Metropolitan Transportation Authority Defined Benefit Pension Plan

(A Fiduciary Component Unit of the Metropolitan Transportation Authority)

Financial Statements as of and for the Year Ended December 31, 2020, and Supplemental Schedules, and Independent Auditors' Report

METROPOLITAN TRANSPORTATION AUTHORITY
DEFINED BENEFIT PENSION PLAN

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INDEPENDENT AUDITORS' REPORT

To the Board of Managers of Pensions
Metropolitan Transportation Authority Defined Benefit Pension Plan

Report on the Financial Statements

We have audited the accompanying statements of fiduciary net position of the Metropolitan Transportation Authority Defined Benefit Pension Plan (the "Plan") as of December 31, 2020, and the related statements of changes in fiduciary net position for the year then ended, and the related notes to the financial statements, which collectively comprise the Plan's basic financial statements as listed in the table of contents.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

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

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

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

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position as of December 31, 2020, and the respective changes in fiduciary net position for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Other Matters

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis on pages 3 through 8 and the Schedule of Changes in the Employers' Net Pension Liability and Related Ratios-Schedule I on page 47; Schedule of Employer Contributions-Schedule II on page 48-50; and Schedule of Investment Returns-Schedule III on page 51 be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Deloitte & Touche LLP

February 8, 2022

METROPOLITAN TRANSPORTATION AUTHORITY DEFINED BENEFIT PENSION PLAN

MANAGEMENT'S DISCUSSION AND ANALYSIS FOR YEAR ENDED DECEMBER 31, 2020 (UNAUDITED)

This management's discussion and analysis of the Metropolitan Transportation Authority Defined Benefit Pension Plan (the "Plan") financial performance provides an overview of the Plan's financial activities for the year ended December 31, 2020. It is meant to assist the reader in understanding the Plan's financial statements by providing an overall review of the financial activities during the two years and the effects of significant changes, as well as a comparison with the prior year's activity and results. This discussion and analysis may contain opinions, assumptions, or conclusions by the MTA's management that should not be considered a replacement for, and is intended to be read in conjunction with the Plan's financial statements which begin on page 9.

Overview of Basic Financial Statements

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

- **The Statement of Fiduciary Net Position —** presents the financial position of the Plan at fiscal year-end. It provides information about the nature and amounts of resources with present service capacity that the Plan presently controls (assets), consumption of net assets by the Plan that is applicable to a future reporting period (deferred outflow of resources), present obligations to sacrifice resources that the Plan has little or no discretion to avoid (liabilities), and acquisition of net assets by the Plan that is applicable to a future reporting period (deferred inflow of resources) with the difference between assets/deferred outflow of resources and liabilities/deferred inflow of resources being reported as net position. Investments are shown at fair value. All other assets and liabilities are determined on an accrual basis.

- **The Statement of Changes in Fiduciary Net Position -** present the results of activities during the year. All changes affecting the assets and liabilities of the Plan are reflected on an accrual basis when the activity occurred regardless of the timing of the related cash flows. In that regard, changes in the fair values of investments are included in the year's activity as net appreciation (depreciation) in fair value of investments.

- **The Notes to Financial Statements -** provides additional information that is essential to a full understanding of the data provided in the financial statements. The notes present information about the Plan's accounting policies, significant account balances and activities, material risks, obligations, contingencies, and subsequent events, if any.

- **Required Supplementary Information** - as required by the Government Accounting Standards Board ("GASB") includes the Schedule of Changes in the Employer's Net Pension Liability and Related Ratios, Schedule of Employer Contributions, and Schedule of Investment returns.

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

CONDENSED FINANCIAL INFORMATION AND ANALYSIS

Fiduciary Net Position
December 31, 2020, 2019 and 2018
(Dollars in thousands)

	2020	2019	Amount of Change $	Precentage Change %
Cash and investments	$ 4,991,058	$ 4,782,648	$ 208,410	4.4%
Receivables and other assets	24,398	5,098	19,300	379
Total assets	**$ 5,015,456**	**$ 4,787,746**	**$ 227,710**	**4.8**
Due to broker for securities purchased	3,921	3,594	327	9.1
Other liabilities	5,771	4,583	1,188	25.9
Total liabilities	**9,692**	**8,177**	**1,515**	**18.5**
Net position restricted for pensions	**$ 5,005,764**	**$ 4,779,569**	**$ 226,195**	**4.7%**

December 31, 2020 versus December 31, 2019

Cash and investments at December 31, 2020 were $4,991.1 million representing an increase of $208.4 million or 4.4% from 2019. This increase is a result of investment activity and plan contributions net of benefit payments and expenses during 2020.

Receivables and other assets net of liabilities at December 31, 2020 increased by $017.8 million or 1,654.4% from 2019. This is due primarily to an increase in an amount if $19.3 million due from broker from the sale of investments, offset by an increase in liabilities of $1.5 million related to investment management fees and due to broker for securities purchased.

The net position restricted for pensions increased by $226.2 million or 4.7% in 2020 as a result of the changes noted above.

Changes in Fiduciary Net Position
For the Years Ended December 31, 2020, 2019 and 2018
(Dollars in thousands)

	2020	2019	Amount of Change $	Percentage Change %
Additions:				
Net investment income/(loss)	$ 96,699	$ 647,264	$ (550,565)	-85.1%
Contributions	426,992	376,217	50,775	13.5
Total net additions	**523,691**	**1,023,481**	**(499,790)**	**(48.8)**
Deductions:				
Benefit payments	293,603	264,878	$ 28,725	10.8
Tranfer to NYSLERs	233	106	127	119.8
Administrative expenses	3,660	3,408	252	7.4
Total deductions	**297,496**	**268,392**	**29,104**	**10.8**
Net increase / (decrease) in net position	**226,195**	**755,089**	**(528,894)**	**(70.0)**
Net position restricted for pensions:				
Beginning of year	4,779,569	4,024,480	755,089	18.8
End of year	**$ 5,005,764**	**$ 4,779,569**	**$ 226,195**	**4.7%**

December 31, 2020 versus December 31, 2019

Net investment income decreased by $550.6 million in 2020 due to lower net investment gains of $96.7 million in 2020 versus net gain of $647.3 million experienced in 2019.

Contributions increased by $50.8 million or 13.5% in 2020 compared to 2019 as required by the Actuarial Determined Contributions ("ADC") and member contributions from 2019 to 2020.

Benefit payments increased by $28.7 million or 10.8% over the prior year due to a continuing trend of increases in the number of retirees and cost-of-living adjustments provided to retirees and beneficiaries.

Administrative expenses increased by $0.3 million, or 7.4% over 2019. This increase is due primarily to expenses charged in 2020 for various services provided to the Plan.

In 2020, the Plan transferred $0.2 million to New York State and Local Police and Fire Retirement System as required by New York State law due to transfers of membership.

Economic Factors

<u>Market Overview and Outlook – 2020</u>

2020 was an extraordinary year for the global economy. The COVID-19 pandemic disrupted the economy, governments and society. Fundamentally, the global health crisis prompted extreme deterioration in fundamentals, including the biggest quarterly drop in global Gross Domestic Product ("GDP") and the greatest increase in unemployment since the Great Depression. Capital markets realized an unprecedented spike in volatility and collapse in most risk assets, while global populations engaged in more pronounced calls for racial justice and climate change initiatives. The geopolitical landscape was further colored by a contentious United States ("U.S.") election, a resolution to BREXIT, and a more assertive China. By year-end, global central bank's monetary and fiscal stimulus and the approval of multiple Covid-19 vaccines prompted some recovery in economic activity and a significant rally in riskier assets.

Global Central banks remained extremely dovish throughout 2020, with most majors enacting emergency lending and liquidity facilities to support market functioning. Quantitative easing measures pushed government yields in many countries into negative territory. Inflation expectations recovered both in response to the significant monetary stimulus and both the real and anticipated supply chain disruptions as the economy slowly reopened. Fiscal policy was similarly stimulative, as additional spending and forgone revenue rose across both developed and emerging economies.

Global GDP contracted 3.8% in 2020, which was not as bad as initially expected given the subsequent rebound in economic growth later in the year. Global equities realized significant volatility and saw sharp price swings over a historically short period of time, while global yield curves finished the year generally lower than the start of 2020. Commodities largely rallied amid a constrained supply backdrop except for oil, which was deeply impacted by weakness in the transportation sector.

Macro Themes

- Trajectory of the virus and the potential spread of new COVID-19 variants
- Unwind of easy monetary policy
- Potential for a continued rise in inflation
- U.S.-China strategic competition

United States

The U.S. economy recovered from its spring lows by year-end. The unemployment rate dropped to 6.7% from a 14.8% high in April, and real GDP over 2020 stood at -3.5% despite a 33.4% during the second quarter.

U.S. equities were strongly positive, with the S&P 500 and Russell 1000 indices posting returns of (+18.4%) and (+21.0%), respectively. Across market caps, Large Cap, as measured by the S&P 500 (+18.4%), Mid Cap, as measured by the S&P 400 (+13.1%), and Small Cap, as measured by the Russell 2000 (20.0%) all posted double digit returns. Across styles, Growth, as measured by the Russell 1000 (+38.5%) outperformed Value, as measured by the Russell 1000 Value (+2.8%).

U.S. Treasury yields declined sharply in 2020 and the yield curve steepened. The Federal Reserve cut the Federal Funds rate to 0.25% and launched multiple emergency measures support market functioning. Diversified fixed income returned +7.5% (Bloomberg Barclays U.S. Aggregate), with gains dominated by U.S. Credit at 9.4% (Bloomberg Barclays Credit) and Treasury Inflation Protected Securities at 11% (Bloomberg Barclays TIPS).

International Developed Equity Markets

International developed equity markets posted very strong results in 2020 and lagged behind U.S. equity markets, returning (+7.8%) as measured by the MSCI EAFE. Both Europe and Japanese equities had positive performance in 2020 with MSCI Europe returning (+5.4%) and MSCI Japan returning (+14.5%). Lower returns in Europe were affected by the global pandemic market conditions during 2020 unlike 2019 when Europe returned (+23.7%). The Small Cap portion of international developed markets posted positive but weaker returns in 2020, (+12.3%) compared with 2019, (+24.9%).

Emerging Markets

Emerging markets posted very strong returns in 2020, with performance equaling the U.S. and outperforming international developed markets across equity but lower than both on the debt front. The broad MSCI Emerging Market Index returned (+18.3%) for the year. Emerging markets gained sharply in the last quarter of 2020, buoyed by resolution of the U.S. election and breakthrough vaccine news.

The bond markets of emerging markets performed reasonably well in 2020 compared to their outperformance in 2019. Both hard currency and local currency bonds posted positive returns. Hard currency bonds predominately issued in U.S. Dollars, as represented by the JPMorgan EMBI Global Diversified Index, returned (+5.3%) in 2020. Local currency bonds represented by the JPMorgan GBI-EM Global Diversified Index returned (+2.7%) for the year.

Commodities

The S&P Goldman Sachs Commodity Index (GSCI) fell 23.7%, largely influenced by a 20.9% drop in oil prices, represented by the New York Mercantile Exchange West Texas Index Crude Spot Index. Excluding energy, GSCI was up over 16% supported by price gains in precious metals. Reactions to the COVID-19 pandemic including mobility restrictions, limitations on nonessential travel, and increased working from home greatly reduced U.S. travel and energy demands in 2020 compared with 2019.

