
15	28.65%	10.00%	27.61%	9.65%	26.61%	9.32%	25.64%	9.00%	24.72%	8.69%

- The “Years” on the left side denote the years over which the unfunded liability is amortized
- Dollar amounts shown are expressed in $millions
- Percentages of payroll shown represent total contributions developed as a % of pay
- The red circle represents current funding policy

Section XI – Alternative Scenarios (continued)

2024 Amortization under Alternative Funding Policies

The table below presents calculations of what the contribution for amortization of the unfunded liability developed in this valuation would be if the Fund were to change its current funding policy with respect to the amortization of the unfunded liability

Amort. (years)	Escalator % per year				
	0%	1%	2%	3%	4%
8	$245.74	$238.13	$230.72	$223.49	$216.45
9	$225.44	$217.57	$209.92	$202.48	$195.25
10	$209.31	$201.21	$193.34	$185.71	$178.31
11	$196.22	$187.90	$179.84	$172.03	$164.48
12	$185.42	$176.89	$168.64	$160.66	$152.97
13	$176.36	$167.63	$159.20	$151.08	$143.25
14	$168.67	$159.76	$151.16	$142.89	$134.94
15	$162.09	$152.99	$144.23	$135.82	$127.75

- The “Years” on the left side denote the years over which the unfunded liability is amortized
- Dollar amounts shown are expressed in $ millions
- Percentages of payroll shown represent total contributions developed as a % of pay
- The red circle represents current funding policy

Schedule A – Results of the Valuation as of December 31, 2024

1.	Present Value of Future Benefits	
(a)	Present value of prospective benefits to retired members, former members and beneficiaries	$ 2,186,088,782
(b)	Present value of prospective retirement allowances on account of present active members	1,995,447,863
(c)	Present value of prospective retirement allowances or return of members' contributions for members not accumulating creditable service	16,062,656
(d)	Total actuarial liabilities	$ 4,197,599,301
2.	Assets of the Fund for purposes of development of contributions	$ 1,917,621,895
3.	Present value of future contributions to the fund (1(d)-2)	$ 2,279,977,406
4.	Present value of future normal contributions to the Fund[1]	$ 774,946,789
5.	Unfunded accrued liability (3) - (4)	$ 1,505,030,617

[1] Includes future contributions of members at the rate developed in Section VII.

Schedule B – Outline of Actuarial Assumptions and Methods

In 2023, an experience study was conducted based on the experience from January 1, 2018 to December 31, 2022. Based on the experience study, Gallagher proposed assumptions for mortality tables, salary increases, termination rates, and retirement rates. All proposed assumptions were approved by the Retirement Board in April 2023.

Data

The rate of pay was used for the 2024 valuation (projected 2025 pensionable earnings). Starting with the 2021 valuation, participants who have been receiving Workers' Compensation benefits for 5 or more years are assumed to never commence their Massachusetts Bay Transportation Authority Retirement Fund pension benefit, but are assumed to receive a refund of their contributions to the Fund with interest. In addition, participants who are active but did not contribute to the plan in 2024, are assumed to remain non-contributing for the remainder of their employment.

Interest rate for funding purposes

7.25% per annum, compounded annually, in addition to fiduciary and investment management expenses.

Separations from active service

Representative values of the assumed rates of withdrawal and reduced early retirement and disability are as follows:

	Withdrawal[1]					
Age/Service	0	1	2	3	4	5+
25	6.59%	6.31%	6.62%	4.62%	4.16%	5.73%
30	6.59%	6.31%	6.62%	4.62%	4.16%	6.25%
35	6.59%	6.31%	6.62%	4.62%	4.16%	3.17%
40	6.59%	6.31%	6.62%	4.62%	4.16%	2.73%
45	6.59%	6.31%	6.62%	4.62%	4.16%	2.19%
50	6.59%	6.31%	6.62%	4.62%	4.16%	1.68%
55	6.59%	6.31%	6.62%	4.62%	4.16%	2.33%
60	6.59%	6.31%	6.62%	4.62%	4.16%	2.72%
64	6.59%	6.31%	6.62%	4.62%	4.16%	3.65%

Age	Disability Male[2]	Disability – Female[2]
20	0.07%	0.11%
25	0.08%	0.12%
30	0.10%	0.15%
35	0.13%	0.20%
40	0.17%	0.26%
45	0.15%	0.38%
50	0.25%	0.44%
55	0.46%	0.80%
60	0.90%	1.58%
64	1.68%	2.94%

[1] 100% of future terminated members not eligible for a retirement allowance are assumed to receive a refund of their accumulated employee contributions.

[2] 50% of disabled employees are assumed to qualify for occupational disability benefits.

Schedule B – Outline of Actuarial Assumptions and Methods (continued)

Unreduced retirement rates

Representative rates of unreduced early normal retirement allowances are as follows:

	Unreduced Retirement		
Age	In the year attaining eligibility	In years after first eligibility	Reduced Retirement
42	39.0%	5.8%	N/A
43	42.0%	5.8%	N/A
44	27.1%	32.3%	N/A
45	30.0%	24.3%	N/A
46	28.7%	17.3%	N/A
47	36.5%	18.1%	N/A
48	24.9%	14.1%	N/A
49	30.2%	15.9%	N/A
50	33.3%	14.7%	N/A
51	37.0%	21.2%	N/A
52	31.7%	15.6%	N/A
53	35.0%	17.0%	N/A
54	28.3%	15.4%	N/A
55	28.6%	15.3%	3.4%
56	30.5%	14.6%	3.7%
57	33.3%	14.8%	4.6%
58	26.7%	23.2%	4.3%
59	31.2%	23.2%	3.8%
60	25.6%	22.3%	5.3%
61	35.5%	20.6%	5.2%
62	40.0%	26.0%	9.7%
63	59.3%	27.8%	11.7%
64	52.9%	18.8%	15.8%
65	30.9%	30.4%	N/A
66	30.9%	27.8%	N/A
67	30.9%	23.9%	N/A
68	30.9%	20.6%	N/A
69	30.9%	26.6%	N/A
70+	100.0%	100.0%	N/A

Vested Group B plan members who terminate before retirement eligibility are assumed to retire at age 65.

Schedule B – Outline of Actuarial Assumptions and Methods *(continued)*

Inflation:

2.75% per year.