Market Outlook

As the global health crisis is brought under control, economic activity is likely to continue to return to pre-pandemic levels. Consensus forecasts for economic growth, earnings and risk assets are mostly favorable, and supported by continued accommodative policies, low interest rates, and asset price appreciation. Growth going forward is likely to be uneven and differentiated between regions and affected by persistent supply disruptions and other challenges in re-opening the economy. Countries with effective pandemic mitigation strategies are expected to fare better overall. The pace of the recovery is dependent on known risks such as the trajectory of the virus and the potential spread of new COVID-19 variants as well as policy errors either in the form of maintaining too much stimulus or too little. The Federal Reserve, European Central Bank, Bank of Japan and Bank of England have all committed to a more flexible approach to rising inflation in the future, suggesting stimulus will remain in place but not necessarily at crisis levels. Some of the heavy lifting will likely continue to be carried by continued global fiscal measures either targeted to specific areas of the economy such as infrastructure or more-broad based in nature via income injections. Unknown risks to the outlook are predominantly geopolitical in nature and possibly related to tensions in the Middle East or between the U.S. and China.

Contact Information

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

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METROPOLITAN TRANSPORTATION AUTHORITY
DEFINED BENEFIT PENSION PLAN

STATEMENT OF FIDUCIARY NET POSITION
AS OF DECEMBER 31, 2020
(In tnousands)

		2020
ASSETS:		
Cash	$	10,702
Investments at fair value (Notes 2 and 3):		
Investments measured at readily determined fair value		1,376,584
Investments measured at net asset value		3,603,772
Total investments		4,980,356
Receivables:		
Accrued interest and dividends		2,712
Other receivable		21,686
Total receivables		24,398
Total assets		5,015,456
LIABILITIES:		
Due to broker for securities purchased		3,921
Due to broker for investment fee		2,275
Due to broker for administrative expenses		170
Due to MTA for administrative expenses		3,016
Other liabilities		310
Total liabilities		9,692
NET POSITION RESTRICTED FOR PENSIONS	$	5,005,764

See notes to financial statements.

METROPOLITAN TRANSPORTATION AUTHORITY
DEFINED BENEFIT PENSION PLAN

STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR THE YEAR ENDED DECEMBER 31, 2020
(In thousands)

		2020
ADDITIONS:		
Investment income:		
Net realized and unrealized gains	$	71,189
Dividends		44,575
Interest		11,461
Total investment income		127,225
Less:		
Investment expenses		(30,526)
Net investment income		96,699
Contributions:		
Employer:		
Metro-North Commuter Railroad Company		137,690
Long Island Rail Road Company		146,441
Metropolitan Transportation Authority Headquarters		41,700
MTA Bus Company		61,100
Staten Island Rapid Transit Operating Authority		8,055
Employee		32,006
Total contributions		426,992
Total additions		523,691
DEDUCTIONS:		
Benefits paid to participants		293,603
Transfer of MTA Police Employer & Employee Contributions to NYSLERS		233
Administrative expenses		3,660
Total deductions		297,496
NET INCREASE IN NET POSITION		226,195
NET POSITION RESTRICTED FOR PENSIONS		
Beginning of year		4,779,569
End of year	$	5,005,764

See notes to financial statements.

1. PLAN DESCRIPTION

The following brief description of the Metropolitan Transportation Authority (the "Authority") Defined Benefit Pension Plan (the "Plan") is provided for general information purposes only. Participants should refer to the Plan document for more complete information.

General — The Plan represents a cost-sharing employer defined benefit pension plan sponsored by the Authority and administered by the Board of Managers of Pensions, covering:

(a) management employees of the Long Island Rail Road Company ("MTA Long Island Rail Road") hired after January 1, 1988 not governed by collective bargaining agreements;

(b) management employees of the Metro-North Commuter Railroad Company ("MTA Metro-North Railroad") not governed by collective bargaining agreements;

(c) represented MTA Long Island Rail Road employees hired after January 1, 1988, covered by collective bargaining agreements which provide for participation in the plan effective January 1, 2004;

(d) certain represented MTA Metro-North Railroad employees covered by collective bargaining agreements which provide for participation in the plan effective on or after January 1, 2004;

(e) represented and non-represented MTA Long Island Rail Road employees hired prior to January 1, 1988;

(f) Metropolitan Suburban Bus Authority ("MTA Long Island Bus") provided public service in Nassau and Queens Counties. The Authority's Lease and Operating Agreement with Nassau County, dated January 15, 1973, as amended, was terminated effective December 31, 2011. As of January 1, 2012, the MTA Long Island Bus is no longer a member of the MTA Group. Represented and management Metropolitan Suburban Bus Authority ("MTA Long Island Bus") employees hired prior to January 24, 1983 and any MTA Long Island Bus person employed by the MSBA Employees' Pension Trust prior to July 29, 1998 under the MSBA Employees' Pension Plan remained vested employees in the plan;

(g) represented and management employees of the Staten Island Rapid Transit Operating Authority ("MTA Staten Island Railway") effective January 1st, 2005;

(h) certain represented and management employees of MTA Bus Company ("MTA Bus"), including represented and non-represented employees who were formerly employed by Liberty Lines Express, Inc., New York Bus Tours, Inc., Command Bus Company, Green Bus Lines Inc., Jamaica Buses Inc., Triboro Coach Corporation and represented and most non-represented employees formerly employed by Queens Surface Corporation; and

(i) participants in the MTA Defined Benefit Pension Plan 20 Year Police Retirement program ("MTA Police").

The Plan contains multiple and distinct benefit structures for MTA Metro-North Railroad and MTA Long Island Rail Road management employees, for MTA Metro-North Railroad and MTA Long Island Rail Road represented employees, MTA Police, MTA Long Island Bus employees and MTA Staten Island Railway employees. In addition, there are multiple but distinct benefit structures for the employees of MTA Bus which are based on the plans covering those employees prior to their becoming MTA Bus employees. MTA Bus non-represented employees and employees represented by the UTLO are covered by separate programs. Assets and liabilities are pooled and a single cash contribution amount and annual pension cost is determined. The Plan is designed to satisfy the applicable requirements for governmental plans under Section 401(a) and 501(b) of the Internal Revenue Code. Accordingly, the Plan is tax-exempt and is not subject to the provisions of the Employee Retirement Income Security Act ("ERISA") of 1974.

Membership of the Plan consisted of the following as of January 1, 2020, the date of the latest actuarial valuations:

	2020
Active Plan Members	18,960
Retirees and beneficiaries receiving benefits	11,468
Vested formerly active members not yet receiving benefits	1,519
Total	31,947

Funding for the Plan is provided by the Authority, MTA Metro-North Railroad, MTA Long Island Rail Road, MTA Bus and MTA Staten Island Railway which are public benefit corporations that receive a significant portion of their operating and capital financing requirements from New York City, New York State, federal and regional governmental units and from the sale of bonds to the public. Certain funding is made on a discretionary basis. The continuance of funding for the Plan has been, and will continue to be, dependent upon the receipt of adequate funds.

Plan Administration – The Defined Benefit Plan is administered by the Board of Managers of Pensions (" The Board of Managers") which is comprised of:

(a) the persons holding the following positions:
  (i) the Chairman of the MTA;
  (ii) the MTA Chief Financial Officer;
  (iii) the MTA Director of Labor Relations; and
  (iv) the agency head of each participating Employer.

(b) Designation of Others – Any member of the Board of Managers, serving as such by virtue of holding a position described in (a) of this section, may, by written authorization filed with the Secretary who shall notify the other members of the Board of Managers, designate another individual, not then a member of the Board of Managers, to serve in that member's stead, in accordance with procedures established with the approval of the Executive Director. Any such authorization may be revoked by the designating member at any time in writing filed in the same manner.

(c) The Board of Managers shall be the agent for the service of legal process with respect to the Plan. No bond or other security is required in any jurisdiction of the Board of Managers or any member thereof except as required by law.

Pension Benefits — Retirement benefits are paid from the Plan to covered MTA Metro-North Railroad, MTA Staten Island Railway and post —1987 MTA Long Island Rail Road employees as service retirement allowances or early retirement allowances. A participant is eligible for a service retirement allowance upon termination if the participant satisfied both age and service requirement. A participant is eligible for an early retirement allowance upon termination if the participant has attained age 55 and completed at least 10 years of credited service. Terminated participants with 5 or more years of credited service who are eligible for a deferred vested benefit are not eligible to receive a service retirement allowance or early retirement allowance. Deferred vested benefits are payable on an unreduced basis on the first day of the month following the participant sixty-second birthday. Effective in 2007, members and certain former members who become (or became) employed by another MTA agency which does not participate in the Plan continue to accrue service credit based on such other employment. Upon retirement, the member's vested retirement benefit from the Plan will be calculated on the final average salary of the subsequent MTA agency, if higher. Moreover, the Plan benefit will be reduced by the benefit, if any, payable by the other plan based on such MTA agency employment. Such member's disability and ordinary death benefit will be determined in the same way.

Retirement benefits are paid from the Plan under the MTA 20-Year Police Retirement Program. A participant is eligible for service retirement at the earlier of completing 20 years of credited Police service or attainment of age 62. Terminated participants with five years of credited police service, who are not eligible for retirement, are eligible for a deferred benefit. Deferred vested benefits are payable on the first of the month following the participant's attainment of age 55.

Retirement benefits paid from the Plan to covered represented MTA Bus employees include service retirement allowances or early retirement allowances. Under the programs covering all represented employees at Baisley Park, Eastchester, La Guardia, Spring Creek, and Yonkers Depots and the represented employees at College Point Depot, JFK, Far Rockaway a participant is eligible for a service retirement allowance upon termination if the participant has attained age 65 and completed at least 5 years of credited service or if the participant has attained age 57 and completed at least 20 years of credited service. A participant hired prior to June 2009 from Baisley Park, College Point, and La Guardia Depots is eligible for an early retirement allowance if the participant has attained age 55 and completed 20 years of credited service. Terminated participants with 5 or more years of credited service who are not eligible to receive a service retirement allowance or early retirement allowance are eligible for a deferred vested benefit. Deferred vested benefits are payable on an unreduced basis on or after the participant attains age 65.

The MTA Bus retirement programs covering TWU, ATU and TSO represented employees are fixed dollar plans, i.e., the benefits are a product of credited service and a specific dollar amount.

The retirement benefits for certain former employees of the Alliance Companies are based on a participant's service and final average salary. A normal retirement benefit is payable when the participant attains age 62 with 5 years of service. An early retirement benefit is payable when the participant attains age 55 with 15 years of service. The retirement benefit is payable as a single life annuity or, for married participants, as an unreduced 75% joint and survivor annuity.

MTA Bus non-represented employees and employees represented by the UTLO as of January 1, 2017 will earn benefits under a new set of programs. For service prior to 2017, a component calculated by a flat monthly dollar rate multiplied by years of credited service will be added to a final average salary (FAS) component, based on the platforms provided to similarly situated MaBSTOA Pension Plan members. For service on or after January 1, 2017, the final average salary component platform will be based on date of hire, years of credited service and whether the participant holds an operating or non-operating title. Certain former Liberty Lines employees assigned to the former Liberty Lines bus routes also are eligible for a supplemental plan benefit of 0.75% of final average salary per year of Plan service. TWU Local 100 has been certified as the collective bargaining representative for certain titles previously not represented at MTA Bus. Affected employees will participate in these programs, as set forth in the relevant collective bargaining agreement.