Salary increases

Service	Salary Increase %
0	14.00%
1	13.00%
2	12.00%
3	11.00%
4	10.00%
5-9	4.00%
10-14	3.00%
15+	2.75%

Deaths before and after retirement

The PRI-2012 Amount Weighted Blue Collar Mortality Tables with fully generational projection using Scale MP-2021 are used for all active participants. 101.1% of the PRI-2012 Amount Weighted Blue Collar Post Commencement Tables with fully generational projection using Scale MP-2021 are used for all retirees and beneficiaries preceding their related member's death. 98.3% of the PRI-2012 Amount Weighted Blue Collar Contingent Survivor Tables with fully generational projection using Scale MP-2021 are used for all beneficiaries following the death of their related member. The PRI-2012 Amount Weighted Total Dataset Disability Tables with fully generational projection using Scale MP-2021 are used for the period after disability retirement. Among pre-retirement deaths, 7.50% are assumed to qualify for accidental death benefits.

Normal retirement

Age 65.

Percent married

90% of male members and 50% of female members under age 55 or who have less than 23 years of service are assumed to be married. 100% of employees age 55 and older or who have 23 or more years of service are assumed to be married. In each case, the female is assumed to be three years younger than the male.

Pension options

50% of male members elect a 75% joint and survivor benefit and 10% of female members elect a 50% joint and survivor benefit. All others elect a life annuity.

Fiduciary and investment management expenses

Paid from investment earnings of the Fund.

Loading or contingency reserves

None.

Schedule B – Outline of Actuarial Assumptions and Methods *(continued)*

Valuation method

Prior to December 31, 2009, projected benefit method with entry age normal cost and open-end accrued liability. On and after December 31, 2009, individual entry age normal method.

Asset valuation method

A five-year phase-in smoothing method is used, under which the value of assets for actuarial purposes equals market value less a five-year phase-in of the differences between actual and assumed investment return. The value of assets for actuarial purposes may not differ from the market value of assets by more than 20%.

Effective December 31, 2013, the actuarial asset method was changed from a five-year moving average of market values to a five-year phase-in smoothing method, with the smoothing restarted as of December 31, 2013.

Prior to December 31, 2013, a five-year moving average of market values method was used to compute the actuarial value of assets.

Administrative expenses

Administrative expenses are estimated to be 1.0% of covered payroll per year.

Summary of Changes from December 31, 2023 Valuation

None.

Schedule C – Summary of Main Provisions of the Fund as Interpreted for Valuation Purposes

The Massachusetts Bay Transportation Authority Retirement Fund became effective as of January 1, 1948. The following summary describes the current main membership, benefit, and contribution provisions of the Fund as interpreted for the valuation.

1 - Definitions

"Compensation" means the full regular remuneration paid to an employee, excluding any overtime pay. "Service" creditable under the Fund means all service rendered by a member prior to his normal retirement date since he last became a member for which contributions are made by the member and by the Authority. "Union" means Boston Carmen's Union, Local Division 589 of the Amalgamated Transit Union, AFL-CIO.

Group A participants

Includes employees who were members of the Plan on or before June 30, 2023, unless the individual elected to be in the new Group B benefit structure.

Group B participants

Includes employees who were members of the Plan on or after July 1, 2023 or former Group A members who elected this structure.

2 - Membership

Each employee, including employees on a part-time basis, who is or who may become a member of the Union or any union recognized by the Authority for collective bargaining purposes is included in the membership of the Fund. Any employee who is not a member of the Union but who is in a group which was authorized to participate in the Fund is included in the membership.

3 - Benefits

Normal Retirement Allowance for Group A Plan members

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 80% of such average annual compensation.

Schedule C – Summary of Main Provisions of the Fund as Interpreted for Valuation Purposes *(continued)*

Normal Retirement Allowance for Group B Plan members

Condition for Allowance

Any member may retire beginning at age 55 with at least 10 years of creditable service.

Amount of Allowance

The normal retirement allowance equals the average of the Member's highest 3 years of pensionable earnings multiplied by the Age Multiplier multiplied by the years of service.

The Age Multiplier is determined using the following table:

Age at Retirement	Percentage
55	1.750%
56	1.875%
57	2.000%
58	2.125%
59	2.250%
60	2.375%
61+	2.460%

A Retired Member's retirement allowance cannot exceed 80% of the average of the Retired Member's highest 3 years of pensionable earnings.

Early Normal Retirement Allowance for Group A Plan members

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.

Early Reduced Retirement Allowance for Group A Plan members

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 ½ of 1% for each month of retirement prior to normal retirement date.

Schedule C – Summary of Main Provisions of the Fund as Interpreted for Valuation Purposes *(continued)*

Disability Retirement Allowance for Group A Plan members

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.

Disability Retirement Allowance for Group B Plan members

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. The Age Multiplier is based on the member retiring at the age of 55 or the member's age at the time of disability retirement (referenced on the Age Multiplier chart above) if the member is over the age of 55.

Vested Retirement Allowance for Group A Plan members

Condition for Allowance

Any member who has completed 10 years of service and does not receive a refund of his contributions with interest, in the event his 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 the amount computed as a normal retirement allowance on the basis of the compensation and service to the time of termination.

Vested Retirement Allowance for Group B Plan members

Condition for Allowance

Any member shall have a fully vested deferred retirement allowance if the member has accrued 10 or more years of service and has not withdrawn their contributions from the Fund.

Amount of Allowance

The vested retirement allowance is computed as the average of the member's highest 3 years of pensionable earnings multiplied by 2.46% multiplied by the years of service; provided, however, that if a vested member retires prior to the age of 65, then the vested member's retirement allowance will be reduced for their entire retirement by 6% per year, or one-half percent each month, of retirement before age 65.

Schedule C – Summary of Main Provisions of the Fund as Interpreted for Valuation Purposes *(continued)*

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 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 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.

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 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.

Return of Contributions

On Account of Termination of Service

In the event of a Group A Plan member's termination of employment for any reason other than death or retirement or a Group B Plan member's nonvested termination, he is paid the amount of his contributions, with interest. Group A Plan members may not elect to keep their contributions in the Fund. Group B Plan members may elect to keep their contributions in the Fund to maintain and resume creditable service in the event they become an employee again in the future.

On Account of Death Prior to Retirement

Upon the death of a member or retired member before his retirement allowance has become effective, the amount of his contributions, with interest, is paid to his beneficiary or estate, unless a survivor benefit is payable.

On Account of Death after Retirement

Upon the death of a retired member, or the survivor of a retired member and his designated beneficiary under an optional benefit, any excess of his contributions at retirement, with interest, over the sum of all retirement allowance payments made is paid to the member's beneficiary or to the survivor's estate.

Our valuation does not include return of contributions on account of death after retirement

Schedule C – Summary of Main Provisions of the Fund as Interpreted for Valuation Purposes *(continued)*

Optional Benefits in Lieu of Regular Benefits

At retirement, or on his normal retirement date if prior thereto, any member may elect to convert his allowance into an optional benefit of equivalent actuarial value permitted by the Rules and Regulations.

Reinstatement of Creditable Service

If a member's service is interrupted by reason of resignation or dismissal, he has the opportunity upon the completion of 3 years of service after he has been rehired to repay to the Fund all amounts he has withdrawn together with an amount equal to their reasonable earnings. Upon such repayment, the member is to be credited with service for the periods before and after the interruption as though they had been a single period of service.

4 - Contributions[1]

Contributions required to provide benefits and meet administrative expenses are made jointly by the Authority and members. The member contribution rate was increased from 5.1489% to 5.4989% effective August 11, 2012, to 5.5589% effective July 1, 2013, to 5.7989% effective July 1, 2014, to 5.7914% effective July 1, 2015, to 6.4614% effective July 1, 2016, to 7.1189% effective July 1, 2017, to 8.0089% effective July 1, 2018, to 8.8239% effective July 1, 2019, to 9.3339% effective July 1, 2020, to 9.1239% effective July 1, 2021, to 9.0539% effective July 1, 2022, to 9.0989% effective July 1, 2023, and to 8.6889% effective July 1, 2025. Member contributions are "picked up" by the Authority pursuant to Section 414(h)(2) of the Internal Revenue Code.

Summary of Changes from December 31, 2023 Valuation

None.

1 The actual rate in effect from July 1, 2023 through June 30, 2028, will be 125 basis points higher, as specified in the new Pension Agreement.

Schedule D – Tables of Employee Data

Table 1 – The Number and Annual Compensation of Active Members Distributed by Fifth Age and Service as of December 31, 2024[1]

Attained Age	Completed Years of Service: 0 to 4		5 to 9		10 to 14		15 to 19		20 to 24		25 to 29		30 to 34		35 to 39		40 & up		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
Under 25	104	8,210,530	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0	0	$ 0	104	$ 8,210,530
25 to 29	298	25,459,961	15	1,548,290	0	0	0	0	0	0	0	0	0	0	0	0	0	0	313	27,008,251
30 to 34	412	37,672,631	113	11,762,816	26	2,819,898	1	105,539	0	0	0	0	0	0	0	0	0	0	552	52,360,884
35 to 39	433	39,893,917	222	23,316,430	133	14,474,866	67	7,699,078	0	0	0	0	0	0	0	0	0	0	855	85,384,291
40 to 44	372	33,631,499	251	25,793,007	140	15,217,842	157	17,925,627	46	5,378,859	1	125,944	0	0	0	0	0	0	967	98,072,778
45 to 49	325	28,780,556	221	22,619,522	132	13,991,078	166	18,181,268	97	10,919,509	10	1,120,184	0	0	0	0	0	0	951	95,612,117
50 to 54	271	24,238,415	220	22,584,723	145	15,699,923	162	17,470,523	114	12,395,760	31	3,270,072	4	408,928	0	0	0	0	947	96,068,344
55 to 59	196	17,841,562	168	17,893,824	151	16,550,340	195	21,272,493	145	15,475,741	51	5,355,210	10	1,027,478	11	1,099,675	0	0	927	96,516,322
60 to 64	94	8,714,048	100	10,695,880	126	14,258,995	185	20,601,298	133	14,742,874	31	3,198,021	17	1,744,330	14	1,493,357	1	95,306	701	75,544,107
65 to 69	19	2,412,904	34	3,765,736	39	4,338,930	49	5,236,026	31	3,245,474	12	1,293,510	6	689,229	5	512,845	3	305,760	198	21,800,413
70 & up	6	648,889	5	513,448	14	1,666,642	6	568,027	9	936,478	7	688,771	2	242,070	1	116,334	0	0	50	5,380,660
Total	2,530	$ 227,504,913	1,349	$ 140,493,675	906	$ 99,018,512	988	$ 109,059,879	575	$ 63,094,695	143	$ 15,051,712	39	$ 4,112,035	31	$ 3,222,211	4	$ 401,066	6,565	$ 661,958,698

[1] Minor differences between the sums of values shown and the totals shown may arise due to rounding.

Schedule D – Tables of Employee Data *(continued)*

Table 2 – The Number and Annual Retirement Allowances Distributed by Age as of December 31, 2024[1]

	Service Retirements		Disabled Members		Beneficiaries	
Age	Number	Amount	Number	Amount	Number	Amount
<50	36	$ 2,254,162	31	$ 627,440	23	$ 272,010
50	12	687,560	6	114,273	2	19,866
51	14	776,137	7	150,329	6	138,096
52	22	1,135,242	5	111,970	8	128,129
53	33	1,767,749	11	264,397	11	183,230
54	36	2,066,703	6	103,280	7	96,536
55	44	2,328,092	8	171,199	5	116,174
56	61	3,339,690	14	391,973	5	74,886
57	70	3,639,855	21	490,233	8	128,839
58	76	3,954,021	19	472,012	14	218,353
59	104	5,555,152	15	332,650	13	231,233
60	112	5,896,755	22	557,930	12	129,453
61	129	6,886,499	24	609,083	17	266,103
62	111	5,633,209	28	714,793	20	324,289
63	116	5,889,206	27	648,320	19	327,647
64	139	6,937,878	30	689,248	13	271,824
65	164	8,031,052	42	869,664	17	279,093
66	213	9,730,367	35	830,927	26	393,411
67	180	7,976,078	27	637,275	20	552,186
68	205	8,931,855	18	400,874	34	598,303
69	191	8,324,084	32	694,525	41	749,597
70	189	7,954,969	36	697,822	26	631,548
71	192	7,963,646	21	421,627	31	593,292
72	210	8,719,207	19	340,428	33	746,601
73	179	7,002,807	12	277,643	34	605,486
74	178	6,687,467	24	458,233	30	805,325
75	187	7,265,395	22	417,707	33	808,964
76	197	7,355,813	16	279,711	47	1,059,772
77	183	6,505,580	17	407,239	39	931,884
78	170	6,115,514	14	252,866	55	1,119,432
79	146	5,121,169	11	247,479	45	923,077
80	159	5,568,294	15	279,163	49	1,046,421
81	140	4,656,099	18	246,063	53	1,066,539
82	123	4,213,468	10	194,835	57	1,079,199
83	100	3,144,215	7	136,483	45	885,523
84	86	2,589,523	7	124,993	39	723,628
85	66	2,247,868	4	55,500	34	698,479
>85	296	8,442,191	9	115,264	227	3,837,055
Total	4,869	$203,294,569	690	$ 14,835,447	1,198	$ 23,061,484
No Option	3,175	133,900,163	572	12,582,575	1,198	23,061,484
Survivor Option	36	1,712,064	2	40,374	0	0
Pop-Up Option	1,658	67,682,342	116	2,212,498	0	0
Total	4,869	$203,294,569	690	$ 14,835,447	1,198	$ 23,061,484