An MTA Bus non-represented or UTLO operating employee hired prior to April 1, 2012 participates in a Tier 4 25/55 operating retirement platform. A Tier 4 25/55 operating retirement platform participant with 25 years of Allowable Service receives upon retirement at age 55 a flat rate benefit equal to $1,380.00 ($115 x 12) for each year of service prior to January 1, 2017, plus a FAS benefit equal to 2% multiplied by FAS multiplied by service accrued after January 1, 2017, up to 30 years of total service, plus 1.5% multiplied by FAS multiplied by service accrued after January 1, 2017 in excess of 30 years of total service.

An MTA Bus non-represented non-operating employee hired prior to April 1, 2012 participates in a Tier 4 57/5 non-operating retirement platform. A Tier 4 57/5 non-operating retirement platform participant receives upon retirement at age 57 a flat rate benefit equal to $1,380.00 ($115 x 12) for each year of service prior to January 1, 2017, plus a FAS benefit equal to, for those with less than 20 years of total service, 1 2/3% multiplied by FAS multiplied by total service accrued after January 1, 2017, or, for those with 20 or more years of total service, 2% multiplied by FAS multiplied by total service accrued after January 1, 2017, up to 30 years of total service, plus 1.5% multiplied by FAS multiplied by total service accrued after January 1, 2017 in excess of 30 years of total service.

An MTA Bus non-represented or UTLO operating employee hired on or after April 1, 2012 participates in a Tier 6 25/55 operating retirement platform. A Tier 6 25/55 operating retirement platform participant with 25 years of Allowable Service receives upon retirement at age 55 a flat rate benefit equal to $1,380.00 ($115 x 12) for each year of service prior to January 1, 2017, plus a FAS benefit equal to 2% multiplied by FAS multiplied by service accrued after January 1, 2017 up to 30 years of total service, plus 1.5% multiplied by FAS multiplied by service accrued after January 1, 2017 in excess of 30 years of total service. The flat rate benefit is vested after the completion of five years of total service and the FAS benefit is vested after the completion of ten years of total service.

An MTA Bus non-represented non-operating employee hired on or after April 1, 2012 participates in a Tier 6 63/10 non-operating retirement platform. A Tier 6 63/10 non-operating retirement platform participant receives upon retirement at age 63 a flat rate benefit equal to $1,380.00 ($115 x 12) for each year of service prior January 1, 2017, plus a FAS benefit equal to, for those with less than 20 years of total service, 1.67% multiplied by FAS multiplied by total service accrued after January 1, 2017, or, for those with 20 or more years of total service, 1.75% multiplied by FAS multiplied by total service accrued after January 1, 2017, up to 20 years of such service, plus 2% multiplied by FAS multiplied by total service accrued after January 1, 2017 in excess of 20 years of total service. The flat rate benefit is vested after the completion of five years of total service and the FAS benefit is vested after the completion of ten years of total service.

Reduced early retirement benefits are payable under all platforms. The Tier 6 definition of wages for civilian members includes an overtime ceiling which limits overtime compensation for pension purposes to no more than $17,067 for 2020, indexed annually thereafter. Any overtime compensation earned in excess of the overtime ceiling is excluded from the final average salary calculation. The Tier 6 definition of wages also excludes wages in excess of the annual salary paid to the New York State Governor, lump-sum payments for deferred compensation, sick leave, accumulated vacation or other credits for time not worked.

TWU, ATU and TSO members who retire after November 16, 2016, and UTLO members and non-represented employees who retire after January 1, 2017 will have their pension benefit increased by a Cost of Living Adjustment (COLA). The COLA is an annual adjustment to the retirement benefit based on the Consumer Price Index (CPI). The following retirees are eligible to receive a COLA: disability retirees, regardless of age, who have been retired for at least 5 years; retirees who are at least age 62 and have been retired for at least 5 years; and retirees who are at least age 55 and have been retired for at least 10 years. Surviving spouses receiving a joint-and-survivor option benefit are eligible to receive 50% of the monthly COLA that would have been paid to the retiree. For TWU, ATU and TSO members, the COLA calculation is based on the first $18,000 of the retiree's normal retirement benefit. For UTLO members and non-represented employees, the COLA calculation is based on the first $18,000 of the retiree's final average salary benefit component. The COLA amount may not be less than 1% nor more than 3% in any year. Once COLA payments begin, they continue automatically and increase each September.

Certain MTA Bus employees represented by TWU Local 100 were granted pension service credit for periods of employment at Liberty Lines Express, Inc. prior to January 3, 2005, with the increase in the Plan benefit offset by the benefit accrued under the TWU-Westchester Private Bus Lines Pension Plan.

Pre-1988 MTA Long Island Rail Road participants are eligible for a service retirement allowance upon termination if the participants have either: (a) attained age 65 and completed at least 5 years of credited service, or if an employee on January 1, 1988 completed at least 10 years of credited service, or (b) attained age 50 and has completed at least 20 years of credited service. Terminated participants who were not employees on January 1, 1988 with 5 or more years of credited service are eligible for a deferred vested benefit. Pension benefits payable to age 65, where eligible, are calculated as 2% of the employee's applicable final average earnings for each year of qualifying service up to 25 years plus 1.5% of applicable final average earning of each year of qualifying service in excess of 25 years. For pension benefits payable at and after age 65 regardless of whether benefits commenced before or after the employee attained age 65, benefits are calculated in the same manner as pension benefits payable prior to age 65 except that the amount so determined is reduced by a percentage of the employee's annuity (not including supplemental annuity) value at age 65 under the Federal Railroad Retirement Act.

The reduction of pension benefits for amounts payable under the Federal Railroad Retirement Act is 50%.

Death and Disability Benefits — In addition to service retirement benefits, participants of the Plan are eligible to receive disability retirement allowances and death benefits. Participants who become disabled may be eligible to receive disability retirement allowances after 10 years of covered MTA Bus service; 10 years of credited service for covered MTA Metro-North Railroad and MTA Long Island Rail Road management and represented employees, covered MTA Staten Island Railway employees and covered MTA police participants.

The disability retirement allowance for covered MTA Metro-North Railroad and MTA Long Island Rail Road management and represented covered MTA Staten Island Railway employees is calculated based on the participant's credited service and final average salary ("FAS") but not less than ⅓ of FAS. Under the MTA 20 Year Police Retirement Program, a disabled participant may be eligible for one of three forms of disability retirement: (a) ordinary disability which is payable if a participant has 10 years of credited Police service and is calculated based on the participant's credited Police service and FAS but not less than ⅓ of FAS; (b) performance of duty, which is payable if a participant is disabled in the performance of duty and is ½ of FAS, and (c) accidental disability, which is payable if a participant is disabled as the result of an on-the-job accidental injury and is ¾ of FAS subject to an offset of Workers' Compensation benefits. Pursuant to the MTA Bus programs, the disability benefit is the same as the service retirement benefit.

Pre-1988 MTA Long Island Rail Road participants who become disabled after accumulating 10 years of credited service and who meet the requirements as described in the Plan may be eligible to receive a disability benefit. Disability pension benefits are calculated based on the participant's qualified service and a percentage of final average compensation reduced by the full amount of the disability benefit under the Federal Railroad Retirement Act.

Survivorship benefits for pre-1988 MTA Long Island Rail Road participants are paid to the spouse when a survivorship option is elected or when an active participant has not divested their spouse of benefits. The survivorship benefit is payable at the time of death or when the vested participant would have attained an eligible age. The amount payable is in the form of an annuity. A lump sum death benefit no greater than $5,000 is payable upon death on behalf of a non-vested participant or vested participant whose pension rights were waived.

Death benefits are paid to the participant's beneficiary in the event of the death of a covered MTA Metro-North Railroad, post-1987 MTA Long Island Rail Road or MTA Staten Island Railway employee after completion of one year of credited service. The death benefit payable is calculated based on a multiple of a participant's salary based on years of credited service up to three years and is reduced beginning at age sixty-one. There is also a post-retirement death benefit which, in the 1st year of retirement, is equal to 50% of the pre-retirement death benefit amount, 25% the 2nd year and 10% of the death benefit payable at age 60 for the 3rd and later years. For the Police 20 Year Retirement Program, the death benefit is payable after ninety days of credited MTA Police service, and is equal to three times their salary. For non-Police groups, this death benefit is payable in a lump sum distribution while for Police, the member or the beneficiary can elect to have it paid as an annuity. The MTA Police do not have a post retirement benefit.

In the MSBA Employees' Pension Plan, there are special spousal benefits payable upon the death of a participant who is eligible for an early retirement benefit, or a normal service retirement benefit, or who is a vested participant or vested former participant. To be eligible, the spouse and participant must have been married at least one year at the time of death. Where the participant was eligible for an early service retirement benefit or was a vested participant or former participant, the benefit is a pension equal to 40% of the benefit payable to the participant as if the participant retired on the date of death. Where the participant was eligible for a normal service retirement benefit, the eligible spouse can elect either the benefit payable as a pension, as described in the prior sentence, or a lump sum payment based on an actuarially determined pension reserve. If there is no eligible spouse for this pension reserve benefit, a benefit is payable to the participant's beneficiary or estate.

Moreover, an accidental death benefit is payable for the death of a participant who is a covered MTA Metro-North Railroad or post-1987 MTA Long Island Rail Road employee, a covered MTA Staten Island Railway employee or a covered MTA Police member and dies as the result of an on-the-job accidental injury. This death benefit is paid as a pension equal to 50% of the participant's salary and is payable to the spouse for life, or, if none, to children until age 18 (or 23, if a student), or if none, to a dependent parent.

For MTA Bus employees, there is varied death benefit coverage under the Plan. For all represented and non-represented MTA Bus employees at Eastchester and Yonkers Depots and represented MTA Bus employees at Baisley Park, College Point, Far Rockaway, JFK, La Guardia and Spring Creek Depots, if a participant dies prior to being eligible for a retirement benefit, the participant's beneficiary may elect to receive a refund of the participant's contributions plus interest.

Moreover, the spouses of the above employees who are vested are entitled to a presumed retirement survivor annuity which is based on a 50% Joint and Survivor annuity. The date as of which such annuity is determined and on which it commences varies among the different programs depending on whether the participants are eligible for retirement and for payment of retirement benefits.

In addition, the spouse of a non-represented MTA Bus employee at Spring Creek, JFK, La Guardia, Baisley Park and Far Rockaway, if such employee is age 55 and has 15 years of service and is a terminated member with a vested benefit which is not yet payable, may elect the presumed retirement survivor annuity or 1/2 the participant's accrued benefit paid monthly and terminating on the 60th payment or the spouse's death. The spouse of a non-represented MTA Bus employee at Yonkers Depot may also receive a pre-retirement survivor annuity from the supplemental plan. If there is no such spouse, the actuarial equivalent of such annuity is payable.

The dependent children of MTA Bus TWU employees of College Point, Baisley Park, and La Guardia hired prior to June 9, 2009 are also entitled to an annuity based on the spouse's pre-retirement survivor annuity (1/2 of the spouse's annuity is payable to each child, but no more than 100% of the spouse's annuity is payable). In addition, the dependent children of retirees who were MTA Bus employees at these Depots are entitled to an annuity based on the presumed retirement survivor's annuity (25% of the spouse's annuity; but no more than 50% of the spouse's annuity is payable).