[1] Minor differences between the sums of values shown and the totals shown may arise due to rounding. Disabled members' counts and allowances exclude 26 individuals receiving worker's compensation for over 5 years.

Schedule D – Tables of Employee Data *(continued)*

Table 3 – Reconciliation of Participant Data

	Actives	Retirees	Beneficiaries	Disabled[16]	Actives not accruing service	Total
Participants as of December 31, 2023	5,805	4,878	1,211	711	444	13,049
Changes due to:						
Termination						
Due Contributions	(102)				102	0
Received Contributions	(49)				(76)	(125)
Retirements	(144)	144				0
Disability	(30)	(2)		35	(3)	0
Deaths						
With Survivor		(51)		(7)	(3)	(61)
Without Survivor	(2)	(99)	(82)	(22)		(205)
New Entrants	1,096		69		70	1,235
Rehires	15				(9)	6
Benefits Expired						0
Resumed contributing	4				(4)	0
Stopped contributing	(28)				28	0
Escheatment					(51)	(51)
Data Corrections		(1)	1	(1)		(1)
Total Changes	760	(9)	(12)	5	54	798
Participants as of December 31, 2024	6,565	4,869	1,199	716	498	13,847

[16] Includes 27 individuals on December 31, 2023 and 26 individuals on December 31, 2024 receiving worker's compensation for over 5 years.

Solvency Test

As of December 31, 2024

The MBTA Retirement Fund's funding objective is to meet long-term benefit promises through contributions that remain approximately level from year-to-year as a percent of member payroll. If the contributions to the Fund are level in concept and soundly executed, the Fund will pay all promised benefits when due—the ultimate test of financial soundness.

A solvency test is one means of checking a fund's progress under its funding program. In a solvency test, the fund's present assets (cash and investments) are compared with:

1. Active member contributions on deposit;
2. The liabilities for future benefits to present retired lives;
3. The liabilities for service already rendered by active and inactive members.

In a Fund that has been following the discipline of level percent-of-payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by present assets (except in rare circumstances). In addition, the liabilities for service already rendered by active members (liability 3) will be partially covered by the remainder of present assets. The larger the funded portion of liability 3, the stronger the condition of the Fund. Buck prepared the following Solvency Schedule:

Valuation Date	(1) Active Member Contributions	(2) Retirees and Beneficiaries	(3) Active/Inactive Members (Employer Financed)	Actuarial Value of Assets	Portion of AAL Covered by Assets (1)	(2)	(3)
12/31/2024	$ 426,779,061	$ 2,186,088,782	$ 809,784,669	$ 1,917,621,895	100%	68%	0%
12/31/2023	380,681,213	2,177,011,957	745,670,912	1,844,331,372	100%	67%	0%
12/31/2022	347,358,589	2,143,395,353	610,950,073	1,799,924,778	100%	68%	0%
12/31/2021	325,347,277	2,129,569,570	646,787,168	1,760,643,571	100%	67%	0%
12/31/2020	298,648,242	2,109,955,052	646,520,086	1,636,054,386	100%	63%	0%
12/31/2019	266,634,347	2,129,210,443	625,265,569	1,561,192,531	100%	61%	0%
12/31/2018	240,849,945	2,092,861,364	583,089,414	1,559,452,659	100%	63%	0%
12/31/2017	221,627,390	2,057,542,739	550,215,648	1,599,505,237	100%	67%	0%
12/31/2016	219,497,282	1,918,980,542	556,078,499	1,607,560,108	100%	72%	0%
12/31/2015	219,752,752	1,774,425,407	577,905,849	1,630,411,191	100%	79%	0%

Schedule of Retirees and Beneficiaries Added to and Removed from Rolls

As of December 31, 2024

Schedule prepared by Gallagher

Valuation Date	Added to Rolls		Removed from Rolls		Rolls - End of Year		% Increase in Annual Allowances	Average Annual Allowances
	No.	Annual Allowances	No.	Annual Allowances	No.	Annual Allowances		
12/31/2024	144	$ 7,215,689	160	$ 4,102,225	6,757	$ 241,191,500	1.55%	$ 35,695
12/31/2023	184	8,310,204	170	2,299,429	6,773	238,078,036	2.38%	35,151
12/31/2022	233	11,543,586	187	5,100,217	6,759	232,067,261	2.16%	34,335
12/31/2021	205	8,555,618	202	5,039,468	6,713	225,623,892	1.54%	33,610
12/31/2020	144	5,343,426	247	5,787,592	6,710	222,107,742	1.33%	33,101
12/31/2019	148	6,101,838	176	4,806,046	6,813	222,551,908	1.00%	32,666
12/31/2018	209	8,408,514	191	4,618,807	6,841	221,256,116	1.47%	32,343
12/31/2017	310	14,541,060	171	4,108,386	6,823	217,466,409	2.90%	31,873
12/31/2016	370	18,053,040	158	3,735,177	6,684	207,033,735	4.02%	30,975
12/31/2015	270	11,550,600	205	4,661,828	6,472	192,715,872	2.67%	29,777