On July 22, 2020, the MTA Board adopted temporary a COVID-19 Accidental Death Benefits, providing eligible surviving beneficiaries with the option to elect a monthly annuity in lieu of an ordinary death benefit, in certain programs of the Plan. On July 21, 2021, the MTA Board adopted amendments to extend the COVID-19 Accidental Death Benefits for active members of the Plan whose death was caused by COVID-19 from March 1, 2020 through December 31, 2022.

MTA Bus employees represented by TWU 100, ATU 1181, ATU 1179, and TSO 106 participate in Article 14 of the Plan. Unlike other Articles of the Plan, Article 14 provides a monthly survivor benefit (a Qualified Preretirement Survivor Annity ("QPSA") to the spouse of an employee who dies while in active service. The MTA Bus COVID-19 Accidental Death Benefit follows the current benefit structure and enhances the existing QPSA benefit. The MTA Board approved this arrangement, subject to collective bargaining, on July 22, 2020. On July 21, 2021, the MTA Board extended the MTA Bus COVID-19 Accidental Death Benefit for active employees whose death was caused by COVID-19 until December 31, 2022.

Retirement benefits establishment and changes for represented employees are collectively bargained and must be ratified by the respective union and the MTA Board. For non-represented employees, retirement benefit adopted and modifications thereto, are presented to the MTA Board and must be accepted and approved by the MTA Board.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

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

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

New Accounting Standards Adopted – The Plan did not adopt any new GASB Statement in 2020. However, the Plan did update the required year of adoption for GASB Statement No. 92. Refer to Recent Accounting Pronouncements- Not yet adopted but currently being evaluated below for further details.

Recent Accounting Pronouncements — Not yet adopted but currently being evaluated

GASB Statement No.	GASB Accounting Standard	MTA Pension Plan Required Year of Adoption
92	*Omnibus 2020*	2022

Use of Estimates — The preparation of the Plan's financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Estimates include fair market value of investments, the annual required contribution and the unfunded actuarial accrued liability.

Benefits — Benefits are recorded when paid.

Contributions — As a condition of participation in the MTA Defined Benefit Pension Plan ("MTADBPP" or the "Plan"), employers and employees are required to contribute to the Plan. The amount of the employer contributions is determined by the Plan actuaries. Employee contribution rates for represented employees are determined by collective bargaining. Employee contribution rates for non-represented employees are set forth in the Plan document as adopted by the MTA Board. If an employee terminates employment with less than 10 (ten) years of credited service in the Plan, the employee may request a refund of his employee contributions with interest. Upon receipt of this refund of contributions, the employee has no claim on any future benefit from the Plan. Employees with more than 10 years of credited service, except for a small group of MTA Bus participants, cannot withdraw their contributions.

Members of the MTA Police Program who have transferred pursuant to Retirement and Social Security Law Section 343 and have not been employed in the MTA Police Program for 15 years may, upon termination of employment, withdraw member contributions. The withdrawal of such transferred police service member contributions shall not terminate membership and rights in the MTA Police Program attributable to Credited Police Service.

Income - Dividend and interest income are recorded when earned.

Securities - Purchases and sales of securities are recorded on a trade-date basis.

Asset Transfers — No assets were transferred to the MTA Defined Benefit Pension Plan for the year 2020.

Administrative Expenses — Administrative expenses of the Plan are paid for by the Plan.

3. CASH AND INVESTMENTS

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

In order to have a reasonable probability of achieving the target return at an acceptable risk level, the Board has adopted the asset allocation policy outlined below. The actual asset allocation will be reviewed on, at least, a quarterly basis and will be readjusted when an asset class weighting is outside its target range. The following was the MTA Defined Benefit Pension Plan Board adopted asset allocation policy as at December 31, 2020.

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

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

Investment Objective — The investment objective of the Plan is to achieve the actuarial return target with an appropriate risk position.

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

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

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

Fixed Income Investment Managers

- Domestic fixed income investments are permitted, subject to the guidelines reflected in Investment Policy Statement. Yankee bonds, which are dollar denominated foreign securities, may be held by each domestic manager in proportions which each manager shall deem appropriate.

- International fixed income securities are permitted, subject to the guidelines reflected in Investment Policy Statement. Generally defined, the Citigroup World Government Bond Index represents the opportunity set for international developed markets. The J.P. Morgan Emerging Markets Bond Index-Global represents the opportunity set for international emerging markets denominated in USD. The J.P. Morgan GBI-EM Global Diversified Index represents the opportunity set for international emerging markets denominated in local currency. These index references are guidelines and do not prohibit investment in securities outside those indexes.

- Investment managers are responsible for making an independent analysis of the credit worthiness of securities and their suitability as investments regardless of the classifications provided by rating agencies.

- The average duration (interest rate sensitivity) of an actively managed fixed income portfolio shall range within two years of the benchmark's duration.

- For domestic fixed income portfolios, individual manager account for the securities of an individual issuer, excepting the U.S. government and U.S. government agencies, shall not constitute more than 5% at market at any time.

- For international bond portfolios, individual manager account for the securities of any non-governmental issuer shall not constitute more than 5% at market at any time.

Equity Investment Managers

- Domestic equity investments are permitted, subject to the guidelines. American Depository Receipts (ADRs), which are dollar denominated foreign securities traded on the domestic U.S. stock exchanges (e.g., Reuters, Nestle, Sony) may be held by each domestic stock manager in proportions which each manager shall deem appropriate.

- International equities are permitted, subject to the guidelines. Generally defined, the Morgan Stanley EAFE (Europe, Australasia and the Far East) Index represents the opportunity set for international developed markets. The Morgan Stanley Emerging Markets Free Index represents the opportunity set for international emerging markets. These index references are guidelines and do not prohibit investment in securities outside those indexes.

- The equity specialists may vary equity commitment from 90% to 100% of assets under management.

- Individual manager account may hold no more than 8% at market or 1.5x the manager's benchmark weight (whichever is greater) of any single company's stock.

Overlay Manager(s).

- For a variety of reasons, the investment program may carry large amounts of cash throughout the year. In order to achieve the actuarial assumed returns on the total investment program, the Board may retain a futures overlay manager. The overlay manager shall use exchange traded futures contracts to expose the cash to the long-term target asset allocation.
- In addition, the overlay manager may be utilized for the following:
    a) Expose un-invested assets of domestic and international equity investment managers to their respective equity benchmarks through the use of futures contracts,
    b) Assist the Board in rebalancing, transitions, and/or gaining exposure to approved asset classes,
    c) Provide the market (or "beta") exposures in a portable alpha program,
    d) The overlay manager shall ensure that all futures positions are fully collateralized and the manager is prohibited from leveraging any portion of the portfolio.

Alternative Investments Managers

Alternative investments are broadly categorized into the following categories:
- Opportunistic
- Real assets
- Real estate
- Absolute return
- Private equity

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

Derivatives Policy

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

- Hedging. To the extent that the portfolio is exposed to clearly defined risks and there are derivative contracts that can be used to reduce those risks, the investment managers are permitted to use such derivatives for hedging purposes, including cross-hedging of currency exposures.

- Creation of Market Exposures. Investment managers are permitted to use derivatives to replicate the risk/return profile of an asset or asset class provided that the guidelines for the investment manager allow for such exposures to be created with the underlying assets themselves.

- Management of Country and Asset Allocation Exposure. Investment managers charged with tactically changing the exposure of their portfolio to different countries and/or asset classes are permitted to use derivative contracts for these purposes.

- Additional uses of derivatives shall be approved by the Board or set forth in the individual investment guidelines or the offering documents prior to implementation and shall be restricted to those specific investment managers.

Ineligible Investments (Separately Managed Accounts)

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

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

Exceptions:

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

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

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

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

Impact of COVID-19 — In March 2020, the World Health Organization classified the COVID-19 outbreak as a pandemic. As a result, global financial markets have experienced, and may continue to experience, significant volatility resulting from the spread of COVID-19. The values of the Plan's individual investments have and will fluctuate in response to changing market conditions and therefore, the amount of losses that will be recognized in subsequent periods, if any, cannot be determined. The extent of the impact of COVID-19 on the Plan's net assets available for benefits and contributions will depend on future developments, including the duration and continued spread of the outbreak. The full impact of the COVID-19 outbreak continues to evolve as of the date of this report.

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

	December 31, 2020	Quoted Price in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2	Significant Unobservable Inputs Level 3
Equity Securities:				
Separate account large-cap equity funds	$ 386,812	$ 386,812	$ -	$ -
Separate account small-cap equity funds	299,157	299,157	-	-
Separate account small-Real Estate Investments Trusts	51,713	51,713	-	-
Total equity investments	737,682	737,682	-	-
Debt Securities				
Mutual funds	230,307	230,307	-	-
Separate account debt funds	408,595	-	408,595	-
Total debt investments	638,902	230,307	408,595	-
Total investments by fair value	$ 1,376,584	$ 967,989	$ 408,595	$ -

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

	December 31, 2020	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Equity Securities:				
Commingled large cap equity funds	$ 225,141	-	Daily	None
Commingled international equity funds	709,300	-	Daily	None
Commingled emerging market equity funds	214,266	-	Daily, monthly	None
Total equity investments measured at the NAV	1,148,707	-		
Debt Securities				
Commingled debt funds	348,890	-	Daily, monthly, quarterly	None
Total debt investments measured at the NAV	348,890	-		
Absolute return:				
Direct lending	221,772	25,300	Bi-annually	60 plus days
Distressed securities	48,081	-	Not eligible	N/A
Credit long	60,501	-	Quarterly	3-30 days
Credit long/short	78,502	-	Quarterly	3-60 days
Equity long/short	55,888	-	Quarterly	3-60 days
Event driven	93,861	1,992	Quarterly, Bi-annually	60-120 days
Multistrategy	47,276	-	Monthly	3-30 days
Risk parity	393,788	-	Not eligible	N/A
Total absolute return measured at the NAV	999,669	27,292	Not eligible	N/A
Private equity - private equity partnerships	397,024	149,560	Varies	N/A
Real assets				
Commingled real estate funds	222,733	-	Not eligible	N/A
Energy	111,030	41,425	Not eligible	N/A
Infrastructure	21,742	4,677	Not eligible	N/A
Total real assets measured at the NAV	355,505	46,102		
Short term investments measured at the NAV	353,977	-		
Total investments measured at the NAV	3,603,772	$ 222,954		
Total investments at fair value	$ 4,980,356			

Concentration of Credit Risk – Individual investments held by the Plan that represents 5.0% or more of the Plan's net assets available for benefits at December 31, 2020 is as follows:

(In Thousands)	**2020**
Investments at fair value as determined by quoted market prices:	
Robert W. Baird and Company	$ 340,105
Johnston International	281,523
JP Morgan Chase Short Term Investment Fund (STIF)	353,976

Credit Risk — At December 31, 2020, the following credit quality rating has been assigned by a nationally recognized rating organization:

(In Thousands) Quality Rating	2020 Fair Value	Percentage of Fixed Income Portfolio
AAA	$ 32,375	8.26 %
AA	81,482	20.78
A	36,377	9.28
BBB	110,676	28.22
BB	8,045	2.05
B	3,003	0.77
CCC	2,031	0.52
Not Rated	50,569	12.90
Credit risk debt securities	324,558	82.78
U.S. Government bonds	67,526	17.22
Total fixed income securities	392,084	100.00 %
Other securities not rated — equity, international funds and foreign corporate bonds	4,588,272	
Total investments	$ 4,980,356	

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

	2020	
Investment Fund (In Thousands)	**Fair Value**	**Duration**
JP Morgan Chase	$ 392,084	6.47
Total fixed income securities	392,084	
Portfolio modified duration		6.47
Investments with no duration reported	4,588,272	
Total investments	$ 4,980,356	

Foreign Currency Risk — Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment. Some of the Plan's investment managers will have foreign currency exposure through holdings of foreign securities, currency derivatives or private investments whose revenue will be non-USD based. The Plan also holds investments in American Depository Receipts ("ADRs") which are denominated in U.S. dollars and accounted for at fair market value.