Schedule of Active Member Valuation Data

Valuation Date	Number	Annual Payroll	Average Annual Pay	% Increase In Average Pay
2024	6,565	$ 661,958,698	$ 100,831	4.4%
2023	5,805	560,824,908	96,611	8.1%
2022	5,555	496,467,531	89,373	6.9%
2021	5,486	458,857,189	83,641	3.0%
2020	5,674	460,921,559	81,234	2.4%
2019	5,507	436,828,077	79,322	0.4%
2018	5,392	425,862,201	78,980	-0.8%
2017	5,386	428,830,122	79,619	3.1%
2016	5,786	446,740,427	77,211	2.5%
2015	5,885	443,237,899	75,317	4.5%

STATISTICAL SECTION

(Unaudited)

Objectives

The objectives of the Statistical Section are to provide additional historical perspective, context and detail to assist readers in using the information in the Financial Statements, Notes to the Financial Statements and Required Supplementary Information in order to understand and assess the Plan's economic condition.

Financial Trends

The Schedule of Changes in Net Position presented on page 153 contains historical information related to the Fund’s revenues, expenses, changes in net position and net position available for benefits. The Schedule of Additions by Source on page 153 provides employer and employee contribution rates and historical investment income information. The schedules of deductions and benefits by type on page 154 provide a history of annual benefit, withdrawal and operating expense trends.

Demographic and Economic Information

The schedule of Distribution of Plan Members shown on page 155 provides relevant details about the composition of the Fund's active membership including concentration of members within various age groups.

Operating Information

The Schedule of Average Benefit Payments on page 156 presents average monthly benefits and average final salary information by years of credited service for new benefit recipients within specified plan years. The Schedule of Benefit Recipients by Type and Option on page 157 illustrates the number of participants and total benefit payments by type and option.

Statistical data is provided from both the Fund's internal resources and from the Fund’s Actuary, Gallagher, LLC, formerly known as Buck Global, LLC.

Financial Trends (2015 – 2024 for all reports)

Schedule of Changes in Net Position

Year Ended Dec 31	Net Position Beginning of Year	Additions	Deductions	Increase (Decrease) in net Position	Adjustment for adoption of GASB 67	Net Position End of Year
2024	$ 1,694,401,260	$ 354,619,862	$ 247,277,438	107,342,424	-	1,801,743,684
2023	1,622,548,978	328,661,971	256,605,301	72,056,670	(204,388)	1,694,401,260
2022	1,939,942,425	(81,770,442)	235,623,005	(317,393,447)	-	1,622,548,978
2021	1,769,941,276	399,135,305	229,134,156	170,001,149	-	1,939,942,425
2020	1,614,144,213	385,730,778	229,933,715	155,797,063	-	1,769,941,276
2019	1,449,695,100	393,360,861	228,911,748	164,449,113	-	1,614,144,213
2018	1,603,176,196	72,546,582	226,027,678	(153,481,096)	-	1,449,695,100
2017	1,485,605,884	334,848,844	217,278,532	117,570,312	-	1,603,176,196
2016	1,497,848,035	191,813,165	204,055,316	(12,242,151)	-	1,485,605,884
2015	1,587,966,489	104,595,864	194,714,318	(90,118,454)	-	1,497,848,035

Schedule of Additions by Source

Year Ended Dec 31	Employee Contributions	Employer Contributions	Employer Contributions as % of Covered Payroll	Investment Income (a)	Total
2024	$ 64,660,810	$ 162,153,826	24.50%	$ 127,805,226	$ 354,619,862
2023	50,735,073	135,226,433	24.11	142,700,464	328,661,971
2022	45,511,253	129,973,295	26.18	(257,254,989)	(81,770,441)
2021	43,224,002	123,493,762	26.91	232,417,541	399,135,304
2020	40,774,027	116,285,928	25.45	228,670,823	385,730,778
2019	36,366,108	103,263,763	23.82	253,730,990	393,360,861
2018	32,606,337	92,013,124	21.61	(52,072,879)	72,546,582
2017	29,775,344	83,382,882	19.44	221,690,618	334,848,844
2016	27,791,543	77,239,279	17.38	86,782,343	191,813,165
2015	26,510,946	73,373,672	16.66	4,711,246	104,595,864

Contributions were made in accordance with actuarially determined contribution requirements
(a) Net of investment expenses

Schedule of Deductions by Type

Year Ended Dec 31	Benefits	Operating Expenses	Withdrawals	Total
2024	$ 238,023,662	$ 4,271,610	$ 4,982,166	$ 247,277,438
2023	247,184,648	4,415,368	5,005,285	256,605,301
2022	226,290,777	4,484,766	4,847,462	235,623,005
2021	221,589,832	4,366,485	3,177,839	229,134,156
2020	221,447,685	4,511,375	3,974,655	229,933,715
2019	220,553,916	5,046,775	3,311,057	228,911,748
2018	218,385,648	4,317,624	3,324,406	226,027,678
2017	208,999,450	4,463,775	3,815,307	217,278,532
2016	195,707,470	6,493,777	1,854,069	204,055,316
2015	187,148,675	5,808,086	1,757,557	194,714,318

Schedule of Benefit Deduction by Type

Year Ended Dec 31	Service	Disability	Beneficiary	Total
2024	$ 200,537,714	$ 15,794,424	$ 21,691,524	$ 238,023,662
2023	208,779,080	16,172,101	22,233,467	247,184,648
2022	191,860,901	14,600,088	19,829,789	226,290,778
2021	188,377,526	14,081,012	19,131,295	221,589,832
2020	188,613,828	13,697,233	19,136,624	221,447,685
2019	189,884,938	13,715,736	16,953,242	220,553,916
2018	188,529,051	13,331,294	16,525,303	218,385,648
2017	179,572,258	12,873,203	16,553,989	208,999,450
2016	165,645,608	13,811,300	16,250,562	195,707,470
2015	158,790,759	12,294,604	16,063,312	187,148,675

Demographic and Economic Information (as of 12/31/24)

Distribution of Fund Members as of December 31, 2024 - Active Members

	Years of Service										Total	Average
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total	Compensation	Compensation
under 25	104	-	-	-	-	-	-	-	-	104	8,210,530	78,947
25-29	298	15	-	-	-	-	-	-	-	313	27,008,251	86,288
30-34	412	113	26	1	-	-	-	-	-	552	52,360,884	94,857
35-39	433	222	133	67	-	-	-	-	-	855	85,384,291	99,865
40-44	372	251	140	157	46	1	-	-	-	967	98,072,778	101,420
45-49	325	221	132	166	97	10	-	-	-	951	95,612,117	100,539
50-54	271	220	145	162	114	31	4	-	-	947	96,068,344	101,445
55-59	196	168	151	195	145	51	10	11	-	927	96,516,322	104,117
60-64	94	100	126	185	133	31	17	14	1	701	75,544,107	107,766
65-69	19	34	39	49	31	12	6	5	3	198	21,800,413	110,103
70+	6	5	14	6	9	7	2	1	-	50	5,380,660	107,613
Total	**2,530**	**1,349**	**906**	**988**	**575**	**143**	**39**	**31**	**4**	**6,565**	**661,958,698**	100,831

Operating Information

Schedule of Average Benefit Payments - New Benefit Recipients (2015 – 2024)

Years of Service	0-4	5-9	10-14	15-19	20-24	25-29	30+	Total
2015								
Average Monthly Benefit	$ 813	$ 951	$ 1,760	$ 2,346	$ 3,720	$ 4,582	$ 4,988	**$ 3,565**
Average Final Average Salary	143,040	77,667	74,294	76,590	86,810	87,865	88,188	**85,090**
Number of Retired Members	2	18	27	24	98	70	31	**270**
2016								
Average Monthly Benefit	$ 2,754	$ 1,294	$ 1,871	$ 2,708	$ 4,012	$ 4,430	$ 5,222	**$ 4,066**
Average Final Average Salary	91,458	82,418	81,622	80,316	85,125	78,969	81,558	**81,761**
Number of Retired Members	2	15	24	19	111	128	71	**370**
2017								
Average Monthly Benefit	$ -	$ 1,145	$ 1,703	$ 2,572	$ 3,805	$ 4,776	$ 5,145	**$ 3,972**
Average Final Average Salary	-	87,848	76,222	78,592	83,192	84,360	83,286	**82,327**
Number of Retired Members	-	7	41	38	52	107	65	**310**
2018								
Average Monthly Benefit	$ 535	$ 1,183	$ 1,718	$ 2,392	$ 3,766	$ 4,767	$ 4,939	**$ 3,445**
Average Final Average Salary	47,133	67,758	67,861	61,879	81,109	87,896	84,979	**77,016**
Number of Retired Members	2	6	37	32	55	48	24	**204**
2019								
Average Monthly Benefit	$ -	$ 1,488	$ 1,821	$ 2,495	$ 3,728	$ 4,904	$ 5,299	**$ 3,345**
Average Final Average Salary	-	68,561	71,079	73,257	80,413	91,264	93,985	**79,622**
Number of Retired Members	-	13	25	25	50	20	17	**150**
2020								
Average Monthly Benefit	$ 655	$ 1,096	$ 1,820	$ 2,832	$ 3,849	$ 4,967	$ 5,073	**$ 3,428**
Average Final Average Salary	74,475	60,381	63,869	72,394	79,997	89,472	77,950	**76,585**
Number of Retired Members	2	9	17	26	53	22	8	**137**
2021								
Average Monthly Benefit	$ 1,027	$ 1,660	$ 1,875	$ 2,872	$ 4,099	$ 4,952	$ 5,654	**$ 3,592**
Average Final Average Salary	98,776	81,957	63,701	75,170	87,159	82,954	99,055	**82,055**
Number of Retired Members	1	15	23	39	82	21	14	**195**
2022								
Average Monthly Benefit	$ 1,189	$ 1,400	$ 2,348	$ 3,108	$ 4,392	$ 5,706	$ 5,561	**$ 4,099**
Average Final Average Salary	101,055	71,338	85,686	84,607	93,017	93,340	93,132	**90,143**
Number of Retired Members	4	10	35	31	92	49	17	**238**
2023								
Average Monthly Benefit	$ 446	$ 1,093	$ 2,391	$ 2,835	$ 4,212	$ 4,898	$ 5,988	**$ 3,752**
Average Final Average Salary	112,858	74,075	92,677	67,220	89,336	93,872	96,317	**86,320**
Number of Retired Members	3	11	24	36	76	20	21	**191**
2024								
Average Monthly Benefit	$ 390	$ 1,229	$ 2,271	$ 2,847	$ 4,562	$ 4,868	$ 6,141	**$ 3,738**
Average Final Average Salary	63,431	57,302	75,934	71,179	95,377	92,906	87,805	**83,605**
Number of Retired Members	2	8	16	46	64	17	8	**161**

Schedule of Benefit Recipients by Type and Option

December 31, 2024

	Total	Type of Retirement*									Option Selected**					Grand Total
		I	II	III	IV	V	VI	VII	VIII	IX	A	B	C	D	E	
$0-$500	193	24	3	0	67	6	1	66	0	26	140	20	7	0	26	193
$500-$1,000	384	46	1	1	106	4	18	161	0	47	290	39	6	2	47	384
$1,000-$1,500	515	82	10	11	134	4	21	217	2	34	394	58	29	0	34	515
$1,500-$2,000	661	134	87	32	150	2	4	202	21	29	464	135	30	3	29	661
$2,000-$2,500	892	164	381	43	133	3	1	145	13	9	606	221	54	2	9	892
$2,500-$3,000	965	146	624	21	65	2	2	99	6	0	604	277	77	7	0	965
$3,000-$3,500	880	107	662	23	37	0	4	46	0	1	533	282	59	5	1	880
$3,500-$4,000	742	75	615	12	20	0	2	18	0	0	410	253	70	9	0	742
Over $4,000	1531	177	1324	8	2	0	2	18	0	0	899	464	154	14	0	1531
Total	**6763**	**955**	**3707**	**151**	**714**	**21**	**55**	**972**	**42**	**146**	**4340**	**1749**	**486**	**42**	**146**	**6763**

***Type of Retirement**
I Normal
II Early Normal
III Early Reduced
IV Disability
V Special Disability
VI Special Survivor
VII Optionee
VIII Special early Reduced
IX QDRO

**** Option Selected**
A Lifetime Annuity
B Joint Annunity Pop-up
C Joint Annuity
D Term Certain
E QDRO

FREQUENTLY ASKED QUESTIONS

(Unaudited)

Questions & Answers

The MBTA Retirement Fund is providing the below answers to frequently asked questions to assist you with understanding your retirement benefits under the Pension Agreement. These are being provided for informational purposes only. In the event of any conflict between these answers to frequently asked questions and the Pension Agreement, the Pension Agreement will control.