The Plan did not have any foreign currency exposures as of December 31, 2020.

Additional Information — The Plan holdings are part of the MTA Master Trust of which the MTA Defined Benefit Plan participates on a percentage basis. The percentage of the Plan ownership for the year ended December 31, 2020 was 87.85%.

	Master Trust Total Plan	MTA Defined Benefit Plan
	December 31, 2020 (In thousands)	
Total Investments:		
Investments measured at readily determined fair value	$ 1,566,915	$ 1,376,584
Investments measured at the NAV	4,102,042	3,603,772
Total investments measured at fair value	$ 5,668,957	$ 4,980,356

4. NET PENSION LIABILITY

The components of the net pension liability of the Plan at December 31, 2020 were as follows (in thousands):

		December 31, 2020
Total pension liability	$	6,950,036
Fiduciary net position		5,005,764
Net pension liability	$	1,944,272
Fiduciary net position as a percentage of the total pension liability		72.03%

Actuarial Methods and Assumptions

The total pension liability as of December 31, 2020 was determined by an actuarial valuation date of January 1, 2020, that was updated to roll forward the total pension liability to year-end. Actuarial valuations are performed annually as of January 1.

Discount Rate

The discount rate used to measure the total liability as of December 31, 2020 was 6.50%. The projection of cash flows used to determine the discount rate assumed that plan contributions will be made in accordance with the Employer funding policy as projected by the Plan's actuary. Based on those assumptions, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments of current and inactive plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all projected benefit payments to determine the total pension liability.

Sensitivity of the Net Pension Liability to Changes in the Discount Rate

The following presents the 2020 net pension liability of the Plan, calculated using the discount rate of 6.50%; as well as what the Plan's net pension would be if it were calculated using a discount rate that is 1-percentage point lower (5.50%) or 1-percentage point higher (7.50%) than the current rate:

2020 (in thousands)	1% Decrease 5.50%	Current Discount Rate 6.50%	1% Increase 7.50%
Net pension liability	$2,819,064	$1,944,272	$1,207,643

Additional Important Actuarial Valuation Information

Valuation date	January 1, 2020
Valuation timing	Actuarially determined contributions calculated as of December 31, for the fiscal year and discounted to July 1 to reflect monthly payments throughout the year.
Actuarial cost method	Frozen Initial Liability and Entry Age Normal cost methods .
Amortization method	For FIL bases, 18 years for the Fresh start base of January 1, 2020 and period specified in current valuation report for specific plan changes. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary or service of the projected population for each group and further weighted by total present value of benefits for each group.
Actuarial asset valuation method	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets
Mortality	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA
Actuarial assumptions:	
Investment rate of return	6.50%, net of investment expenses
Projected salary increases	Varies by years of employment, and employee group; 2.75% GWI increases for TWU Local 100 MTA Bus hourly employees
COLAs	60% of inflation assumption or 1.35%, if applicable
Inflation/Railroad Retirement wage base	2.25%; 3.25%

Calculation on Money-Weighted Rate of Return

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

2020 Schedule of Calculations of Money-Weighted Rate of Return

(In thousands)

	Net External Cash Flows	Periods Invested	Period Weight	Net External Cash Flows With Interest
Beginning Value - January 1, 2020	$4,784,224	12.00	1.00	$4,875,572
Monthly net external cash flows:				
January	(11,874)	12.00	1.00	(12,102)
February	7,052	11.00	0.92	7,176
March	7,052	10.00	0.83	7,164
April	7,052	9.00	0.75	7,152
May	7,052	8.00	0.67	7,142
June	9,624	7.00	0.58	9,730
July	10,343	6.00	0.50	10,442
August	10,343	5.00	0.42	10,426
September	10,343	4.00	0.33	10,408
October	15,111	3.00	0.25	15,182
November	15,343	2.00	0.17	15,393
December	42,056	0.37	0.03	42,079
Ending Value - December 31, 2020				$5,005,764
Money-Weighted Rate of Return	1.91%			

Calculation on Long-Term Expected Rate of Return

The best-estimate range for the long-term expected rate of return is determined by adding expected inflation to expected long-term real returns and reflecting expected volatility and correlation. The capital market assumptions are per Milliman's investment consulting practice as of December 31, 2020.

SCHEDULE OF LONG TERM EXPECTED RATE OF RETURN FOR 2020

Asset Class	Index	Target Allocation*	Real Rate of Return
US Core Fixed Income	Barclays Aggregate	9.00%	0.78%
US Long Bonds	Barclays Long Term Government/C	1.00%	1.82%
US Bank/Leveraged Loans	Credit Suisse Leveraged Loan	7.00%	2.73%
US Inflation-Indexed Bonds	Barclays US TIPS	2.00%	-0.07%
US High Yield Bonds	BAML High Yield	4.00%	3.84%
Emerging Market Bonds	JPM EMBI Plus	2.00%	4.19%
US Large Caps	S&P 500	12.00%	3.93%
US Small Caps	Russell 2000	6.00%	5.11%
Foreigh Developed Equity	MSCI EAFE NR	12.00%	5.74%
Emerging Market Equity	MSCI EM NR	5.00%	7.53%
Global REITS	FTSE EPRA/NAREIT Developed	1.00%	3.65%
Private Real Estate Property	NCREIF Property	4.00%	3.85%
Private Equity	Cambridge Private Equity	9.00%	9.02%
Commodities	Commodity	1.00%	2.26%
Hedge Funds - MultiStrategy	HFRI: Fund Wtd Composite	16.00%	2.99%
Hedge Funds - Event Driven	HFRI Event Driven	6.00%	3.16%
Hedge Funds - Equity Hedge	HFRI Equity Driven	3.00%	3.42%
Assumed Inflation - Mean			2.25%
Assumed Inflation - Standard Deviation			1.65%
Portfolio Nominal Mean Return			6.44%
Portfolio Standard Deviation			11.47%
Long-Term Expected Rate of Return selected by MTA			6.50%

* Based on March 2014 Investment Policy

5. CONTRIBUTIONS

Employer contributions are actuarially determined on an annual basis. Amounts recognized as receivables for contributions include only those due pursuant to legal requirements. Employee contributions to the Plan are recognized in the period in which the contributions are due. There are no contributions required under the Metropolitan Suburban Bus Authority Employee's Pension Plan.

The following summarizes the types of employee contributions made to the Plan.

Effective January 1, 1994, covered MTA Metro-North Railroad and MTA Long Island Rail Road non-represented employees are required to contribute to the Plan to the extent that their Railroad Retirement Tier II employee contribution is less than the pre-tax cost of the 3% employee contributions. Effective October 1, 2000, non-represented employee contributions, if any, were eliminated after 10 years of making contributions to the Plan. MTA Metro-North Railroad employees may purchase prior service from January 1, 1983 through December 31, 1993 and MTA Long Island Rail Road employees may purchase prior service from January 1, 1988 through December 31, 1993 by paying the contributions that would have been required of that employee for the years in question, calculated as described in the first sentence, had the Plan been in effect for those years.

Police Officers who became participants of the MTA Police Program prior to January 9, 2010 contribute to that program at various rates. Police Officers who became participants on or after January 9, 2010 but before April 1, 2012 contribute 3% up to the completion of 30 years of service, the maximum amount of service credit allowed. Police Officers who become participants on or after April 1, 2012 contribute 3%, with additional new rates starting April 2013, ranging from 3.5%, 4.5%, 5.75%, to 6%, depending on salary level, for their remaining years of service.

MTA Bus represented participants make contributions in accordance with their respective collective bargaining agreements and arbitration awards. MTA Bus non-represented employees are accessed contributions for their flat rate benefit of $10.33 for each week for the period from January 1, 2012 through December 31, 2016. Effective January 1, 2017, MTA Bus non-represented operating employee hired prior to April 1, 2012 contribute 2% of gross wages. MTA Bus non-represented non-operating employee hired prior to April 1, 2012 contribute 4.85% of gross wages for ten years of service after January 1, 2017, and then 1.85% gross salary thereafter until retirement. Contributions levels for MTA Bus non-represented employees hired on or after April 1, 2012, which are required until retirement, are determined every year at the beginning of the calendar year, and are based on annual wages during the prior year and the following schedule:

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

In 2017, a reserve was established for fifteen former MTA employees in accordance with Chapter 533 of the Laws of 2015. As of December 31, 2020, total transfer in the amount of $2.2 million, to the New York State and Local Police and Fire Retirement System allowed former MTA Police employees to transfer membership and contributions to the New York State and Local Police and Fire Retirement System from the MTA Defined Benefit Plan.

Covered MTA Metro-North Railroad represented employees and MTA Long Island Rail Road represented employees who first became eligible to be Plan participants prior to January 30, 2008 contribute 3% of salary. MTA Staten Island Railway employees contribute 3% of salary except for represented employees hired on or after June 1, 2010 who contribute 4%. MTA Long Island Rail Road represented employees who became participants after January 30, 2008 contribute 4% of salary. For the MTA Staten Island Railway employees, contributions are not required after the completion of 10 years of credited service. MTA Long Island Rail Road represented employees are required to make the employee contributions for 10 years, or 10 years if hired after certain dates in 2014 as per collective bargaining agreements. Certain Metro-North represented employees, depending on their collective bargaining agreements, are required to make the employee contributions until January 1, 2014, January 1, 2017, June 30, 2017, or the completion of required years of credited service as per the relevant collective bargaining agreements.

Covered MTA Bus represented employees and certain non-represented employees are required to contribute a fixed dollar amount, which varies, by Depot. MTA Bus is required to make significant annual contributions to the MTA Plan on a current basis. Pursuant to the January 1, 2020 actuarial valuations for the MTA Plan, which included amounts for actuarial assets and liabilities relating to both active and retired members for most portions of the former private plans (excepting, for example, members of the Transport Workers Union — New York City Private Bus Lines Pension Trust who were working on school bus routes which did not become part of MTA Bus service), MTA Bus recorded pension expense equal to the valuation annual required contribution of $61.1 million for the calendar year ended December 31, 2020. The employer contribution was paid to the MTA Plan in 2020.

6. ACTUARIAL METHODS AND ASSUMPTIONS

A. Actuarial Valuation Method

The Frozen Initial Liability method was used for determining the actuarial determined contribution comprising the normal cost-plus amortization payments of the frozen unfunded actuarial accrued liability. The Normal Cost equals the present value of future employer normal contributions divided by the average future working lifetime factor. This factor equals the present value of future compensation or for MTA Bus represented members, present value of future general wage increases divided by current compensation or the member count weighted by general wage increases (less certain retirements), and weighted by the present value of benefits for each membership group.