Q *Who is eligible to become a member of the Retirement Fund?*

A Any person regularly employed by the MBTA is eligible to become a member of the Retirement Fund.

Q *How does an employee contribute to the Retirement Fund?*

A Retirement contributions are deducted from the regular earnings (excluding overtime).

Q *Are the matching contributions made by the Authority applied to the member's balance in the Fund?*

A No. The Authority's contributions are not applied to the member's balance in the Fund. These contributions become an irrevocable asset of the Fund used for the benefit of its members.

(Continued)

Q *What is the rate of interest earned by the member on his/her contributions? Does the member continue to earn interest after his/her employment with the Authority is terminated by reason of retirement, resignation, or discharge?*

A Interest earned on contributions made on or after July 1, 1967, are compounded annually at a rate of three percent (3%). Note: This rate is set by the Pension Agreement and does not reflect the earnings of the Fund. No. A member stops earning interest on his/her contributions as of the last day of the month prior to his/her separation from the Authority's service.

Q *What is creditable service?*

A Creditable service is the total of membership service and prior service. Prior service is service rendered to the MBTA before January 1, 1948. Membership service is the period of service rendered to the MBTA starting January 1, 1948, for which a member made contributions to the Fund, with exceptions as follows:

1. The period of time an employee is not working at the MBTA due to an injury on the job and is being paid workers' compensation.
2. The period of time spent in the military service by an employee who was a member of the Fund before leaving for military service, for which a maximum credit of 4 years is allowed, if such time occurs during a period of national emergency or such military service is compulsory.

Q *How do part-time employees accrue creditable service?*

A For the purpose of determining the amount of retirement benefit, creditable service for part-time employees of the MBTA accrues at the rate of one month of creditable service, or fraction thereof, for each 173 pay hours received.

Q *Under what circumstances is the spouse of a member required to sign a spousal consent form?*

A When a member submits their application, a spousal consent is required when the member elects to receive his/her benefit in the following manner:

- No optional benefit for spouse
- $33^{1/3}$% with no pop-up
- 25% with no pop-up
- 50% with pop-up
- $33^{1/3}$% with pop-up

(Continued)

- 25% with pop-up
- 5, 10 or 15-year term certain benefits

Q *Are retirement contributions deducted from Workers' Compensation payments? Does the time out on Workers' Compensation count as creditable membership service?*

A No. There are no retirement contributions deducted from Workers' Compensation payments. As a result, it may exclude that year as a high year in calculating the high 3-year average. Yes. When a member is out of work from the MBTA and receiving Workers' Compensation payments, the time out on Worker's Compensation counts as creditable membership service.

Q *Workers' Compensation Offset: Does my receipt of Workers' Compensation payments affect my disability retirement benefit?*

A Possibly. If the payments that you receive under Workers' Compensation are based on the same injury that qualified you for disability retirement, your pension benefit will be offset against your Workers' Compensation for that same injury.

This means that your pension benefit will be directly reduced by the amount of the Workers' Compensation benefit that you receive.

Workers' Compensation payments that are based on an injury different from the injury that qualified you for a disability pension will not affect your disability retirement benefit.

Q *Is the employment date with the Authority the same as the membership date in the Fund?*

A No. Membership in the Fund begins when contributions are made to the Fund and is usually a short time after the employment date, typically 90 working days after being employed.

Q *Who is the Group A Plan?*

A Employees who became members of the Fund on or before June 30, 2023 are enrolled in Group A unless they elected to join Group B prior to the March 29, 2024 deadline and then accumulates at least 24 months of creditable service after such election.

Q *Who is in the Group B Plan?*

A Those who are or become members of the Fund on or after July 1, 2023, are automatically enrolled in the Group B Plan and may not elect to join Group A.

(Continued)

Employees enrolled in the Group A Plan that elected to join the Group B Plan prior to the March 29, 2024, deadline are enrolled in Group B once they have accrued 24 months of creditable service from the date of their election to join Group B.

Q *When can a member retire?*

A **Group A Plan:** A member can retire at age 65 or older on a Normal Retirement.

For a member hired before December 6th, 2012, an Early Normal Retirement is available with 23 years of creditable service.

A member hired on or after December 6th, 2012, an Early Normal Retirement is available if the member is age 55 or older and has at least 25 years of creditable service.

An Early Reduced Retirement is available if the member is age 55 or older and has at least 20 years of creditable service; however, the retirement allowance will be reduced by 1/2 of 1% for each month between the age at retirement and age 65.

The plan provides for a Disability Retirement after 4 years of creditable service for an occupational disability or after 6 years for a non-occupational disability.

Group B Plan: A member can retire at age 55 with at least 10 years of creditable service on a Normal Retirement.

A Group B member who accrues at least 10 years of credible service prior to obtaining 55 years of age may leave the employ of the MBTA and elect to begin receiving a vested retirement allowance anytime between the ages of 55-65. Vested retirement allowances are reduced based upon the number of months a member begins collecting their benefit prior to obtaining age 65.

The plan provides for a Disability Retirement after 4 years of creditable service for an occupational disability or after 6 years for a non-occupational disability.

Q *How is a member's normal retirement allowance (non-disability and non-vesting) determined?*

A **Group A Plan:** The retirement allowance is determined by using the following formula: The average of the member's highest three years of pensionable earnings, multiplied by 2.46%, multiplied by years and months of creditable membership service.

Group B Plan: The retirement allowance is determined by using the following formula: The average of the member's highest three years of pensionable earnings, multiplied by the age multiplier based upon the member's age at retirement (see Pension Agreement Article IV), multiplied by the member's years and months of creditable service.

(Continued)

Q *What is the date shown on the monthly retirement checks and when are they mailed to the retirees?*

A The monthly retirement checks are dated for the last business day of the month. The checks are mailed 4 or 5 days before the end of the month in order for them to arrive at the retiree's home by the last day of the month.