The Entry Age Normal (EAN) method is used for determining changes in the frozen unfunded actuarial accrued liability due to plan provisions and assumption changes. For MTA Bus members with benefits indexed to general wage increases, the entry age normal cost uses assumed general wage increases rather than payroll, which conforms to a method compliant for GASB 67 purposes. For MTA Bus nonrepresented members where benefits are bifurcated into a past service level dollar component and a future service MaBSTOA benefit component, the EAN normal cost assumes that the MaBSTOA style benefits were in effect for the member's entire career.

For groups where service was reported as of the valuation date, Entry Age is based on an effective date of hire equal to the valuation date less provided service plus any purchased service, but not reflecting any military service purchased.

B. Asset Valuation Method

The Asset Valuation method smooths gains and losses over a 5-year period. The formula for the asset valuation method is as follows:

Actuarial Value of Assets = MV_t - $.8UR_1$ - $.6UR_2$ - $.4UR_3$ - $.2UR_4$

Where

MV_t = Market Value of assets as of the valuation date.

UR_n = Unexpected return during the n^{th} year preceding the valuation date. The unexpected return for a year equals the total investment return minus the total expected return. The total expected return equals the market value of assets at the beginning of the year plus the weighted net cash flow during the year multiplied by the expected rate of return.

The resulting value cannot be less than 80% or greater than 120% of the market value of assets.

The market value of assets is adjusted for any contributions made in the current year attributable to a prior year less any contributions made in a prior year and attributable to a future year, determined for each Agency independently.

C. Actuarial Assumptions Universal to all Groups

The assumptions described below were primarily determined based on an experience analysis covering the period from January 1, 2012 to December 31, 2017, with certain assumptions modified subsequently. The postretirement mortality assumption is based on an experience analysis covering the period from January 1, 2011 to December 31, 2015.

Interest — 6.50% per annum, compounded annually.

Railroad Retirement Wage Base — 3.25% per year.

Consumer Price Index — 2.25% per year.

Cost of Living Increases - 60% of inflation assumption or 1.35% per annum, compounded annually for Police and MTA Bus members eligible for a cost of living adjustment.

Provision for Expenses — Estimated administrative expenses are added to the normal cost. Administrative expenses are based on the average of the prior three year's reported administrative expenses.

Valuation Compensation: The valuation compensation is equal to the annualized base salary as of December 31, 2020 as provided by the MTA adjusted for wage increases granted after the valuation date but retroactive to earlier periods, multiplied by the assumed salary increases for the year. Salary increases are assumed to occur on average at mid-year. Retroactive wage adjustments are as follows:

- MTA Metro-North represented employees: 7.689% for certain ACRE groups and 2.50% for all others
- Long Island Railroad represented employees: 2.50%
- MTA Staten Island Railway represented employees: 7.689% for UTU and 2.50% for all others
- Police: 5.0625%

Mortality — Preretirement and postretirement healthy annuitant rates are projected on a generational basis using Scale AA. As a generational table, it reflects mortality improvements both before and after the measurement date.

Preretirement — RP-2000 Employee Mortality Table for Males and Females with Blue collar adjustments.

Postretirement Healthy Lives — 95% of RP-2000 Healthy Annuitant mortality table for males with Blue Collar adjustments and 116% of the rates from the RP-2000 Healthy Annuitant mortality table for females.

Postretirement Disabled Lives — RP-2014 Disabled Annuitant mortality table for males and females.

Post-termination Death Benefits - For current inactive participants eligible for post-retirement death benefits, an amount of $25,000 ($10,000 for certain M.S.B.A. inactive participants) is assumed to be payable at death. For current terminated vested members, $100,000 is assumed to be payable at death prior to retirement.

Participant Data — Service for MTA Police, MTA Metro-North Railroad and MTA Long Island Rail Road represented and management members is based on the sum of credited service, purchased service and military service provided by MTA.

For inactive MTA Police, MTA Metro-North and MTA Long Island Rail Road represented and management participants, future offsets for Railroad Retirement benefits are estimated and assumed to occur at age 62 or age 60 if the member had accrued 30 years of service, unless disabled or it appears the offset has occurred. For inactive Long Island Rail Road Pension participants, offsets for Railroad Retirement benefits are estimated and assumed to occur at the member's age 65. Benefits, net of any

Railroad Retirement benefits, are estimated for vested members who terminated during the past year if not provided by the Authority.

If not provided, the maximum retirement allowance was estimated for police and MTA Bus retirees eligible for COLA adjustments.

D. Changes in Actuarial Assumptions Universal to all Groups

This summary reflects the adoption of the January 1, 2012 – December 31, 2017 Experience Study dated October 4, 2019 and the fresh start methodology to set the frozen unfunded liability to the unfunded Entry Age Normal liability as of January 1, 2020, amortized over a closed 18 year period. The experience study decreased the investment return assumption from 7% to 6.5%, modified demographic assumptions (rates of termination, retirement, and disability) and modified other economic assumptions (salary growth, overtime and the cost of living adjustment).

E. Actuarial Assumptions — MTA Defined Benefit Pension Plan — Management

Salary Scale — Salaries are assumed to increase in accordance with the following schedule:

Years of Service	Rate of Increase	Years of Service	Rate of Increase
0	8.00 %	8	4.70 %
1	8.00	9	4.60
2	7.00	10	4.50
3	6.50	11	4.25
4	5.50	12	4.00
5	5.00	13	3.75
6	4.90	14	3.50
7	4.80	15+	3.25

Termination — Withdrawal rates vary by years of service. Illustrative rates are shown below:

Years of Service	Termination Rate	Years of Service	Termination Rate
0 - 1	6.00 %	7	2.00 %
2	5.50	8	1.75
3	5.00	9	1.50
4	4.50	10 - 14	1.25
5	3.00	15 - 19	1.00
6	2.50	20+	0.50

Retirement — Rates vary by age and type of retirement. Rates apply upon benefit eligibility from ages 55 to 79. Certain retirement age is 80. Illustrative rates are shown below:

Years of Service	Reduced Early Retirement	Unreduced Early Retirement
<10	2.00 %	5.00 %
10-19	2.00	10.00
20	5.00	30.00
21-29	5.00	20.00
30	N/A	50.00
31+	N/A	50.00 [1]

[1] At age 55, rate is 50.00%

Disability — Rates vary and apply at 10 or more years of service until age 64. For Staten Island Railway, rates apply until eligible for normal retirement and completion of 20 years of service. No rates of accidental disability are assumed. Illustrative rates are shown below:

Age	Disability Rate
25	0.045 %
30	0.049
35	0.052
40	0.073
45	0.113
50	0.138
55	0.191
60	0.259
64	0.323

Employee Contributions — No employee contributions have been anticipated for future years.

Changes in Actuarial Assumptions — This summary reflects the adoption of the January 1, 2012 – December 31, 2017 Experience Study dated October 4, 2019.

F. Actuarial Assumptions — MTA Defined Benefit Pension Plan — Rail Agencies Represented Employees

Salary Scale — Salaries are assumed to increase in accordance with the following schedule:

Years of Service	Termination Rate	Years of Service	Termination Rate
0 - 1	12.50 %	6	4.25 %
2	11.50	7	4.00
3	10.00	8	3.75
4	10.00	9	3.50
5	6.00	10+	3.25

Overtime - Rates of overtime vary by years of service and Agency. They are applied to base salary in accordance with the following schedule for Long Island Rail Road and Metro-North Railroad. For Staten Island Railway, assumed overtime is 15% of base pay regardless of the years of service. No overtime is applied to members receiving benefits upon death or disability.

Long Island Rail Road

Years of Service	Overtime Rate	Years of Service	Overtime Rate
<4	21.00 %	13	31.00 %
4	22.00	14	32.00
5	23.00	15	33.00
6	24.00	16	34.00
7	25.00	17	35.00
8	26.00	18	36.00
9	27.00	19	37.00
10	28.00	20	38.00
11	29.00	21	39.00
12	30.00	22+	40.00

Metro-North Railroad

Years of Service	Overtime Rate	Years of Service	Overtime Rate
<4	20.00 %	17	27.75 %
4	21.00	18	28.00
5	22.00	19	28.25
6	23.00	20	28.50
7	24.00	21	28.75
8	25.00	22	29.00
9	25.50	23	29.50
10	26.00	24	30.00
11	26.25	25	30.50
12	26.50	26	31.00
13	26.75	27	32.00
14	27.00	28	33.00
15	27.25	29	34.00
16	27.50	30+	35.00

Termination — Withdrawal rates vary by years of service. Illustrative rates are shown below:

Years of Service	Termination Rate	Years of Service	Termination Rate
0 - 1	3.50 %	7	1.20 %
2	2.00	8	1.10
3	1.75	9	1.00
4	1.50	10-14	0.75
5	1.40	15 - 19	0.50
6	1.30	20+	0.50

Retirement — Rates vary by age and type of retirement. Rates apply upon benefit eligibility from ages 55 to 79. Certain retirement age is 80. Illustrative rates are shown below:

Years of Service	Reduced Early Retirement	Unreduced Early Retirement	
<10	2.00 %	5.00 %	
10-19	2.00	10.00	
20	5.00	30.00	
21-29	5.00	20.00	
30	N/A	50.00	
31+	N/A	50.00	*

* At age 55, rate is 50.00%

Metro-North Non-ACRE represented members hired after the New Participant Date are not eligible for unreduced early retirement therefore the rates for 30 or more years of service are not applied.

Disability — Rates vary by age and gender and apply at 10 or more years of service until age 64. For Staten Island Railway, rates apply until eligible for normal retirement and completion of 20 years of service. Prior to 10 years of service, a rate of 0.025% for accidental disability is assumed for all ages. Illustrative rates are shown below:

	Rates of Disability				
Age	M	F	Age	M	F
20	0.151 %	0.227 %	45	0.246 %	0.372 %
25	0.151	0.227	50	0.447	0.674
30	0.151	0.227	55	0.857	1.285
35	0.164	0.239	60	1.739	2.608
40	0.183	0.277	64	2.366	3.549

Changes in Actuarial Assumptions — This summary reflects the adoption of the January 1, 2012 – December 31, 2017 Experience Study dated October 4, 2019.

G. Actuarial Assumptions — MTA Defined Benefit Pension Plan — MTA Long Island Rail Road Represented Employees

Salary Scale — Salaries are assumed to increase in accordance with the following schedule:

Years of Service	Rate of Increase
0	3.25 %
1	10.50
2	10.00
3	9.75
4	9.25
5	14.75
6+	3.25

Overtime - Members hired prior to January 31, 2008 are assumed to earn overtime equal to 30% of their pay for years when they are retirement eligible. Otherwise, members are assumed to earn overtime equal to 20% of their rate of pay.

Termination — Withdrawal rates vary by years of service. Illustrative rates are shown below:

Years of Service	Termination Rate
0	4.25 %
1 - 4	2.75
5 - 9	2.25
10+	1.25

Retirement — Rates vary by age and type of retirement. Illustrative rates are shown below:

A. For represented employees hired prior to January 31, 2018:

Age	Reduced Early Retirement	Unreduced Early Retirement
55	4.50 %	10.00 %
56	4.00	7.50
57	3.00	5.00
58	3.00	5.00
59	3.50	5.00

B. For represented employees hired on or after January 31, 2008:

Age	Reduced Early Retirement	Unreduced Early Retirement
55	3.00 %	10.00 %
56	3.00	7.50
57	3.00	5.00
58	3.00	5.00
59	3.00	5.00
60	3.00	30.00
61	3.00	30.00

C. For all represented employees at Normal Retirement (age 60 or age 62 and later):

- 5% per year if members have fewer than 10 years of service
- 15% per year if members have 10 but fewer than 20 years of service
- 30% per year if member have 20 or more years of service

Certain retirement age is age 80

Disability — Rates vary by age, sex and type of disability beginning at benefit eligibility. Illustrative rates are shown below:

	Ordinary		Accidental			Ordinary		Accidental	
Age	M	F	M	F	Age	M	F	M	F
20	0.17 %	0.25 %	0.01 %	0.01 %	45	0.27 %	0.41 %	0.06 %	0.01 %
25	0.17	0.25	0.01	0.01	50	0.50	0.75	0.06	0.01
30	0.17	0.25	0.02	0.01	55	0.95	1.43	0.07	0.01
35	0.18	0.27	0.03	0.01	60	1.93	2.90	0.07	0.01
40	0.20	0.31	0.05	0.01	64	1.93	2.90	0.07	0.01

Changes in Actuarial Assumptions - None.

H. Actuarial Assumptions — MTA 20-Year Police Retirement Program

Salary Scale — Salary increases vary by year and reflect longevity increases. Illustrative rates are shown below.

Years of Service	Rate of Increase	Years of Service	Rate of Increase
0 - 1	12.5 %	9	8.75 %
2	15.5	10 – 13	3.25
3	13.0	14	8.75
4	20.5	15 – 18	3.25
5	13.0	19	8.75
6	8.0	20 – 23	3.25
7	6.0	24	8.75
8	4.0	25+	3.25

Overtime - Rates of overtime vary by years of service. They are applied to base salary in accordance with the following schedule. No overtime is applied to members receiving benefits upon death or disability.

Years of Service	Overtime Rate	Years of Service	Overtime Rate
<4	20.00 %	9	26.00 %
4	21.00	10	27.00
5	22.00	11	28.00
6	23.00	12	29.00
7	24.00	13	30.00
8	25.00	14+	30.00

Termination — Withdrawal rates vary by length of service. Illustrative rates are shown below:

Years of Service	Termination Rate
<5	2.50 %
5– 9	0.25
10+	0.00

Retirement — Rates vary by age and years of service. Rates apply upon benefit eligibility from up to age 61. Certain retirement age is 62. Illustrative rates are shown below:

	Years of Service at Retirement		
Age	20	21 - 28	29+
<50	20.00 %	7.50 %	20.00 %
50 - 54	30.00	15.00	20.00
55 - 61	30.00	20.00	25.00

Disability — Ordinary rates vary by age and apply between 10 and 20 years of service. A rate of 0.025% for accidental disability is assumed for all ages and service periods. Illustrative rates are shown below:

Age	Ordinary	Age	Ordinary
25	0.1132 %	45	0.7311 %
30	0.1318	50	1.0608
35	0.1856	55	1.3329
40	0.4283	60	1.4149

Benefits Not Valued – Railroad benefit offset.

Changes in Actuarial Assumptions — This summary reflects the adoption of the January 1, 2012 – December 31, 2017 Experience Study dated October 4, 2019.

I. Actuarial Assumptions — MSBA Employees Pension Plan

Benefit Estimates — Due to the insignificant number of active employees, benefits are estimated based on plan provisions and actuarial assumptions used for management benefits, except for the overtime assumption. No railroad offset is assumed.

Overtime – Members are assumed to earn overtime equal to the following percentage of their rates of pay:

Years of Service	Rate
Under 25 years of service	17.00 %
25 to 29 years of service	20.00
30 or more years of service	23.00

Changes in Actuarial Assumptions - None.

J. Actuarial Assumptions — MTA Defined Benefit Plan — MTA Staten Island Railway

Salary Scale — Salary increases vary by years of service. Illustrative rates are shown below.

Years of Service	Rate
0	10.00 %
1	9.50
2	9.25
3	9.00
4	8.75
5	6.00
6+	3.25

Overtime — Hourly employees are assumed to earn overtime equal to 7.50% of their rate of pay.

Termination — Withdrawal rates vary by years of service. Illustrative rates are shown below:

Year of Service	Termination Rate
0	9.00 %
1 - 3	5.50
4 - 9	3.50
10 - 19	1.40
20+	0.50

Retirement — Rates vary by age and type of retirement. Illustrative rates are shown below:

		Normal Retirement	
Age	Reduced Early Retirement	First Year Eligible	After First Eligibility
55	3.00 %	30.00 %	20.00 %
56	3.00	30.00	20.00
57	3.00	30.00	20.00
58	3.00	30.00	20.00
59	3.00	30.00	20.00
60	3.00	30.00	20.00
61	3.00	30.00	20.00

For all employees at Normal Retirement (age 60 or age 62 and later):

- 5% per year if members have fewer than 10 years of service
- 15% per year if members have 10 but fewer than 20 years of service
- 30% per year if member have 20 or more years of service

Certain retirement age is age 80

Disability — Rates vary by age and type of disability beginning at benefit eligibility. Illustrative rates are shown below:

Age	Ordinary	Accidental	Age	Ordinary	Accidental
20	0.15 %	0.03 %	45	0.44 %	0.05 %
25	0.17	0.03	50	0.54	0.06
30	0.19	0.03	55	0.61	0.07
35	0.24	0.03	60	0.81	0.08
40	0.33	0.04			

Benefits Not Valued — Accidental death benefits.

Changes in Actuarial Assumptions — None.

K. Actuarial Assumptions — MTA Long Island Rail Road Pension Plan/Plan for Additional Pensions

Salary Scale — Rates of pay are assumed to increase at a rate of 3.0% per annum.

Overtime/unused Vacation Pay — Earnings in each year increased by 65% for represented employees to account for overtime and by 20% in the year prior to assumed retirement and by 10% in the year prior to termination (other than retirement) for non-represented employees to account for unused vacation pay.

Termination — Withdrawal rates vary by age. Illustrative rates are shown below:

Age	Rate	Age	Rate
20	2.12 %	45	0.96 %
25	1.64	50	0.80
30	1.44	55	0.60
35	1.36	60	0.00
40	1.16	65	0.00

Retirement — Assumed retirement rate varies by year of eligibility.

Eligibility Period	Rate of Retirement
First Year	40 %
Years 2–4	33
Years 5	37
Years 6–7	35
Years 8–9	33
Years 10–15	55
Years 16 and above	100

Terminated vested participants are assumed to retire upon first eligibility, or attained age if later.

Interest on Employee Contributions — Assumed to be 3.5% per year for future years.

Participant Data — Benefits under the Plan are frozen and based on information provided by MTA Headquarters, Consolidated Pensions.

Benefits Not Valued — Disability benefits since all active plan participants are eligible for retirement.

Changes in Actuarial Assumptions — None.

L. Actuarial Assumptions — MTA Bus

Salary Scale for Non-represented Employees - Salaries are assumed to increase at 3.25% for Article 18 members and in accordance with the following schedule for other non-represented employees:

Years of Service	Rate of Increase	Years of Service	Rate of Increase
0	6.00 %	12	3.90 %
1	7.00	13	3.80
2	6.50	14	3.70
3	6.25	15	3.60
4	6.00	16	3.50
5 - 9	4.50	17	3.40
10	4.30	18	3.30
11	4.10	19+	3.25

Overtime — None

General Wage Increase (GWI) - The benefit level and contribution rate are assumed to increase 2.75% each year based on the anniversary of the last actual or assumed scheduled increase for TWU Local 100, ATU 1179, ATU 1181 and TSO represented employees. The benefit level for ATU 1179, ATU 1181, and TSO represented employees are assumed to follow the same increase pattern as TWU Local 100. **Termination** — Withdrawal rates vary by years of service, employee type and operating/non-operating distinction. Illustrative rates are shown below:

For represented employees:

Year of Service	Termination Rate	Year of Service	Termination Rate
0	14.00 %	5 - 9	2.25 %
1	6.00	10 - 14	1.75
2	3.00	15 -1 9	1.25
3	2.75	20+	1.00
4	2.50		

For non-represented employees:

Year of Service	Operating	Non - Operating
0	13.00 %	8.50 %
1	6.00	8.50
2	3.50	7.50
3	3.00	6.50
4	2.50	5.00
5 - 9	2.25	3.00
10 - 14	1.75	2.00
15 -1 9	1.25	1.00
20+	1.00	1.00/0.50 *

* 1% applies if less than age 50 and 0.5% applies if age 50 and older

Retirement — Rates vary by age, service, employee type, Tier, Operating/Non-operating distinction, and retirement eligibility. Rates apply upon benefit eligibility until age 79. Certain retirement age is 8 Terminated vested members are assumed to retire at first eligibility for an unreduced benefit. Illustrative rates are shown below:

For represented members:

Age	Years of Service at Retirement <10	10-19	20+
57	N/A	N/A	25.00 %
58-61	N/A	N/A	20.00
62-64	N/A	N/A	30.00
65 - 79	5.00	30.00	30.00

For certain former non-represented employees of Alliance Companies (Article 18):

Age	Retirement Rate
55–56	6 %
57–58	8
59	9
60–61	13
62	25
63–64	15
65	100

For non-grandfathered non-represented employees:

Tier	Operating/Non-operating	Age	<10	10-19	20	21-24	25	26+
4	Operating	55 - 56	N/A	N/A	N/A	N/A	40 %	30 %
4	Operating	57 - 61	N/A	N/A	N/A	N/A	40	25
4	Operating	62 - 79	5 %	15 %	30 %	20 %	40	30
4	Non-operating	57–79	5	10	25	25	25	25
6	Operating	55 - 56	N/A	N/A	N/A	N/A	40	30
6	Operating	57 - 62	N/A	N/A	N/A	N/A	40	25
6	Operating	63 - 79	N/A	15	30	20	40	30
6	Non-operating	55–59	N/A	0.5	1	1	1	1
6	Non-operating	60–61	N/A	1	2	2	2	2
6	Non-operating	62	N/A	3	6	6	6	6
6	Non-operating	63–79	N/A	10	25	25	25	25

For grandfathered non-represented employees:

For employees hired prior to January 1, 2017, retirement conditions are modified to reflect a single commencement date at the earliest eligible retirement date among former MTA Bus Article 14,15,16,17, and 19 provisions and MaBSTOA-style provisions. Retirement rates for these members reflect a phase-in of retirement rates used as of January 1, 2017 under the prior benefit structure and the retirement rates used under the current benefit structure.

Disability — Rates vary by age, employee type and apply at 10 or more years of service until eligibility for retirement for represented employees and until eligible for unreduced retirement and completion of 20 years of service for non-represented employees. Illustrative rates are shown below:

For represented employees:

Age	Disability Rate	Age	Disability Rate
20	0.250 %	45	0.678 %
25	0.270	50	0.827
30	0.292	55	1.145
35	0.314	60	1.552
40	0.440	64	1.938

For non-represented employees:

Age	Disability Rate	Age	Disability Rate
20	0.042 %	45	0.113 %
25	0.045	50	0.138
30	0.049	55	0.191
35	0.052	60	0.259
40	0.073	64	0.323

Marriage — 80% of members are assumed to be married with wives 3 years younger than their husbands.

Interest on Employee Contributions — Future years assumed to be 2.5% per year for represented employees and for the accumulated balances as of December 31, 2016 for non-represented employees.