Q *If a member leaves the employment of the MBTA, what happens to the contributions made on the employee's behalf (Authority's Contributions) to the Fund?*

A Those contributions, once made, become an irrevocable asset of the Pension Fund and can only be used for the exclusive benefit of the retired members and their beneficiaries.

Q *If a retirement benefit is sent direct deposit (ACH – wire transfer) to a bank or credit union, when is the benefit deposited into the retiree's account and when are the funds available?*

A The benefit is wired to the retiree's bank or credit union on the last business day of the month. The availability date of these funds is determined by the member's banking institution.

Q *Does a member have a decision to make on how the pension will be paid?*

A Yes. A member can take the maximum retirement allowance payable and will get a check every month for life in that amount, subject to adjustments from time to time. If a member takes the maximum retirement allowance payable, the member will recover the money contributed to the Fund in three years or less, and after the member dies, no further payments will be made from this Fund. A member can elect to take retirement payments under an option. Options give the retiree a lesser amount for life with the provision that upon their death the person designated as beneficiary will receive a retirement allowance. An example would be the 100% option. Instead of taking the maximum retirement allowance payable, the member elects to take a reduced amount for life and upon the members death, the designated beneficiary will receive 100% of the allowance the member was receiving for life. The amount of reduction from the maximum is determined by option factors which are based on the member's and designated beneficiary's age and life expectancy. There are several types of options available.

(Continued)

Q *Once a member has retired and elected either the maximum benefit or elected an option, can this election be changed?*

A No. An option elected by a member can only be changed prior to the effective date of retirement.

Q *How does unused sick leave affect the retirement allowance?*

A At retirement, a member's unused sick leave is converted to creditable membership service, which when multiplied by 2.46% of the average of the three (3) best years, increases the retirement allowance. For example, an unused sick balance of 150 days converts to 7 months of creditable membership service. However, unused sick leave cannot be used to determine service eligibility for retirement.

Q *In the event a retiree is divorced or widowed, can he/she drop the option elected or change it in favor of a new spouse?*

A No. In the event a retiree is divorced or widowed from his/her spouse, the option elected cannot be dropped or transferred in favor of a new spouse after the effective date of retirement.

Q *Can a member buy any service for which credit is not being received?*

A No. A member can only get credited for the time in which both the member and the Authority make contributions.

Q *Who can an active or retired member contact with specific questions concerning health and life insurance benefits?*

A Active and retired members of the MBTA may contact the Benefits Department with specific questions about health and life insurance benefits. The telephone number is (617) 222-3244. Written inquiries should be sent to the MBTA Benefits Department, 10 Park Plaza, 2nd Floor, Boston, MA 02116.

Q *Can a member withdraw any money from the Fund and pay it back at a later date with interest?*

A No. A member cannot withdraw any contributions from the Fund. The only way a member can obtain money from the Fund is either by resigning or retiring.

(Continued)

Q *Can I receive creditable service in the MBTA Retirement Fund for service with any other Federal, State, or local government agency?*

A No. Since the MBTA Retirement Fund is a private system, no credit can be given for service other than with the MBTA.

Q *If the surviving spouse is eligible to receive a monthly benefit, how soon does he/she begin receiving the benefit? Does he/she have to wait until the member would have reached age 65?*

A The surviving spouse is eligible to receive the benefit the first month following the member's death. He/She does not have to wait until the member would have reached age 65.

Example: Member passes away June 15th. The surviving spouse is eligible for benefit starting July 1st.

Q *How are changes made to the Pension Agreement?*

A All changes to the Pension Agreement are negotiated between Local #589 and the Authority.

Q *If I leave the employ of the Authority and return at a later date, am I eligible to "Buy Back" my prior service?*

A Yes. A former member of the Fund who is re-employed by the Authority is eligible, after a 3-year waiting period, to request the Retirement Board to restore his/her previous service by the repayment of the withdrawn funds, plus interest. "Bridging the Gap" restores to the member the creditable service he/she built up during the previous period of employment. There is no credit given for the period between the date the member left the employ of the Authority and the date he/she was re-employed. That gap will always remain. Therefore, any member of the Fund who terminated his/her employment with the Authority and was re-employed should contact the Retirement Board to determine the amount necessary to "Buy Back" the previous service.

(Continued)

Q *How does a member qualify for a benefit under the Vesting Provision of the Fund?*

A **Group A Plan:** Under the Vesting Provision of the Fund, a member who has at least 10 years of creditable membership service may qualify for a benefit provided that his/her employment with the MBTA ended through no fault of their own. If a member resigns or is discharged for cause, he/she is not eligible for a retirement benefit under this provision.

Group B Plan: A Member qualifies for a vested deferred retirement allowance if the member accrues at least 10 years of credible service, the member's employment with the MBTA is terminated for any reason prior to becoming eligible for an immediate retirement allowance per Article IV (2), and the member has not withdrawn their contributions from the Fund.

Q *When is a member eligible to receive a vested retirement benefit?*

A **Group A Plan:** A member is eligible to receive a vested retirement benefit the first of the month following the member's 65th birthday provided that (i) such member has 10 years of creditable membership service in the Fund, and (ii) such member's employment did not end voluntarily or by termination (e.g. was permanently laid off).

Group B Plan: A member that has 10 years of creditable membership service (and was not eligible for a retirement allowance set out in Pension Agreement Article IV, Section 2) may begin collecting their vested allowance between the ages of 55-65 provided that such allowance will be reduced by one half of one percent (0.50%) for each month prior to their 65th birthday. All vested retirement allowances are calculated using the 2.46% multiplier.

Q *Can taxes be withheld from a retiree's pension benefit?*

A Federal tax can be withheld and deducted from a retiree's pension benefit each month. The amount of federal tax withheld from a retiree's pension allowance can be changed at any time by filing a new W-4P form with the Retirement Fund. The pension allowance is not taxable in the state of Massachusetts. Retirees and payees residing in states other than Massachusetts should consult their tax professional for advice regarding the state tax status of a retiree's pension benefit.

Q *If a member has a question concerning the Fund or would like to obtain an estimate of his/her retirement benefit, whom should he/she contact for the correct answer?*

A All questions should be directed to the MBTA Retirement Fund at One Washington Mall, Boston, MA 02108 617-316-3800 or 800-810-6228.

MBTA Retirement Fund

One Washington Mall - 4th Floor
Boston, MA 02108

617-316-3800
www.mbtarf.com