Benefits Not Valued — Former Article 15 represented members who may be eligible for reduced retirement at attainment of age 55 and completion of 20 years of service is expected to have an insignificant cost.

The $2,500 post-retirement death benefit for represented members is not valued since premiums are paid outside of the plan trust.

The $10,000 post-retirement death benefit for former Queens Surface, Jamaica and Triboro Bus Service non-represented Employees (former Article 15) is not valued since premiums are paid outside of the plan trust.

The accidental death and dismemberment benefit for former Queens Surface, Jamaica and Triboro Bus Service non-represented Employees (former Article 15) is not valued as the costs are paid outside of the plan trust.

Form of payment - Normal Form, except that all former Liberty Lines Bus non-represented employees (former Article 13) members are assumed to elect the lump sum payment option. Lump sums valued using the current (2019) lump sum mortality table published by the IRS and a 4.5% assumed interest rate.

Changes in Actuarial Assumptions — This summary reflects the adoption of the January 1, 2012 – December 31, 2017 Experience Study dated October 4, 2019.

7. CUSTODIAL AND OTHER PROFESSIONAL SERVICES

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

8. SUBSEQUENT EVENTS

The Plan invested assets with the Allianz Structured Alpha Funds ("Allianz"). During 2020, it is alleged that the fund managers breached their fiduciary and contractual obligations to the Plan, resulting in a significant loss. Allianz has closed the funds. The Plan, along with other institutional investors, filed a lawsuit in the United States District Court for the Southern District of New York (20 Civ. 5615 (KPF)) seeking recovery of their losses. The lawsuit is in preliminary stages of discovery.

* * * * * *

SCHEDULE I

METROPOLITAN TRANSPORTATION AUTHORITY
DEFINED BENEFIT PENSION PLAN

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

		2020	2019	2018	2017	2016	2015	2014
Total pension liability:								
Service cost	$	213,495	173,095	162,273	148,051	138,215	124,354	121,079
Interest		427,672	387,193	358,118	335,679	308,009	288,820	274,411
Changes of benefit terms		-	-	61,890	76,511	73,521	6,230	-
Differences between expected and actual experience		92,019	35,935	75,744	(27,059)	86,809	121,556	2,322
Changes of assumptions		-	690,958	-	10,731	-	(76,180)	-
Benefit payments and withdrawals		(293,836)	(264,985)	(242,349)	(232,976)	(209,623)	(199,572)	(191,057)
Net change in total pension liability		439,350	1,022,196	415,676	310,937	396,931	265,208	206,755
Total pension liability – beginning		6,510,686	5,488,490	5,072,814	4,761,877	4,364,946	4,099,738	3,892,983
Total pension liability – ending (a)		6,950,036	6,510,686	5,488,490	5,072,814	4,761,877	4,364,946	4,099,738
Plan fiduciary net position:								
Employer contributions		394,986	344,714	338,967	321,861	280,768	221,694	331,259
Member contributions		32,006	31,504	29,902	31,027	29,392	34,519	26,006
Net investment income		92,044	647,264	(150,422)	516,153	247,708	(45,122)	102,245
Benefit payments and withdrawals		(293,836)	(264,985)	(242,349)	(232,976)	(209,623)	(199,572)	(191,057)
Administrative expenses & Transfer to investments		(3,660)	(3,408)	(3,152)	(4,502)	(3,051)	(1,962)	(9,600)
Net change in plan fiduciary net position		221,540	755,089	(27,054)	631,563	345,194	9,557	258,853
Plan fiduciary net position – beginning		4,784,224	4,024,480	4,051,534	3,419,971	3,074,777	3,065,220	2,806,367
Plan fiduciary net position – ending (b)		5,005,764	4,779,569	4,024,480	4,051,534	3,419,971	3,074,777	3,065,220
Employer’s net pension liability – ending (a)-(b)	$	1,944,272	1,731,117	1,464,010	1,021,280	1,341,906	1,290,169	1,034,518
Plan fiduciary net position as a percentage of the total pension liability		72.03%	73.41%	73.33%	79.87%	71.82%	70.44%	74.77%
Covered payroll	$	1,996,960	1,996,090	1,984,629	1,805,156	1,724,219	1,603,924	1,544,050
Employer’s net pension liability as a percentage of covered payroll		97.36%	86.73%	73.77%	56.58%	77.83%	80.44%	67.00%

In accordance with GASB No. 67, paragraph 50, such information was not readily available for periods prior to 2014.

Plan fiduciary net position – ending (b) for 2019 was revised by $4,655 representing the December 31, private markets investment market values.

METROPOLITAN TRANSPORTATION AUTHORITY DEFINED BENEFIT PENSION PLAN

SCHEDULE II

Required Supplementary Information (Unaudited)
Schedule of Employer Contributions
(in thousands)

Fiscal Year Ending December 31	Actuarially Determined Contribution	Actual Employer Contribution	Contribution Deficiency (Excess)	Covered Payroll	Contribution as a % of covered Payroll
2011	$ 166,188	$ 166,188	$ -	$ -	N/A
2012	212,397	212,397	-	-	N/A
2013	242,980	242,980	-	-	N/A
2014	271,523	331,259	(59,736) *	1,544,050	21.45%
2015	273,730	221,694	52,036	1,603,924	13.82%
2016	290,415	280,768	9,647	1,724,219	16.28%
2017	316,916	321,861	(4,945)	1,805,156	17.83%
2018	331,566	338,967	(7,401)	1,984,629	17.08%
2019	349,928	344,714	5,214	1,996,090	17.27%
2020	392,921	394,986	(2,065)	1,996,960	19.78%

* Excess for 2014 reflects a prepaid contribution toward the 2015 Actuarially Determined Contribution.

In accordance with GASB No. 67, paragraph 50, such information was not readily available for periods prior to 2014.

METROPOLITAN TRANSPORTATION AUTHORITY
DEFINED BENEFIT PENSION PLAN

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)
SCHEDULE OF EMPLOYER CONTRIBUTIONS

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

Valuation Dates	January 1, 2020	January 1, 2019	January 1, 2018	January 1, 2017
Actuarial cost method	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)
Amortization method	For FIL bases, 18 years for the Fresh start base as of January 1, 2020 and period specified in current valuation report for specific plan change bases. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary or service, of the projected population for each group and further weighted by total present value of benefits for each group.	For FIL bases, period specified in current valuation report for specific plan change bases. Fresh start base as of January 1, 2020 will be determined based on the Plan's unfunded Entry Age Normal liability less amortization balances remaining plan change bases. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population for each group	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population for each group	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population for each group
Actuarial asset valuation method	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets.	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets.	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets.	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets.
Interest rate	Net rate of 6.50% for 2020, per annum, net of investment expenses	Net rate of 6.50% for 2019, per annum, net of investment expenses	Net rate of 7.0% for 2018, per annum, net of investment expenses	Net rate of 7.0% for 2017, per annum, net of investment expenses
Inflation	2.25% per annum	2.25% per annum	2.5% per annum	2.5% per annum
Railroad retirement wage base	3.25% per year	3.25% per year	3.5% per year	3.5% per year
Mortality	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA
Separations other than for normal retirement	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience
Rates of normal retirement	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan.	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan.	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan.	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan.
Salary increases	Varies by years of employment, and employee group; 2.75% General Wage Increases ("GWI") for TWU MTA Bus hourly employees	Varies by years of employment, and employee group; 2.75% General Wage Increases ("GWI") for TWU MTA Bus hourly employees	Varies by years of employment, and employee group; 3.0% General Wage Increases ("GWI") for TWU MTA Bus hourly employees	Varies by years of employment, and employee group; 3.0% General Wage Increases ("GWI") for TWU MTA Bus hourly employees
Overtime	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience
Cost-of-living adjustments	1.35% per annum (2)	1.35% per annum (2)	1.375% per annum (2)	1.375% per annum (2)
Provision for expenses	An average of the prior three years' administrative charges added to the normal cost	An average of the prior three years' administrative charges added to the normal cost	An average of the prior three years' administrative charges added to the normal cost	An average of the prior three years' administrative charges added to the normal cost

(1) Under this actuarial method, the initial liability has been established by the Entry Age Actuarial Cost Method for determining changes in the Unfunded Actuarial Accrued Liability (UAAL) due to plan provision and assumption changes.
(2) Assumes a long-term consumer price inflation assumption of 2.5% per annum, compounded annually.

METROPOLITAN TRANSPORTATION AUTHORITY
DEFINED BENEFIT PENSION PLAN

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)
SCHEDULE OF EMPLOYER CONTRIBUTIONS

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

Valuation Dates	January 1, 2016	January 1, 2015	January 1, 2014
Actuarial cost method	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)	Frozen initial liability (FIL) (1)
Amortization method	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population for each group	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population for each group	For FIL bases, period specified in current valuation report. Future gains/losses are amortized through the calculation of the normal cost in accordance with the FIL cost method amortized based on expected working lifetime, weighted by salary, of the projected population for each group
Actuarial asset valuation method	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets.	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets.	Actuarial value equals market value less unrecognized gains/losses over a 5-year period. Gains/losses are based on market value of assets.
Interest rate	Net rate of 7.0% for 2016, per annum, net of investment expenses	Net rate of 7.0% for 2015, per annum, net of investment expenses	Net rate of 7.0% for 2015, per annum, net of investment expenses
Inflation	2.5% per annum	2.5% per annum	2.5% per annum
Railroad retirement wage base	3.5% per year	3.0% per year	3.0% per year
Mortality	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA	Based on experience of all MTA members reflecting mortality improvement ona generational basis using Scale AA
Separations other than for normal retirement	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience
Rates of normal retirement	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan.	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan.	Tables based on recent experience. Rates vary by age, years of service at retirement and Tier/Plan.
Salary increases	Varies by years of employment, and employee group; 3.0% General Wage Increases ("GWI") for TWU MTA Bus hourly employees	Varies by years of employment, and employee group; 3.5% for MTA Bus hourly employees	Varies by years of employment, and employee group; 3.5% for MTA Bus hourly employees
Overtime	Tables based on recent experience	Tables based on recent experience	Tables based on recent experience
Cost-of-living adjustments	1.375% per annum (2)	1.375% per annum (2)	1.375% per annum (2)
Provision for expenses	An average of the prior three years' administrative charges added to the normal cost	An average of the prior three years' administrative charges added to the normal cost	An average of the prior three years' administrative charges added to the normal cost

(1) Under this actuarial method, the initial liability has been established by the Entry Age Actuarial Cost Method for determining changes in the Unfunded Actuarial Accrued Liability (UAAL) due to plan provision and assumption changes.
(2) Assumes a long-term consumer price inflation assumption of 2.5% per annum, compounded annually.

Required Supplementary Information (Unaudited)
Schedule of Investment Returns

The following table displays annual money-weighted rate of return, net of investment expense.

Fiscal Year Ending December 31	Net Money-Weighted Rate of Return
2011	N/A
2012	N/A
2013	N/A
2014	3.58%
2015	(1.47%)
2016	7.97%
2017	14.94%
2018	(3.67%)
2019	16.06%
2020	1.91%

In accordance with GASB No. 67, paragraph 50, such information was not readily available for periods prior to 2014.

Calculation on Long-Term Expected Rate of Return

The best-estimate range for the long-term expected rate of return is determined by adding expected inflation to expected long-term real returns and reflecting expected volatility and correlation. The capital market assumptions are per Milliman's investment consulting practice as of December 31, 2020.